



AGENDA

Consolidated Workshop

City Council Chamber - 1243 National City
Boulevard, National City, CA

Ron Morrison, Mayor
Luz Molina, Vice-Mayor
Marcus Bush, Councilmember
Jose Rodriguez, Councilmember
Ditas Yamane, Councilmember

Armando Vergara, Acting City Manager
Barry J. Schultz, City Attorney
Shelley Chapel, MMC, City Clerk
R. Mitchel Beauchamp, City Treasurer

The City Council also sits as the City of National City Community Development Commission, Housing Authority, Joint Powers Financing Authority, and Successor Agency to the Community Development Commission as the National City Redevelopment Agency

Thank you for participating in local government and the City of National City Council Meetings.

Meetings: Regular City Council Meetings are held on the first and third Tuesday of the month at 6:00 p.m. Special Closed Session Meeting and Workshops may be same day, the start time is based on needs. Check Special Agendas for times.

Location: Regular City Council Meetings are held in the Council Chamber located at City Hall, 1243 National City Boulevard, National City, CA 91950, the meetings are open to the public.

Agendas and Material: [Agendas and Agenda Packet](#) for items listed are available on the City website, and distributed to the City Council no less than 72 hours prior to the City Council Meeting. Sign up for [E-Notifications](#) to receive alerts when items are posted.

Public Participation: Encouraged in a number of ways as described below. Members of the public may attend the City Council Meeting in person, watch the City Council Meeting via [live](#) web stream, or participate remotely via Zoom. [Recording of Meetings](#) are archived and available for viewing on the City's website.

Public Comment: Persons wishing to address the City Council on matters not on the agenda may do so under Public Comments. Those wishing to speak on items on the agenda may do so when the item is being considered. Please submit a Speaker's Slip to the City Clerk prior to the meeting or immediately following the announcement of the item. All comments will be limited up to three (3) minutes. The Presiding Officer shall have the authority to reduce the time allotted to accommodate for a large number of speakers. *(City Council Policy 104)*

If you wish to submit written comment [email](#) to the City Clerk's Office at least 2 hours prior to the City Council Meeting to allow time for distribution to the City Council.

Spanish Interpretation Services: Spanish Interpretation Services are available, please contact the City Clerk prior to the start of the meeting for assistance.

American Disabilities Act Title II: In compliance with the American Disabilities Act of 1990, persons with a disability may request an agenda in appropriate alternative formats as required by Title II. Any person with a disability who requires a modification or accommodation in order to participate in a meeting should direct such request to the City Clerk's Office (619) 336-4228 at least 24 hours in advance of the meeting.



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Gracias por participar en las reuniones del gobierno local y del Consejo de la Ciudad de National City.

Reuniones: Las reuniones regulares del Consejo Municipal se llevan a cabo el primer y tercer martes del mes a las 6:00 p.m. La reunión especial de sesión privada y los talleres pueden ser el mismo día, la hora de inicio se basa en las necesidades. Consulte las agendas especiales para conocer los horarios.

Ubicación: Las reuniones regulares del Concejo Municipal se llevan a cabo en la Cámara del Consejo ubicada en el Ayuntamiento, 1243 National City Boulevard, National City, CA 91950, las reuniones están abiertas al público.

Agendas y Material: Las Agendas y el Paquete de Agenda para los temas enumerados están disponibles en el sitio web de la Ciudad y se distribuyen al Concejo Municipal no menos de 72 horas antes de la Reunión del Concejo Municipal. Regístrese para recibir notificaciones electrónicas cuando se publiquen artículos.

Participación pública: Se fomenta de varias maneras como se describe a continuación. Los miembros del público pueden asistir a la Reunión del Concejo Municipal en persona, ver la Reunión del Concejo Municipal a través de la transmisión web en vivo o participar de forma remota a través de Zoom. Las grabaciones de las reuniones están archivadas y disponibles para su visualización en el sitio web de la Ciudad.

Comentario Público: Las personas que deseen dirigirse al Concejo Municipal sobre asuntos que no están en la agenda pueden hacerlo bajo Comentarios públicos. Quienes deseen hacer uso de la palabra sobre los temas del programa podrán hacerlo cuando se esté examinando el tema. Por favor, envíe una solicitud del orador al Secretario de la Ciudad antes de la reunión o inmediatamente después del anuncio del artículo. Todos los comentarios estarán limitados a tres (3) minutos. El Presidente tendrá la autoridad para reducir el tiempo asignado para dar cabida a un gran número de oradores. (Política del Concejo Municipal 104)

Si desea enviar comentarios por escrito, envíe un correo electrónico a la Oficina del Secretario de la Ciudad al menos 2 horas antes de la Reunión del Concejo Municipal para dar tiempo a la distribución al Consejo Municipal.

Servicios de interpretación en español: Los servicios de interpretación en español están disponibles, comuníquese con el Secretario de la Ciudad antes del inicio de la reunión para obtener ayuda.

Título II de la Ley de Discapacidades Americanas: En cumplimiento con la Ley de Discapacidades Americanas de 1990, las personas con discapacidad pueden solicitar una agenda en formatos alternativos apropiados según lo requerido por el Título II. Cualquier persona con una discapacidad que requiera un modificación o adaptación para participar en una reunión debe dirigir dicha solicitud a la Oficina del Secretario de la Ciudad (619) 336-4228 al menos 24 horas antes de la reunión.



AGENDA

City Council Workshop

Tuesday, May 16, 2023, 3:00 p.m.
City Council Chamber - 1243 National City Boulevard
National City, CA

Pages

1. CALL TO ORDER

2. ROLL CALL

3. PUBLIC COMMENT

4. STAFF REPORT

4.1 Fiscal Year 2023-2024 Preliminary Budget Workshop

2

Recommendation:

Review, receive presentation, and provide direction.

5. ADJOURNMENT

Regular Meeting of the City Council of the City of National City - Tuesday, May 16, 2023 - 6:00 p.m. - Council Chambers - National City, California.



AGENDA REPORT

Department: Administrative Services - Finance
Prepared by: Molly Brennan, Administrative Services Director
Meeting Date: Tuesday, May 16, 2023
Approved by: Armando Vergara, Acting City Manager

SUBJECT:

Fiscal Year 2023-2024 Preliminary Budget Workshop

RECOMMENDATION:

Review, receive presentation, and provide direction.

BOARD/COMMISSION/COMMITTEE PRIOR ACTION:

Not Applicable.

EXPLANATION:

During the workshop, staff will present the fiscal year 2023-2024 (FY24) preliminary budget, which represents status quo staffing and programs, and then focus the main portion of the conversation on the enhancement decision items. For the second year in a row, staff is presenting a balanced budget and City Council has the ability to consider adding enhancement items. Since some of the items are significant spending increases, additional details on the largest operating expenditure requests are enclosed herein. The presentation and FY24 preliminary budget book are attached as Exhibit A and B for your review.

FINANCIAL STATEMENT:

See attached presentation.

RELATED CITY COUNCIL 2020-2025 STRATEGIC PLAN GOAL:

Balanced Budget and Economic Development

ENVIRONMENTAL REVIEW:

This is not a project under CEQA and is therefore not subject to environmental review.CCR15378; PRC 21065.

PUBLIC NOTIFICATION:

Agenda Report posted within 72 hours of meeting date and time in accordance with Brown Act.

ORDINANCE:

Not Applicable

EXHIBITS:

Exhibit A – FY24 Preliminary Budget Presentation
Exhibit B – FY24 Preliminary Budget Book
Exhibit C – City Council Goal Setting Workshop Report
Exhibit D – Police Staffing Memo
Exhibit E – Fire Staffing Memo
Exhibit F – After School Program Proposal
Exhibit G – City of San Diego Council Policy 100-06



**FISCAL YEAR 2024
BUDGET WORKSHOP**

May 5, 2023



Budget Team

**Brad Raulston, Roberto Yano, Molly Brennan
Janel Pehau, Paul Valadez, Sheila Pangco**

Department Heads

**Carlos Aguirre, Shelley Chapel, Sergio Mora,
Joyce Ryan, Barry Schultz, Jose Tellez, Armando Vergara**

Workshop Outline

- ❖ Introduction and Overview
- ❖ City Priorities – Goal Setting Results
- ❖ Revisit 5 Year Forecast
- ❖ Fiscal Year 2023-2024 Preliminary Budget (July 2023-June 2024)
 - ❖ Enhancement Decision Items
- ❖ Capital Improvement Program (CIP)
 - ❖ Enhancement Decision Items
- ❖ Revisit 5 Year Forecast
- ❖ Closing Comments, Next Steps, and Request for Direction
- ❖ Public Comment
- ❖ City Council Comments and Direction



Process and Schedule

- January - City Council interviews on Individual Goals & Expectations
- Feb 1-3 - New Mayor & Councilmembers Academy by CA League of Cities
- Feb 21 - Regular Meeting - Goal Setting and Budgeting Kick-Off
- March 7 – Recruitment/Retention Update
- March 21 – Initial 5-year Financial Forecast & Current Priorities from Staff
- March 24 –Facilitated Workshop on Council Priorities and Teamwork
- April 18 – Presentation of Recommended Budget and Workshop to Get Direction
- May 16 – Follow up Workshop based on Direction Provided
- June – Adoption of Balanced Budget

Financial Accomplishments

BALANCED BUDGET

CLEAN AUDITS

RESERVE POLICY UPDATED AND RESERVES FUNDED

CREDIT RATING INCREASE

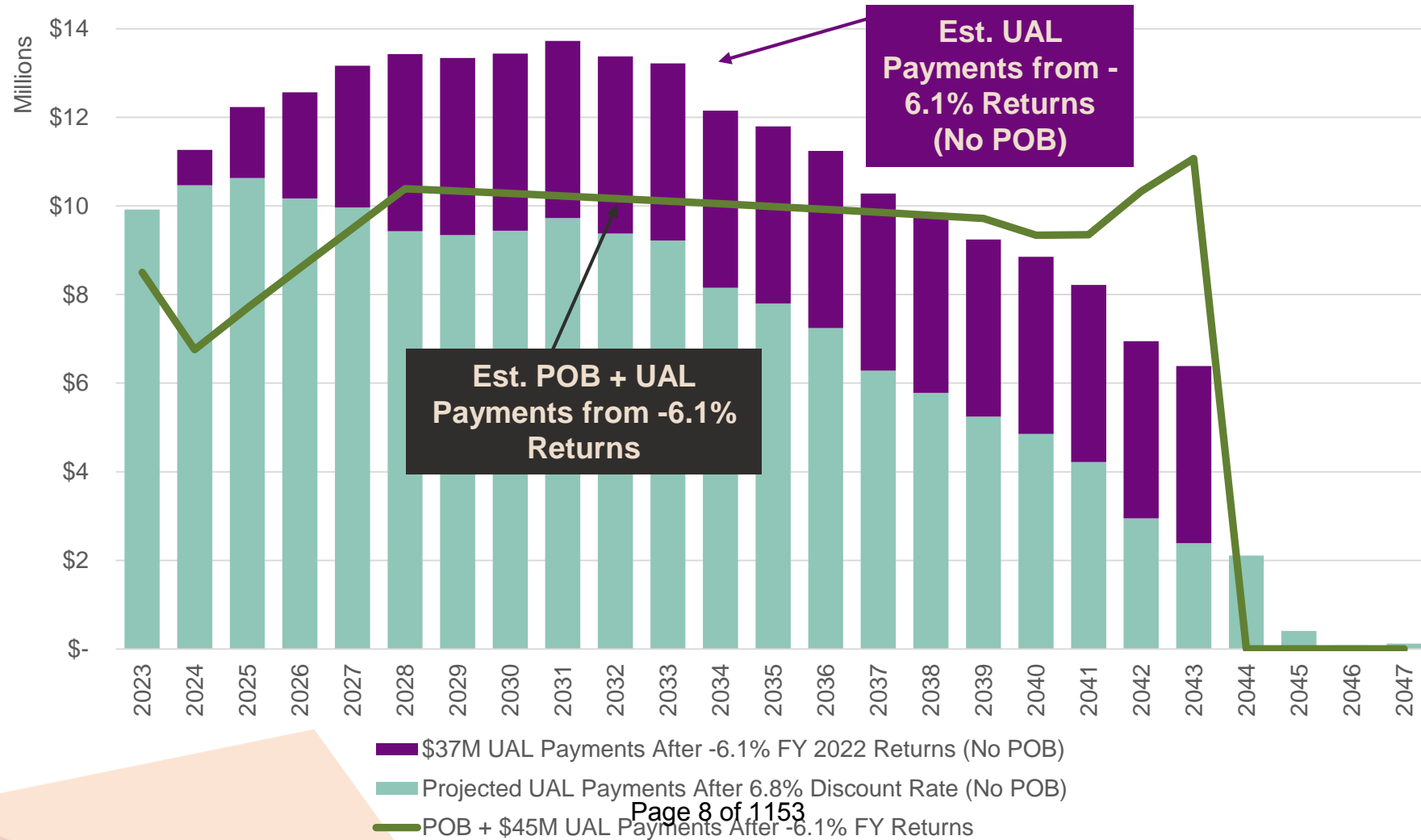
\$20M SAVINGS FROM PENSION OBLIGATION BONDS (POB) ISSUANCE

ARPA SPENDING PLAN



National City 2021 POB

Update After -6.1% FY 2022 CalPERS Investment Returns



FY 2024 Budget and Fiscal Health

- ❖ Forecasting a General Fund budget surplus
- ❖ Important to retain controls on General Fund discretionary spending, as surplus is projected to end when ARPA funds end in FY25
- ❖ Remain focused on economic development projects/programs
- ❖ Continue to support committed work force with customer service culture that supports the 7Cs pledge
- ❖ Use one time revenue for one time expenditures
- ❖ Continue grow ongoing revenue for ongoing expenditures





Goal Setting: City Council Priorities



Current Strategic Plan 2020-2025

TWO-YEAR STRATEGIC PLANNING CYCLE

- ❖ 7 Focus Areas – 7 Cs Pledge
 - ❖ Balanced Budget & Economic Development
 - ❖ Communications & Outreach
 - ❖ Health, Environment, & Sustainability
 - ❖ Housing & Community Development
 - ❖ Parks, Recreation, & Library
 - ❖ Public Safety
 - ❖ Transportation Choices & Infrastructure



7C's Pledge

We Pledge to Provide **Customer Service** through a **Culture** of...

Courtesy

We treat everyone with dignity and respect.

Collaboration

We work to achieve common goals and value our differences.

Communication

We communicate openly, honestly, and with clear, consistent messages.

*With a **Commitment to Our Community!***

Strategic Focus Areas and Organization

7 STRATEGIC FOCUS AREAS

- Balanced Budget and Economic Development
- Communication and Outreach
- Health, Environment, and Sustainability
- Housing and Community Development
- Parks, Recreation and Library
- Public Safety
- Transportation Choices and Infrastructure

7 FUNCTIONAL GROUPS

- Police
- Fire
- Public Works/Engineering
- Community Development
- Library & Community Services
- Housing Authority
- Leadership & Administration
 - City Manger and Attorney Offices
 - Finance and Human Resources
 - Information Technology
 - City Clerk
 - Economic Development

City Council Goal Setting

TIER 1

- Improve permitting and development process for greater efficiency
- Provide services that impact quality of life (e.g. cleanliness)

TIER 2

- Improve communication and outreach overall and tailor some by district
- Maintain and improve infrastructure
- District budgeting (first step- research what other cities do)
- Pipelines for public safety jobs



Employees, Volunteers, & Partners

Service = People + Partnerships

- ❖ City employs approximately 400 essential workers
- ❖ National City is a full-service city (no public safety contracts)
- ❖ Committed work force that relies on fiscal sustainability
 - ❖ Meaningful and sustainable wage increases for our workers
- ❖ Boards, Commissions, and other official committees
- ❖ Task Forces, Community Clubs, CERT, RSVP, other city volunteers
- ❖ Partnerships with non-profits to deliver services





5 Year Financial Forecast



Fund Balance Categories

Non-spendable – amounts that cannot be spent because they are: 1) not in spendable form or 2) legally or contractually required to be maintained intact.

Restricted – resources that have spending constraints that are either 1) “externally” imposed or 2) imposed by law through constitutional provisions or enabling legislation.

Committed – amounts that have internally imposed restrictions mandated by formal action of the City Council.

Assigned – amounts that are constrained by the Council’s intent that they will be used for specific purposes. (Decision-making with regard to these amounts may be made by a committee or other governmental official.)

Unassigned – the “residual” fund balance for the General Fund. This residual amount of unassigned fund balance reflects the resources available for further appropriation and expenditure for general governmental purposes



Council Policy #201

GENERAL FUND UNASSIGNED FUND BALANCE

TARGET: 10% ANNUAL OPERATING BUDGET

- “Amounts in excess of the target level will be used to increase or replenish other reserves (with priority given to the Economic Contingency and Facilities Maintenance reserves), to set aside resources for specific one-time uses, or as a funding source for one-time expenditures included in the annual budget or for needs that arise subsequent to budget adoption.”



Current Reserves

Reserves	Target*	Balance**	Policy Level
Unassigned Fund Balance	\$ 6,575,000	\$19,156,000	10% General Fund Op Bdgt
Economic Contingency Reserve	\$ 13,150,000	\$ 12,800,000	20% General Fund Op Bdgt
Liability Reserve	\$ 13,264,000	\$ 16,615,000	80% confidence level
Facilities Maintenance	\$ 2,960,000	\$ 2,880,000	4.5% General Fund exp
Vehicle Replacement	\$ 3,141,900	\$ 2,770,265	30% book value of vehicles
Pension Trust (115)	\$ 18,400,000	\$ 6,393,549	2 years UAL payments
OPEB Trust	\$ 4,821,000	\$ 3,133,184	80% OPEB liability

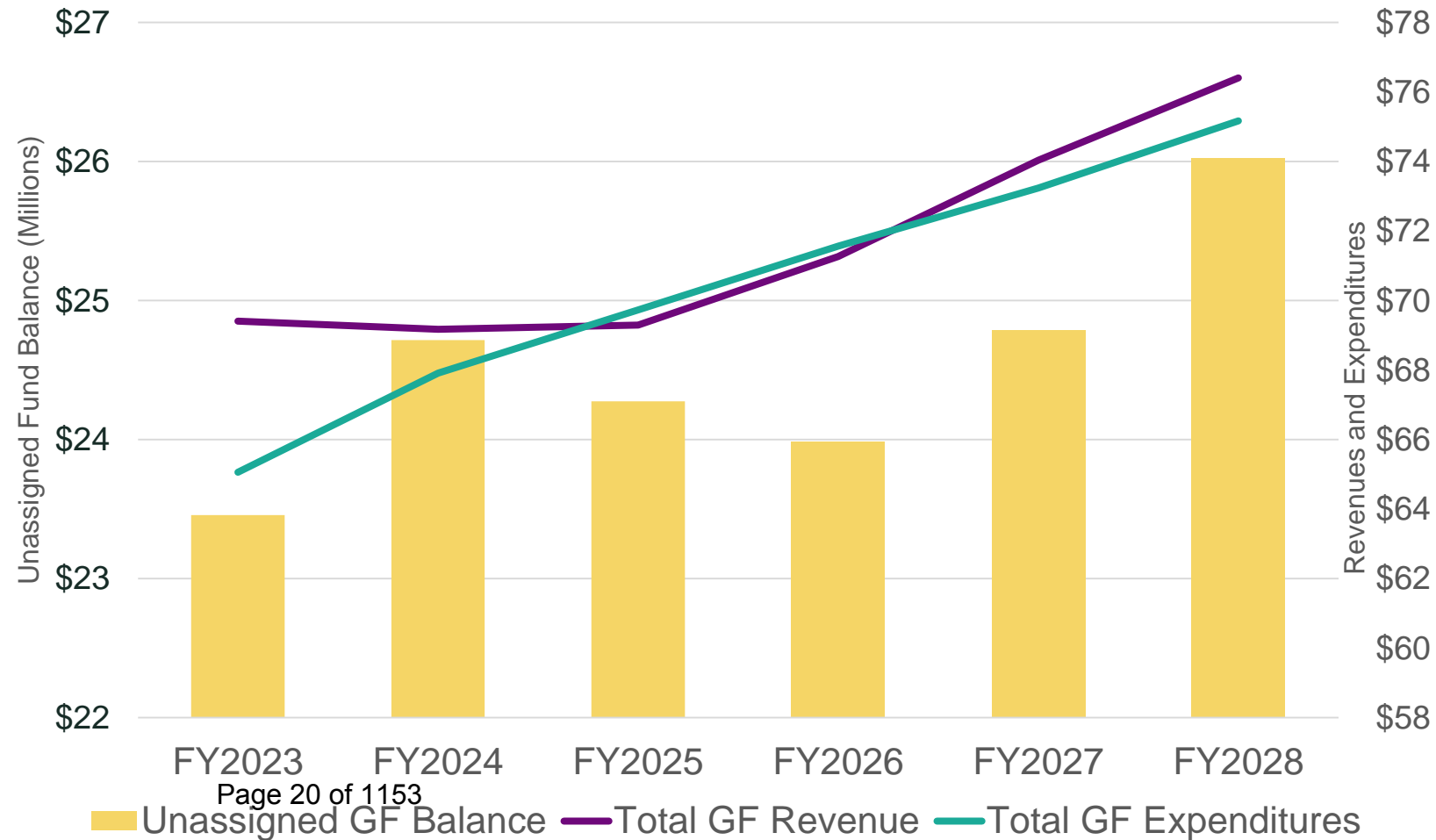
* Based on estimated \$66M operating

**All balances are as of June 30, 2022 (unaudited)

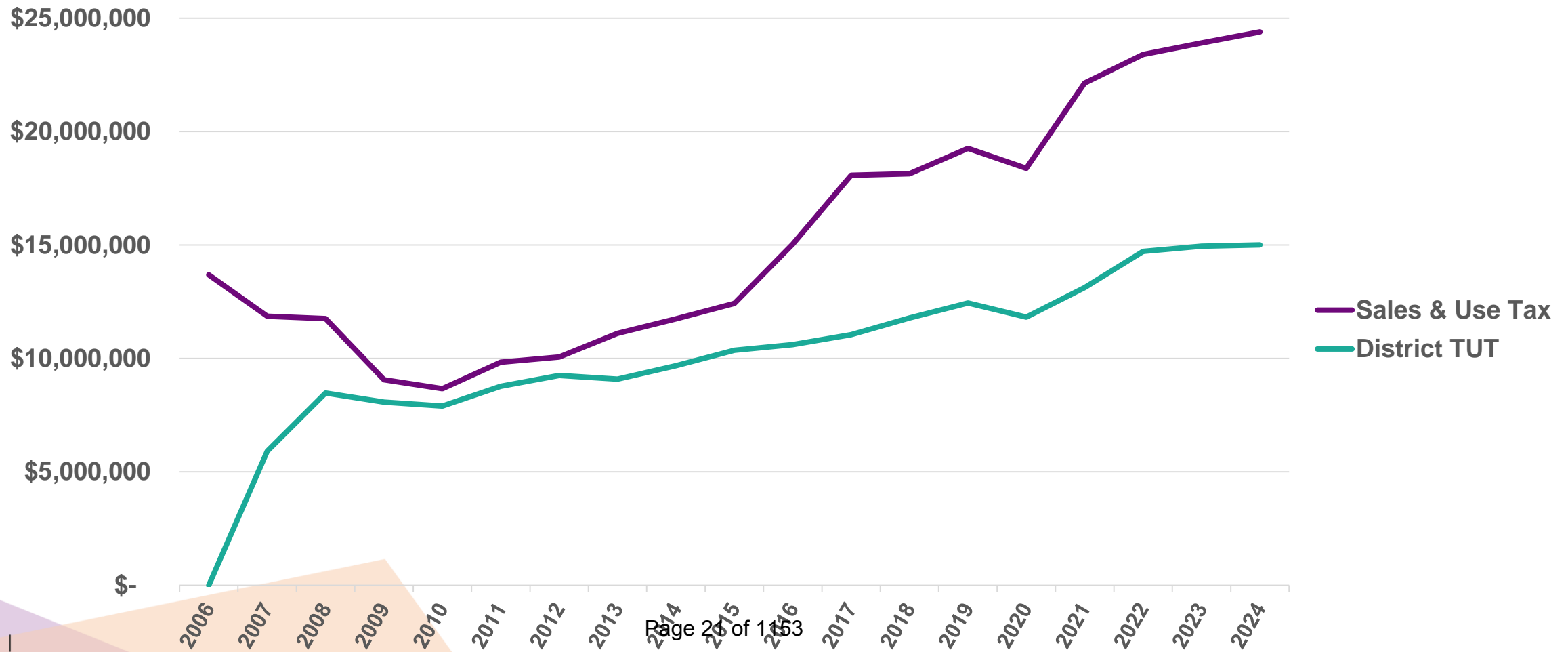
General Fund 5-Year Forecast

Projected Revenues, Expenditures, and Unassigned General Fund Balance

- Current staffing and programs
- Total revenue and expenditures expected to grow
- Projected deficit in FY25 and FY26
- Yellow bars represent estimated unassigned fund balance, which grow during surplus years and shrink during deficit years
- 3 labor group MOUs expire in 2024
- No recession is considered but there are mounting concerns



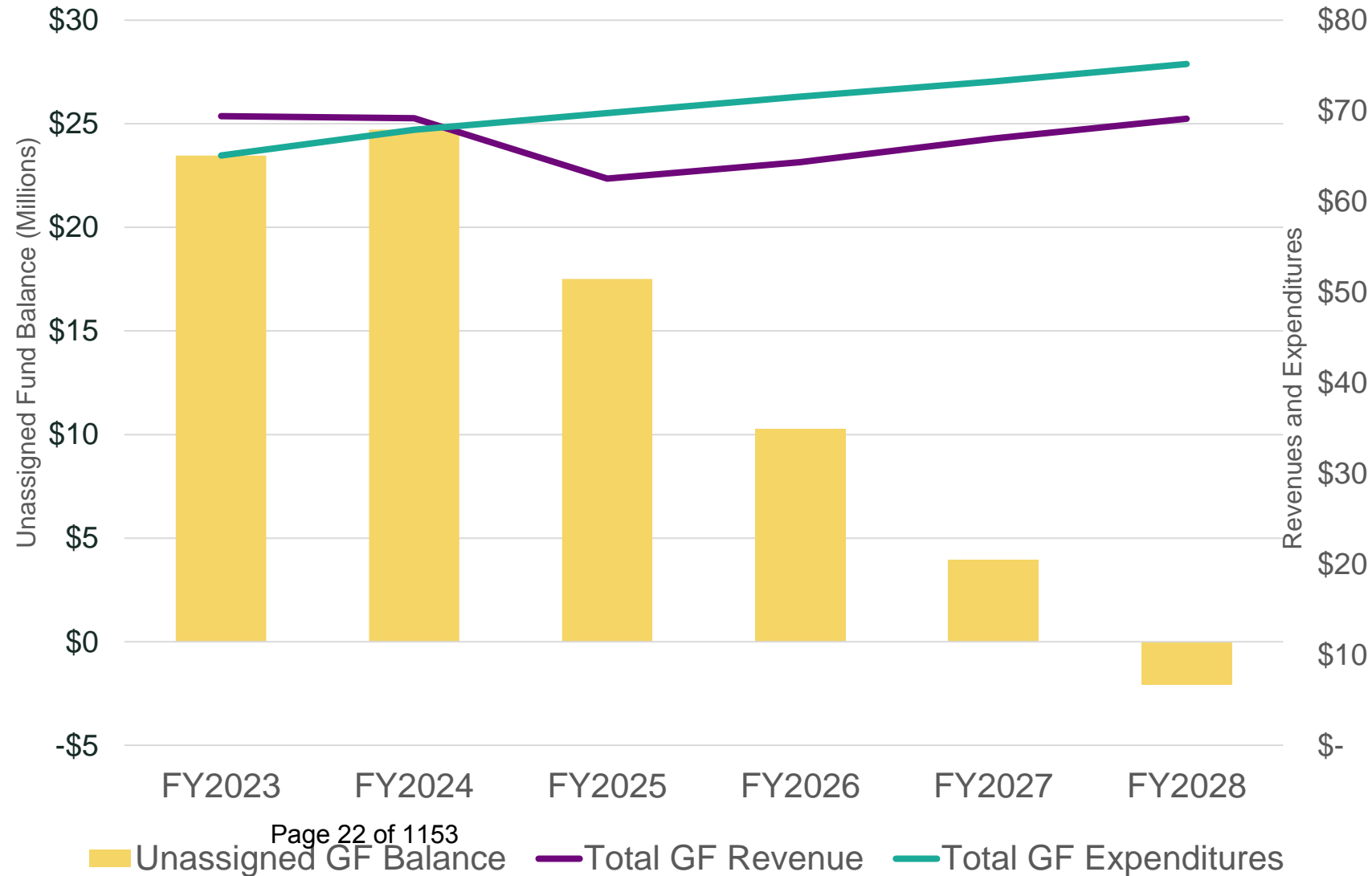
Sales Tax Revenue History



General Fund 5-Year Forecast – Recession Scenario

- Modeled FY25 recession half as severe as the Great Recession in 2008, with slow recovery

Projected Revenues, Expenditures, and Unassigned General Fund Balance





FY24 Preliminary Budget All Funds



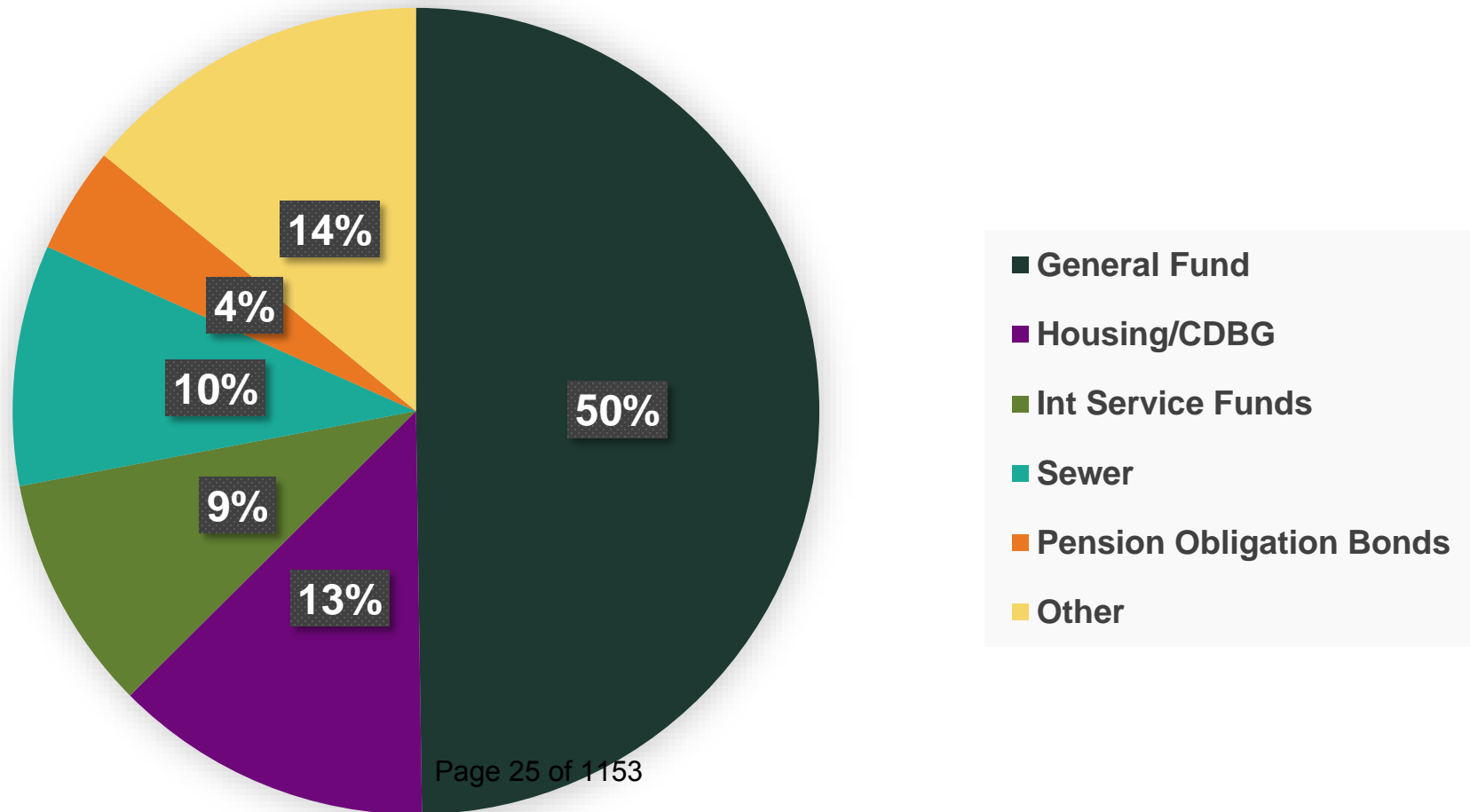
Total Operating & Capital Budget FY 24 Preliminary vs FY 23 Adopted

	FY 24 Preliminary	FY 23 Adopted	Change
All Funds			
All Revenues	\$129,403,177	\$134,351,875	\$(4,948,698)
All Expenditures	136,478,171	133,042,568	3,435,603
Projected Use of Fund Balance	\$ (7,074,995)	\$ 1,309,307	



Expenditure by Fund

FY24 Preliminary Expenditures by Fund



Revenues & Expenditures Other Funds FY24 Preliminary

PRELIMINARY BY FUND TYPE

	FY 24 Prelim Revenue	FY 24 Prelim Expenditures
Housing/CDBG Funds	16,406,689	17,440,084
Internal Service Funds	11,947,403	12,934,332
Sewer Service Fund	9,931,785	13,182,495
Other	9,915,229	14,743,337
Pension Obligation Bonds	5,806,468	5,806,468
Library/Parks Funds	4,583,183	4,457,083
Total Other Funds	\$60,230,716	\$68,563,799





General Fund



Preliminary Budget Summary Fiscal Year 2024

GENERAL FUND

	FY 24 Preliminary	FY 23 Adopted	Change
Total Revenues	\$ 67,166,961	\$ 64,574,077	\$ 2,592,884
Transfers In	2,005,500	2,005,500	0
Expenditures	65,085,303	63,737,457	1,347,846
Transfers Out	2,829,069	2,557,210	271,859
Fund Balance (Use) Gain	\$ 1,258,089	\$ 284,910	



Expenditures

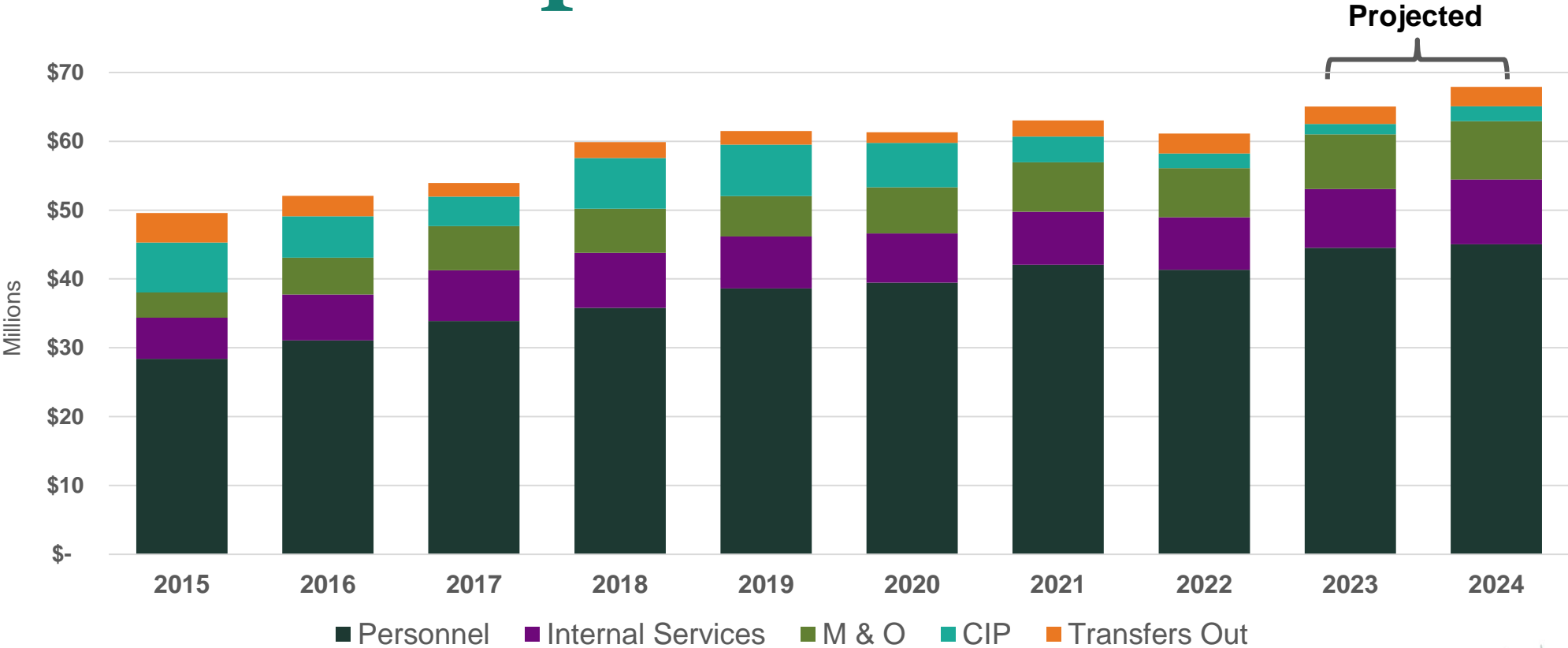
FY 24 Preliminary vs FY 23 Adopted

GENERAL FUND

	FY 24 Preliminary	FY 23 Adopted	Change
Personnel Services	\$45,039,464	\$45,410,890	\$(371,426)
Maintenance & Operations	8,469,578	7,776,245	693,333
Capital Outlay	143,500	160,000	16,500
Capital Improvements (CIP)	2,160,000	1,900,000	100,000
Internal Service Charges and Reserves	9,416,261	8,506,822	909,439
Transfers Out	2,829,069	2,557,210	271,859
Total	\$67,914,372	\$66,294,667	\$1,619,705



Historical Expenditure Trends

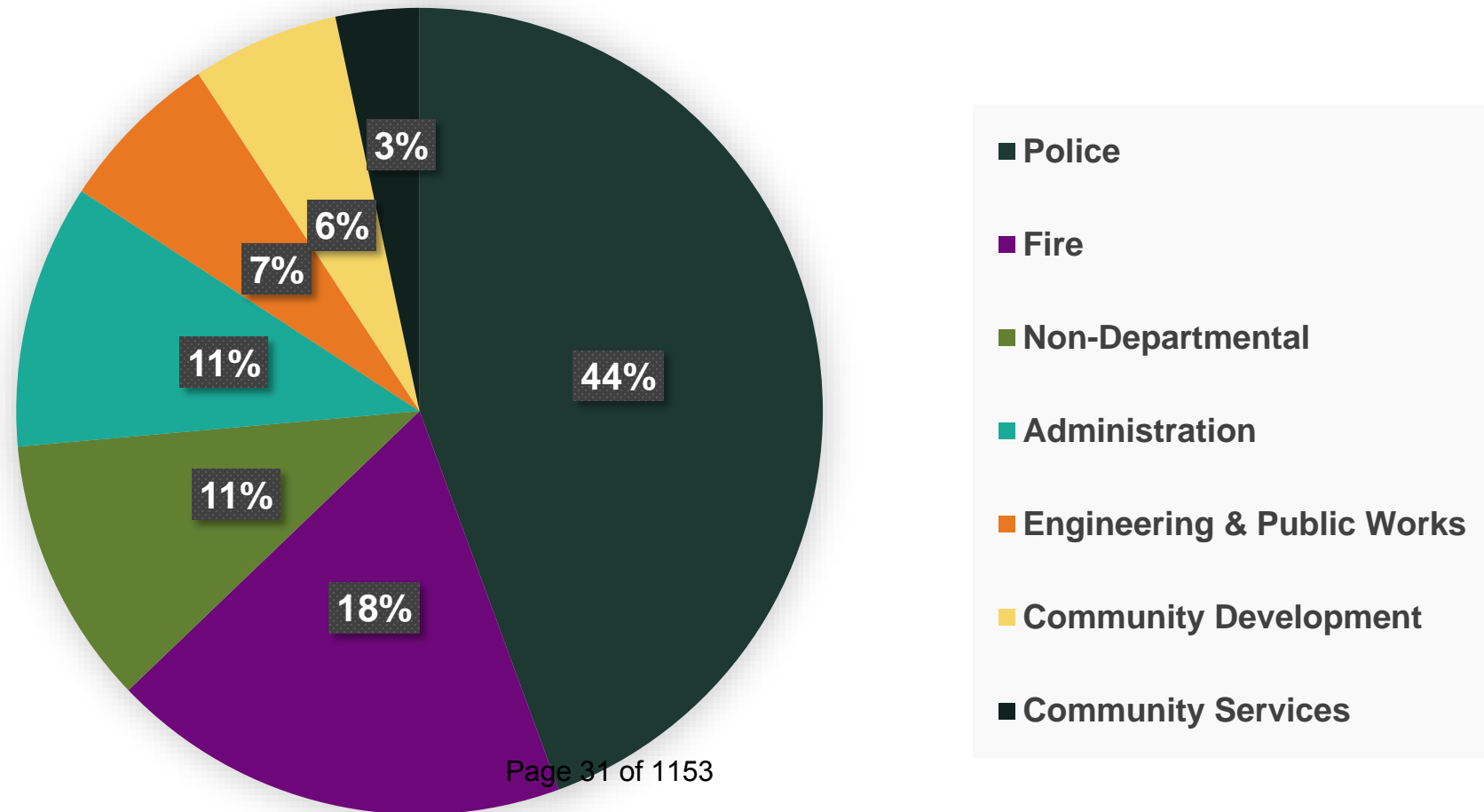


❖ Total personnel costs will comprise 66.3% of FY 24 General Fund expenditures



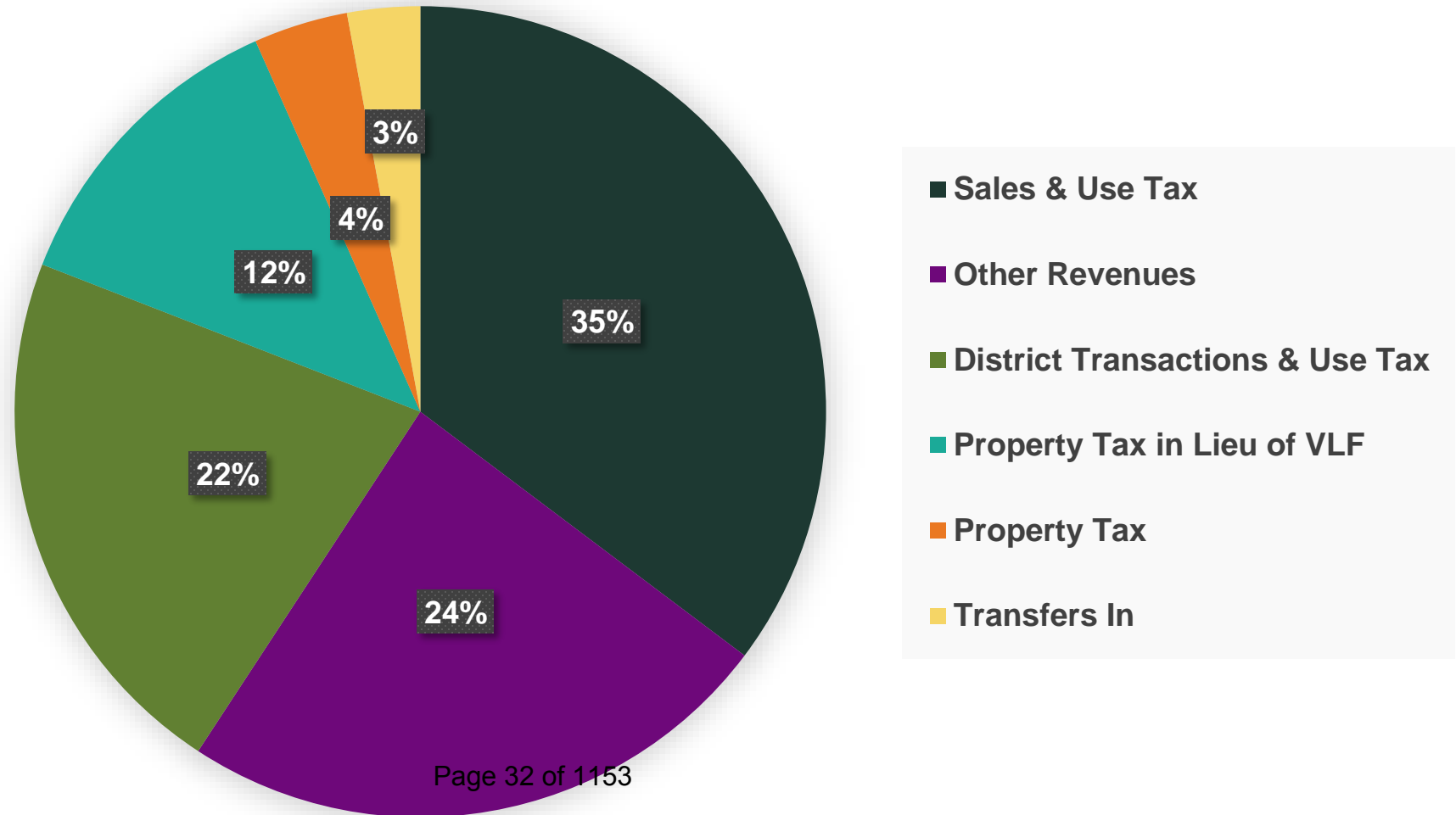
Expenditure by Department

FY24 General Fund Exp by Department

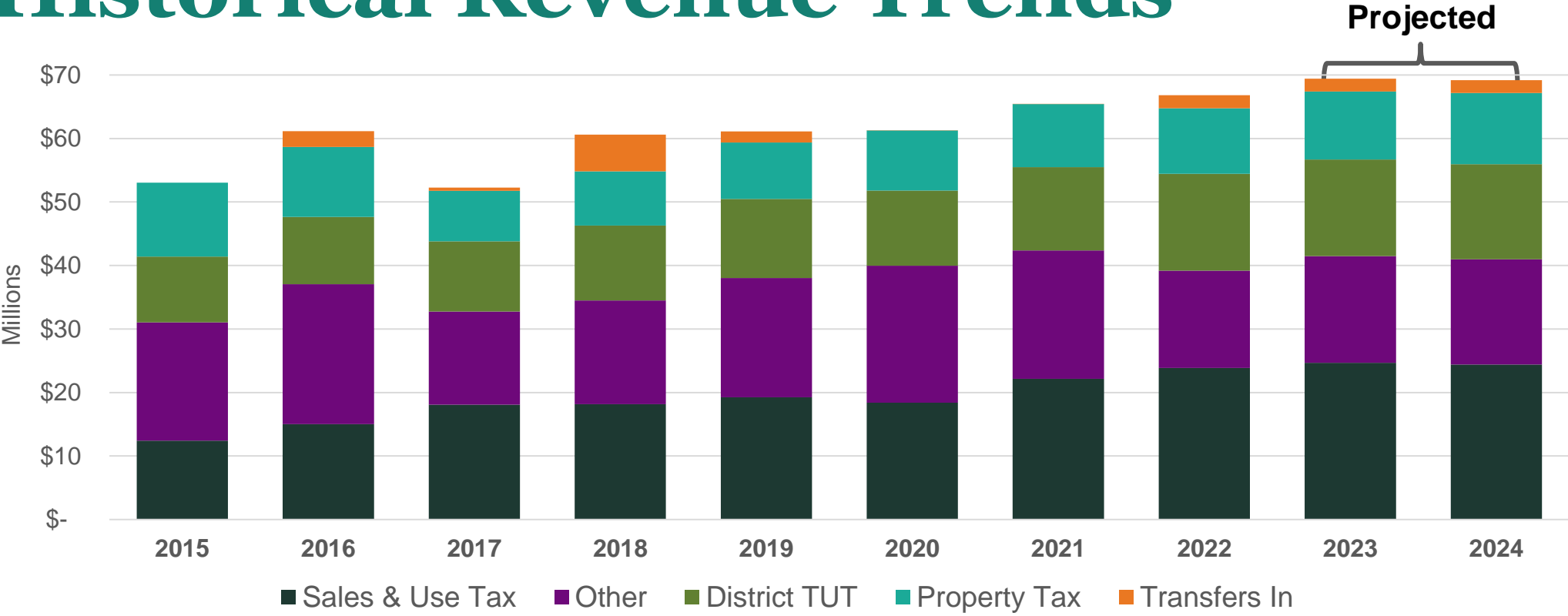


Revenue Trends

FY24 General Fund Revenue by Source



Historical Revenue Trends



❖ Sales taxes (black) and District transaction & use taxes (green) are approximately 57% of projected FY 24 revenues, while property taxes (teal) about 16%



Impact on Unassigned Fund Balance Fiscal Year 2024

GENERAL FUND

Unassigned Fund Balance 6/30/2022	\$19,156,296
FY23 - Mid-Year Projected Use/Gain	<u>4,300,000</u>
Projected Balance 6/30/2023	23,456,296
Estimated Use/Gain - FY24 Prelim Budget	<u>1,258,089</u>
Projected Unassigned Fund Balance 6/30/24	\$ 24,714,385



Unassigned Fund Balance FY2024

GENERAL FUND

Projected Balance 6/30/2023	\$ 23,456,296
10% Operating Expenditures	<u>6,575,437</u>
Estimated Amount Over Policy 201 Target	\$ 16,880,859





Enhancement Decision Items



1. Police Staffing – CPSM Recommendation for Year 1

- INCREASE AUTHORIZED POSITIONS TO SUPPORT INCREASED CALL VOLUME
- ADD 5 POLICE POSITIONS, IN PRIORITY ORDER
 - 1 Officer
 - 2 Dispatchers
 - 1 Records Clerk
 - 1 Community Service Officer

On-going	FY24
5 New Police Staff	\$498,037



2. Fire Staffing – 3 Firefighters & Pilot Enhanced Minimum Staffing

SAFER GRANT ENDING MARCH 2024

ADD 3 FIREFIGHTERS TO GENERAL FUND AUTHORIZED POSITIONS

- Increase from 15 to 18 firefighters
- CPSM recommendation
- CURRENTLY RUNNING 3 PERSON ENGINE COMPANIES
- PILOT A 4 PERSON ENGINE COMPANY RESPONSE MODEL ON ENGINE 34

On-going	FY24	FY25
Firefighter (3)	\$111,060	\$484,677
Use of Leave of 4 th person	\$28,253	\$29,100
TOTAL	\$139,313	\$513,777



3. After School Programming

AFTERSCHOOL YOUTH RECREATION PROGRAM (AGES 5-14)

- Builds on existing programs
- Program grows over time
 - Youth Sports Skills (Basketball, Soccer, Volleyball)
 - Structured Leagues (Basketball, Soccer)
 - Art, Music classes
 - Contract classes

RECREATION CLASSES AND YOUTH SPORTS IN LINE WITH OTHER LOCAL CITIES

LOW PARTICIPANT COSTS FOR RESIDENTS



3. After School Programming

PROGRAM COORDINATOR FT

- New position to specialize in youth sports

RECREATION LEADERS/RECREATION AIDES (TOTAL OF 5 PT STAFF)

- Recreation Aides recruited at high school level

On-going	FY24	FY25	FY26
Program Coordinator	\$79,000	\$81,370	\$83,811
Rec Leader III	\$32,900 (2)	\$50,831 (3)	\$52,355 (3)
Rec Aide	\$48,100 (3)	\$49,543 (3)	\$99,086 (6)
Operations	\$15,000	\$15,000	\$20,000
TOTAL	\$175,000	\$196,744	\$255,253



4. Tree Trimming

ADD 2ND TREE TRIMMING CREW

- 2 new staff: Lead Tree Trimmer & Tree Trimmer
 - \$187,700 personnel costs
 - Use existing truck
- Cost partially offset by reduction in contractor work
 - Average of \$95,000 the last few years

On-going	FY24
Tree Trimming Crew	Net \$92,700



5. Improve Permitting/Development Process

ADD ONE ENGINEERING PERMIT TECHNICIAN

- Also helps with succession planning for pending retirements in department

PURSUING OTHER IDEAS WITH EXISTING STAFF AND RESOURCES, SUCH AS:

- Teaching/communication on process
- Provide and promote pre-construction meetings for large projects
- Monthly ADU day for residents

On-going	FY24
Engineering Permit Tech	\$91,200



6. Quality of Life

INCREASE FUNDING FOR AMORTIZATION EFFORTS

INCREASE PW OVERTIME TO EXPAND SWEEPING & FRIDAY CLEAN-UPS

STREET SIGN REPLACEMENT CATCH-UP: ONE-TIME

SIGN ORDINANCE ENFORCEMENT

- Need Council fully committed and supportive
- Will attempt with existing staff, but may need additional staff in future

On-going	FY24
Amortization	\$50,000
PW Overtime	\$32,000
Street Signs	\$25,000
TOTAL	\$107,000



7. Communication Improvements

COMMUNICATIONS PLAN – RFP FOR CONSULTANT

- Identify internal & external areas for improvement
- Outline plan to address
- Develop outreach and communication materials
- For example:
 - Update website content
 - Coordination with schools about building sense of shared social responsibility
 - FAQs and handbooks for development process

One-Time	FY24
Communications Plan	\$100,000



8. Chamber of Commerce

\$50,000 CONTRIBUTION

USED FOR ECONOMIC DEVELOPMENT SERVICES

ONE-TIME COMMITMENT FOR FY24

One-Time	FY24
Chamber Contribution	\$50,000



9. Fund Reserves

Reserves	Target*	Balance**	Policy Level
Unassigned Fund Balance	\$ 6,575,000	\$19,156,000	10% General Fund Op Budget
Economic Contingency Reserve	\$ 13,150,000	\$ 12,800,000	20% General Fund Op Budget
Facilities Maintenance	\$ 2,960,000	\$ 2,880,000	4.5% General Fund Exp.

One-Time	FY24
Economic Contingency	\$350,000
Facilities Maintenance	\$80,000
TOTAL	\$430,000

* Based on estimated \$66M operating

**All balances are as of June 30, 2022 (unaudited)



10. District Budgeting

CURRENT COUNCIL BUDGET:

- \$1,050 per member – governmental purposes
- \$1,836 – Mayor governmental purposes
- \$18,000 – Mayoral events
- \$2,000 per member – travel & training
- Personnel costs for Council, Mayor, & 1 Executive Assistant to the Mayor



10. District Budgeting

GOAL SETTING WORKSHOP – DIRECTED STAFF TO RESEARCH
SURVEYED CA CITIES OF A SIMILAR SIZE THAT HAVE DISTRICTS

- None had discretionary district budgets
- One had \$100k for discretionary contributions to non-profits for Council as a whole
- One had \$2k per district for travel/training
- Staffing – none, 1 PT admin, 1 FT admin
- Council budgets were between 0.4%-1% General Fund operating exp (NC 0.6%)



10. District Budgeting

CITY OF SAN DIEGO

- Each district gets a pool of funding for community projects, programs, and services
- Restricted to one-time expenditures and compliance with Council policy
- Funding dependent on Council administrative budget savings from prior year
- \$100,000 - \$150,000 per district over last few years
- NC is 4% of the size of City of San Diego





Capital Improvement Plan (CIP)



CIP ASSETS

Parks and Facilities

City Offices
Public Works Yards
Police Station
Fire Stations
Community & Rec Centers
Public Library
Community Parks
Athletic Fields & Skate Park
Basketball & Tennis Courts
Municipal Swimming Pool
Public Restrooms
Public Safety Cameras
Lighting & Landscaping
Walking Paths

Infrastructure

Streets
Sidewalks
Pedestrian Ramps
Street Lights
Traffic Signals
Sewer System
Storm Drains and Open Channels
Communications &
Information Technology

Vehicle Fleet

Light Duty Trucks
Medium and Heavy Duty Trucks
Sedans
SUVs
Specialty Vehicles
Police Patrol Vehicles
Fire Apparatus
Heavy Equipment

CIP Overview

MAJOR MAINTENANCE - DEFERRED & ONGOING (M)

CAPITAL IMPROVEMENT PROJECTS THAT PROVIDE MAJOR MAINTENANCE AND/OR UPGRADES TO EXISTING INFRASTRUCTURE AND/OR FACILITIES REQUIRED TO PROVIDE ESSENTIAL PUBLIC SERVICES AND MAINTAIN HEALTH AND SAFETY

EXAMPLES – ROADWAY REHAB, ROOF REPLACEMENT, HVAC SYSTEM UPGRADES, REMOVAL AND REPLACEMENT OF DETERIORATED METAL STORM DRAIN PIPES

NEW PUBLIC IMPROVEMENTS (N)

CAPITAL IMPROVEMENT PROJECTS THAT EXPAND EXISTING INFRASTRUCTURE AND/OR FACILITIES, OR CONSTRUCT NEW FACILITIES, TO ADDRESS PRESENT AND FUTURE NEEDS OF THE COMMUNITY

EXAMPLES – SKATE PARK, MULTI-PURPOSE ATHLETIC FIELD, MUNICIPAL SWIMMING POOL, COMMUNITY CORRIDORS

CIP OVERVIEW

Major Maintenance
Deferred & Ongoing

New Public
Improvements

Prioritization

Tier 1 – Urgent, Public Health
and Safety

Tier 2 – Need 1 to 2 Years

Tier 3 – Need 3 to 5 Years

Tier 4 - Need 6 to 10 Years

Funding

TransNet, Gas Tax,
Sewer Service Fund,
Development Impact Fees
(DIF), Facilities
Maintenance Reserve
(FMR), ARPA, and General
Fund

Evaluation Criteria

Health and Safety
Community Support
Cost and Schedule
Available Funding
Consistency with
Long Range
Planning Documents
Ongoing
Maintenance Cost



CURRENT PARKS & FACILITIES

Park and Facility	Qty	Description
City Hall	1	City Hall
Police Station	1	Police Department
Fire Stations	3	31,33,34
Recreational Centers	3	Camacho, Kimball, El Toyon
Community Facilities	3	MLK Jr, Casa de Salud Youth Center, Nutricional Center
Public Works Yards	2	1726 Wilson, 726 19th
Library	1	Public Library
Parks	5	Kimball, El Toyon, Las Palmas, Paradise Creek Park, Sweetwater Heights
Facilities Other	5	ARTS Center, Granger Music Hall, Kimball House, Stein Farm, Santa Fe Rail Depot
Senior Center	1	Kimball Senior Center
Las Palmas Municipal Pool	1	Pool
Total	26	



Maintenance of Reserve Funds

- City Council Policy #201 adopted June 26, 1985, and most recently amended May 4, 2021 by City Council Resolution No. 2021-48, establishes the annual amount to be budgeted for major maintenance projects as 1.5% of the City's General Fund operating budget (~\$60Million).
 - **FY 24 Estimated Amount - \$1,000,000**



FY24 PARKS & FACILITIES INCLUDE

Police Department	Tier	\$700,000
Generator and Electric Upgrade Supplement	1	\$500,000
Sewer Pipe Rehabilitation – Phase 1	1	\$200,000
Fire Station 34	Tier	\$200,000
HVAC Rehabilitation	1	\$40,000
Hand Railing Rehabilitation	1	\$10,000
Bathroom on Drill Ground	1	\$150,000
Arts Building	Tier	\$100,000
Roof Rehabilitation	1	\$100,000



FY24 PARKS & FACILITIES INCLUDE

El Toyon Multipurpose Facility/Fire Station	Tier	\$200,000
Design of El Toyon Multi-Purpose Facility/Fire Station	1	\$200,000*

* DIF

Total Parks & Facilities Major Maintenance Projects	\$1,000,000
Total DIF	\$ 200,000

CIP Category	Cost Estimate					Proposed Funding Plan		
	Total	Tier 1 (Urgent)	Tier 2 (1-2 years)	Tier 3 (3-5 years)	Tier 4 (6-10 years)	Facilities Maintenance Reserve (General Fund)	DIF, Grants and Other	TBD
Facilities, Parks & Recreation								
Civic Center / City Hall*	\$4,710,000	\$0	\$4,000,000	\$0	\$710,000	\$0	\$0	\$4,710,000
MLK Jr Community Center	\$540,000	\$0	\$0	\$50,000	\$490,000	\$0	\$0	\$540,000
Police Dept Building	\$1,080,000	\$700,000	\$300,000	\$0	\$80,000	\$700,000	\$0	\$380,000
Fire Station 34	\$370,000	\$200,000	\$0	\$170,000	\$0	\$200,000	\$0	\$170,000
Fire Station 33	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Fire Station 31	\$130,000	\$0	\$50,000	\$80,000	\$0	\$0	\$0	\$130,000
Public Works (1726 Wilson Ave)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Public Works (726 W. 19th St)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Public Library	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ARTS Center	\$500,000	\$100,000	\$0	\$400,000	\$0	\$100,000	\$0	\$400,000
Kimball Recreation Center	\$650,000	\$0	\$650,000	\$0	\$0	\$0	\$0	\$650,000
Kimball Senior Center	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Casa de Salud Youth Center*	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Las Palmas Municipal Pool	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Camacho Recreation Center	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
El Toyon Recreation Center	\$280,000	\$0	\$0	\$280,000	\$0	\$0	\$0	\$280,000
Granger Music Hall	\$4,000,000	\$0	\$4,000,000	\$0	\$0	\$0	\$0	\$4,000,000
Kimball House	\$40,000	\$0	\$0	\$0	\$40,000	\$0	\$0	\$40,000
Stein Farm	\$360,000	\$0	\$0	\$320,000	\$40,000	\$0	\$0	\$360,000
Santa Fe Rail Depot	\$40,000	\$0	\$0	\$0	\$40,000	\$0	\$0	\$40,000
Kimball Park	\$7,738,273	\$0	\$0	\$0	\$7,738,273	\$0	\$0	\$7,738,273
Las Palmas Park	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Paradise Creek Park	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
El Toyon Multipurpose Facility/Fire Station	\$20,000,000	\$200,000	\$0	\$19,800,000	\$0	\$0	\$200,000	\$19,800,000
Total	\$40,438,273	\$1,200,000	\$9,000,000	\$21,100,000	\$9,138,273	\$1,000,000	\$200,000	\$39,238,273

* Supplemental evaluations are needed, which will lead to additional capital needs and costs



INFRASTRUCTURE INVENTORY

Asset	Asset Items	Quantity	Unit
Streets	Streets	111	Miles (cl)
	Alleys	9	Miles (cl)
Sidewalks / Ped Ramps (ADA)	Sidewalks*	200	Miles
	Pedestrian Ramps*	2200	Each
Traffic Signals / Street Lights	Traffic Signals	80	Each
	Street Lights	736	Each
Sewer	Sewer Mains	106	Miles
	Sewer Manholes	2015	Each
	Force Mains	1325	LF
Storm Drain	Storm Drain Mains	45	Miles
	Storm Channels	12	Miles
	Storm Drain Structures (inlet, c.o., hw, etc)	791	Each
*Quantity is estimated			



FY 2024 INFRASTRUCTURE NEEDS

Funding Source	Streets / ADA (Major Maintenance)	Streets / ADA (New Public Improvements)	Traffic Signals / Street Lights	TDIF	Sewer	Storm Drain	Comm. Infra. Expansion	Total
Gas Tax RMRA (SB1)	\$1,519,578*							1,519,578
TransNet	\$1,313,000	\$236,000	\$300,000					\$1,849,000
TDIF				\$1,500,000				\$1,500,000
Sewer Fund					\$3,000,000			\$3,000,000
Solid Waste Fund	250,000					\$50,000		\$300,000
General Fund		\$800,000				\$200,000	\$100,000	\$1,100,000
FY 2023 Investment	\$3,082,578	\$1,036,000	\$300,000	\$1,500,000	\$3,000,000	\$250,000	\$100,000	\$9,268,578

- TransNet MOE is \$2,030,000* for FY24
- Personnel, maintenance and operating costs funded by the General Fund for engineering, project management and maintenance of local roadways are applied towards the City's MOE (~ \$1.2M); the remaining MOE is met by funding capital roadway projects through General Fund appropriations (~ \$800k)

* Amount will be updated in May 2023



MAINTENANCE OF EFFORT

- National City is required to invest approximately \$2 million annually in discretionary funds (General Fund) for local roadway projects to meet its Maintenance of Effort (MOE) requirements to receive local TransNet funding and State Gas Tax Road Maintenance and Rehabilitation Account (RMRA) funding through SB1
- Personnel, maintenance and operating costs funded by the General Fund for engineering, project management and maintenance of local roadways are applied towards the City's MOE
- The remaining MOE is met by funding capital roadway projects through General Fund appropriations



FY24 INFRASTRUCTURE INCLUDES

Additional Funding for Grant Funded Projects (TransNet/SB1)	\$ 1,614,000
Citywide Protected Left-Turn Enhancements (TransNet*)	\$ 814,000
Central Community Mobility Enhancements (SB1)	\$ 800,000
* \$300,000 signals + \$514,000 ADA/Major Maintenance	
Construction Management (General Fund)	\$ 200,000
Construction Management to deliver FY24 Infrastructure	\$ 200,000
Pavement Improvement Project	\$ 2,604,578
General Fund	\$ 800,000
Pavement from SB1 and TransNet	\$1,554,578
Solid Waste Fund	\$250,000



FY24 INFRASTRUCTURE INCLUDES

Storm Drain Rehabilitation	\$ 250,000
Includes pipe replacement, design, and construction management.	\$ 250,000
Sewer Program	\$ 3,000,000
Includes pipe upsizing, rehabilitation, pipe repairs, access road design, and construction management.	\$ 3,000,000
Transportation Development Impact Fees	\$1,500,000
Traffic Signal optimization and operational traffic improvements along Regional Arterial System roadways	\$1,500,000
Communications Infrastructure	\$100,000
Replace existing security cameras, and install new cameras at select facilities (City Hall, Police Dept., Camacho Rec. Center, El Toyon Rec. Center, Library, ARTS, Kimball House)	\$100,000



Vehicles and Equipment

FY23	221
LEASED VEHICLES	42
Hybrid - 16	
Full Electric - 3	
OWNED VEHICLES	122
Hybrid - 16	
SMALL EQUIPMENT	22
MEDIUM EQUIPMENT	23
LARGE EQUIPMENT	12

FY24 – Includes Recommendations	223
LEASED VEHICLES + Inspector	50
Hybrid - 23	
Full Electric - 3	
OWNED VEHICLES	115
Hybrid - 16	
SMALL EQUIPMENT	22
MEDIUM EQUIPMENT	23
LARGE EQUIPMENT + Street Sweeper	13



FY24 Fleet Recommendations

FY 2024 Recommendations - Vehicle Fleet										
Department	Vehicle/Equipment	Lease (Annual Cost)	Purchase (Total Cost)	FY 2024 (Funding Needs)	General Fund (001)	Parks Maint Fund (105)	Sewer Fund (125)	Section 8 Fund (502)	Facilities Maint Fund (626)	Solid Waste Fund (172)
Public Safety										
Police	Patrol (4)		\$300,000	\$300,000	\$300,000					
Police	K-9		\$80,000	\$80,000	\$80,000					
Police	Lieutenant		\$75,000	\$75,000	\$75,000					
Police	Supervisor		\$80,000	\$80,000	\$80,000					
Police	Detective/Pool (4)	\$44,000		\$44,000	\$44,000					
Police	Emergency Equip (1-time cost)		\$25,000	\$25,000	\$25,000					
Police	Current Lease Vehicles (15)	\$85,000		\$85,000	\$85,000					
Fire										
	Inspector	\$8,000		\$8,000	\$8,000					
	Current Lease Vehicles (2)	\$18,000		\$18,000	\$18,000					
Public Works										
Streets	Small Kubota Tractor		\$75,000	\$75,000	\$75,000					
Parks	Small Riding Mower -Hybrid		\$50,000	\$50,000		\$50,000				
Streets	Large Front Loader		\$250,000	\$250,000	\$250,000					
Equipment Maintenance	Medium Truck w/Outfitting	\$8,000	\$20,000	\$28,000	\$28,000					
Streets	Street Sweeper		\$450,000	\$450,000						\$450,000
	Current Lease Vehicles (15)	\$98,000		\$98,000		\$44,000	\$18,000		\$36,000	
General										
	Current Lease Vehicles (17)	\$95,000		\$95,000	\$82,500			\$12,500		
FY Totals										
		\$356,000	\$1,405,000	\$1,761,000	\$1,150,500	\$94,000	\$18,000	\$12,500	\$36,000	\$450,000
Contingency - 10%										
		\$35,600	\$140,500	\$176,100	\$115,050	\$9,400	\$1,800	\$1,250	\$3,600	\$45,000
FY Totals with Contingency										
		\$391,600	\$1,545,500	\$1,937,100	\$1,265,550	\$103,400	\$19,800	\$13,750	\$39,600	\$495,000

Notes: Replace based on Rotation Schedule
New Addition to Vehicle Fleet



FY24-FY28 Fleet Totals

With 10% Contingency

Fiscal Year	Lease (Annual Cost)	Purchase (Total Cost)	Funding Needs	General Fund (001)	Parks Maint Fund (105)	Sewer Fund (125)	Section 8 Fund (502)	Facilities Maint Fund (626)	Solid Waste Fund (172)
FY24	\$391,600	\$1,545,500	\$1,937,100	\$1,265,550	\$103,400	\$19,800	\$13,750	\$39,600	\$495,000
FY25	\$421,300	\$921,800	\$1,343,100	\$1,125,850	\$144,100	\$19,800	\$13,750	\$39,600	\$0
FY26	\$467,500	\$1,367,300	\$1,834,800	\$910,250	\$136,400	\$734,800	\$13,750	\$39,600	\$0
FY27	\$506,000	\$2,820,400	\$3,326,400	\$3,204,850	\$48,400	\$19,800	\$13,750	\$39,600	\$0
FY28	\$474,100	\$610,500	\$1,084,600	\$963,050	\$48,400	\$19,800	\$13,750	\$39,600	\$0



FY24 ALL FUNDS REQUEST

	Vehicle Fleet	Parks & Facilities	Infrastructure	Totals
General Fund (001)	\$1,265,550		\$1,000,000	\$2,265,550
Facilities Maintenance (001)		\$1,000,000		\$1,000,000
Park Maintenance Fund (105)	\$103,400			\$103,400
Facilities Maintenance (626)	\$39,600			\$39,600
Sewer Fund (125)	\$19,800		\$3,000,000	\$3,019,800
Solid Waste Fund (172)	\$495,000		\$300,000	\$795,000
Gas Tax RMRA (SB1) Fund (109)			\$1,519,578	\$1,519,578
TransNet (Prop "A") Fund (307)			\$1,849,000	\$1,849,000
Section 8 Fund (502)	\$13,750			\$13,750
Information Systems Maintenance Fund (629)			\$100,000	\$100,000
Development Impact Fees Fund (325)		\$200,000		\$200,000
Transportation Development Impact Fees Fund (326)			\$1,500,000	\$1,500,000
Totals	\$1,937,100	\$1,200,000	\$9,268,578	\$12,405,428



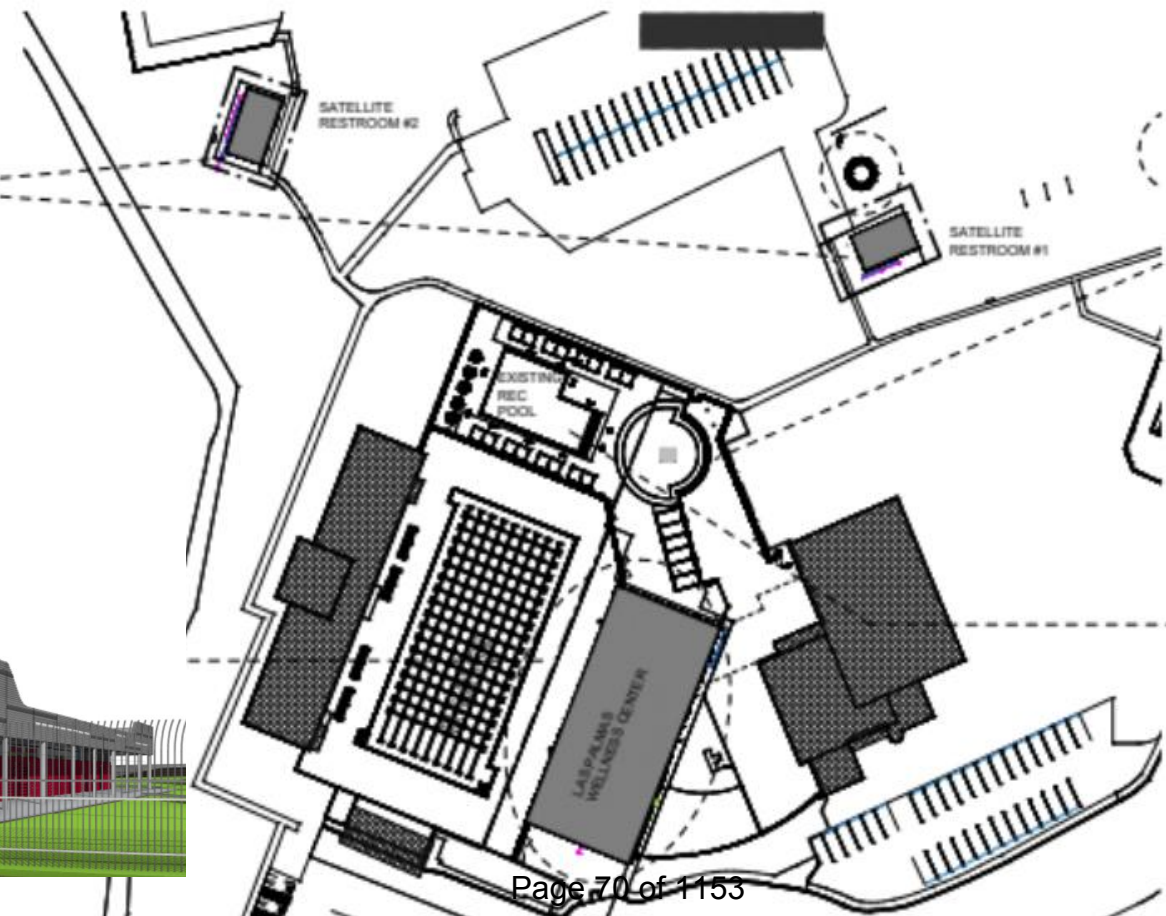
Questions/Comments – Baseline Budget



Capital Enhancement Decision Items



CIP Budget Enhancement No. 1 - Las Palmas Wellness Center, Splash Pad, Site Work, and Restrooms (\$2,700,000 +)



CIP Budget Enhancement No. 1 - Las Palmas Wellness Center, Splash Pad, Site Work, and Restrooms

100% PLANS BY END OF 2023

TOTAL PROJECT COSTS \$14,700,000

ARPA \$ 6,500,000

STATE GRANT \$ 1,000,000

SWEETWATER GRANT \$ 1,500,000

SUB TOTAL \$ 9,000,000

OPTION A - GF REQUEST \$ 2,700,000* - INCLUDES BOTH RESTROOMS

OPTION B - GF REQUEST \$ 1,700,000* - EXCLUDES BOTH RESTROOMS

SECTION 108 LOAN \$ 3,000,000**

* AMOUNT WILL CHANGE DEPENDING ON LOW BID RECEIVED

** Authorization will require a separate Council action

CIP Budget Enhancement No. 2 – Pavement Rehabilitation (\$500,000)

Plan Year	PCI Before	PCI After	Slurry/Cape	Overlay/Recon	Total \$	Deferred Maint.
2020-21	70.6	71.3	\$553,600	\$2,442,600	\$2,996,200	24,891,100
2021-22	70.2	72.4	\$558,100	\$2,451,800	\$3,009,900	24,050,600
2022-23	71.2	72.6	\$544,700	\$2,452,900	\$2,997,600	23,417,800
2023-24	71.5	73.1	\$552,700	\$2,441,300	\$2,994,000	22,787,300
2025-26	72.0	73.3	\$550,600	\$2,450,100	\$3,000,700	22,212,000
			\$2,759,700	\$12,238,700	\$14,998,400	

PAVEMENT INVESTMENT IN FY2022 = \$ 2,119,000

PAVEMENT INVESTMENT IN FY2023 = \$ 2,087,142

PAVEMENT BASELINE BUDGET REQUEST IN FY2024 = \$2,604,578

PAVEMENT BUDGET ENHANCEMENT = \$ 500,000

CIP Budget Enhancement No. 3 – Storm Drain Rehabilitation (\$300,000)

STORM DRAIN YEARLY REHABILITATION AMOUNT = \$200,000

11,000 LF OF CORRUGATED METAL PIPE (CMP)

STORM DRAIN BUDGET ENHANCEMENT = \$300,000 TO REHABILITATE CMP BEFORE CATASTROPHIC FAILURE



CIP Budget Enhancement No. 4 – Granger Music Hall (\$100,000)

RELOCATION AND RESTORATION PLAN AND COST ESTIMATE UPDATE.



Original Location
Ralph Granger Estate - Paradise Valley



Interior Looking towards Stage



Interior Looking towards Mezzanine



Stairway Detail



Current Site on E 4th Street



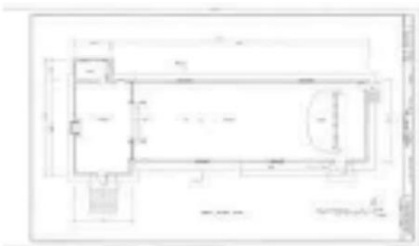
Current Entry



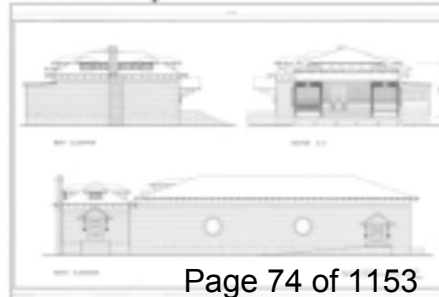
Current Ramp



Current Accessible Entry



Floor Plan

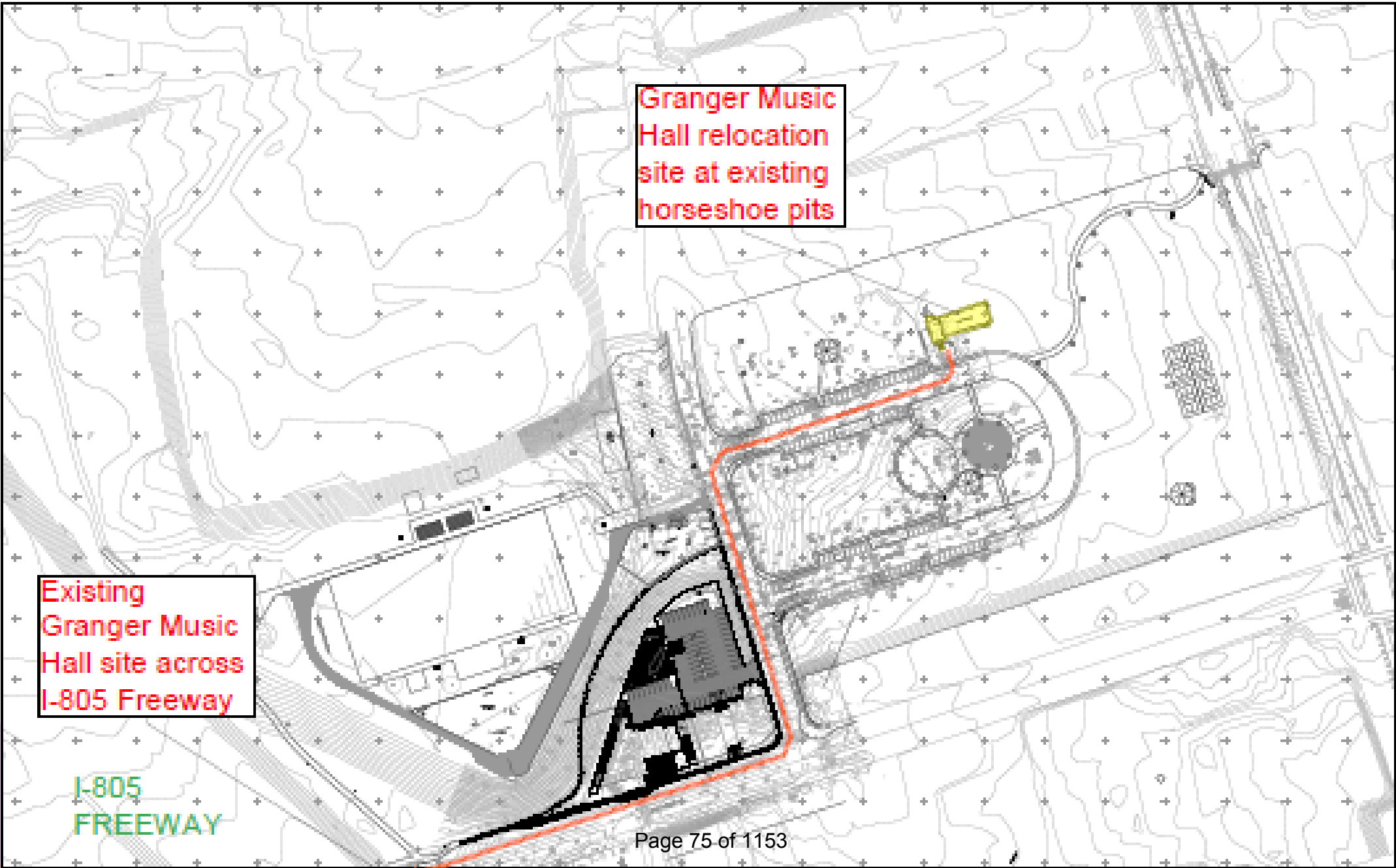


Section & Elevations

Historical Context

GRANGER MUSIC HALL
at El Toyon Park
City of National City, CA





Granger Music Hall relocation site at existing horseshoe pits

Existing Granger Music Hall site across I-805 Freeway

I-805
FREEWAY

CIP Budget Enhancement No. 5 – Civic Center Voluntary Seismic Retrofit

SEISMIC STRENGTHENING
INVESTIGATION
NATIONAL CITY CIVIC CENTER
CITY OF NATIONAL CITY, CA

August 1999



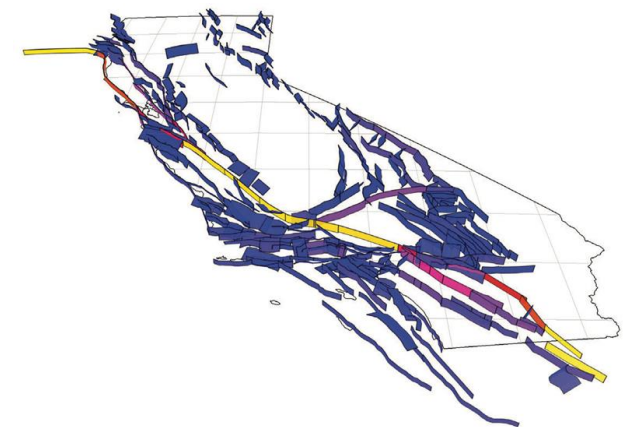
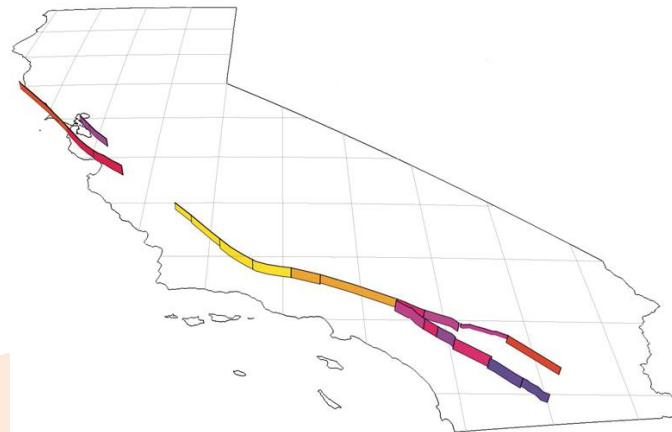
Prepared By:
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1985

2019



CIP Budget Enhancement No. 5 – Civic Center Voluntary Seismic Retrofit

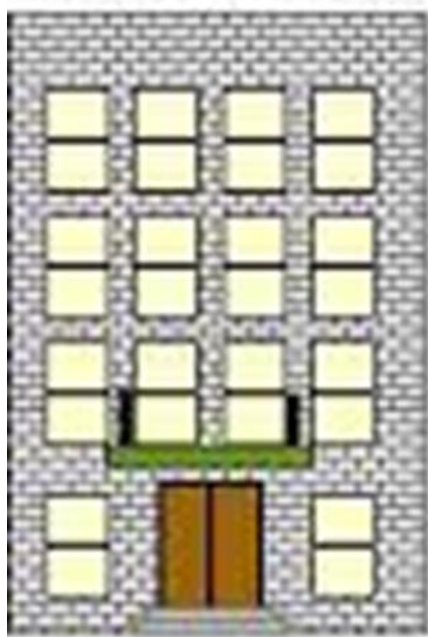
Group 1	
City Hall	Retrofit Analysis in Progress
Police Station	Evaluate further, ASCE-41 Tier 2 Analysis
MLK Jr. Community Center	Evaluate further, ASCE-41 Tier 1 Analysis Add wall to roof anchorage
Fire Station 31	Evaluate further, ASCE-41 Tier 2 Analysis Add wall to roof anchorage

Group 2	
Camacho Recreation Center	Evaluate further, ASCE-41 Tier 2 Analysis Add wall to roof anchorage
Police Department Vehicle Storage	Evaluate further, ASCE-41 Tier 2 Analysis Add wall to roof anchorage
Casa De Salud Youth Center	Evaluate further, ASCE-41 Tier 2 Analysis Add wall to roof anchorage
Public Works Offices/Breakroom	Evaluate further, ASCE-41 Tier 2 Analysis Add wall to roof anchorage
Public Works Vehicle Maint. Shop	Evaluate further, ASCE-41 Tier 2 Analysis Add wall to roof anchorage
76 Public Works Materials Storage	Evaluate further, ASCE-41 Tier 2 Analysis Add wall to roof anchorage

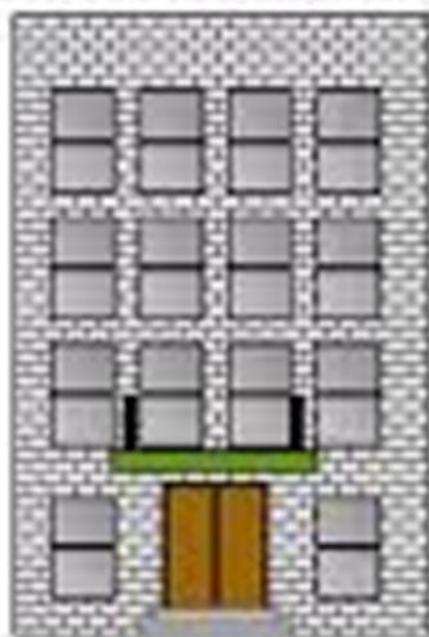
Group 3	
Kimball Park Recreation Center	Evaluate further, ASCE-41 Tier 2 Analysis Add wall to roof anchorage
Arts Center	Lower Risk. Consider evaluation in future.
Kimball Senior Center	Lower Risk. Consider evaluation in future.
El Toyon Park Recreation Center	Lower Risk. Consider evaluation in future.
4 Pump Stations (Critical to Infrastructure)	Lower Risk. Consider evaluation in future.

Newer Buildings	
Public Library	New Building. No action required.
Fire Station 34	New Building. No action required. (But not benchmarked)

CIP Budget Enhancement No. 5 – Civic Center Voluntary Seismic Retrofit



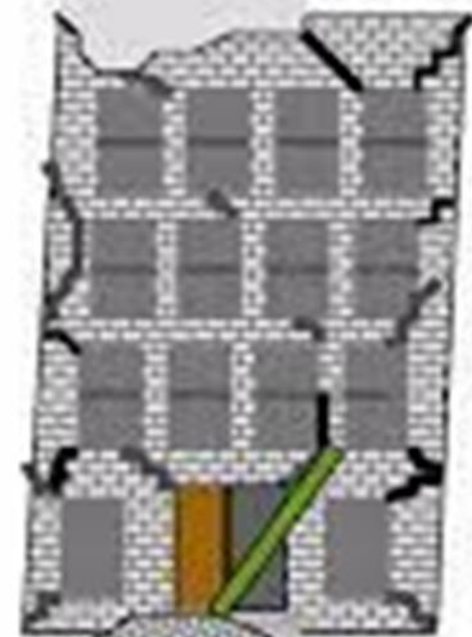
Operational



Immediate
Occupancy



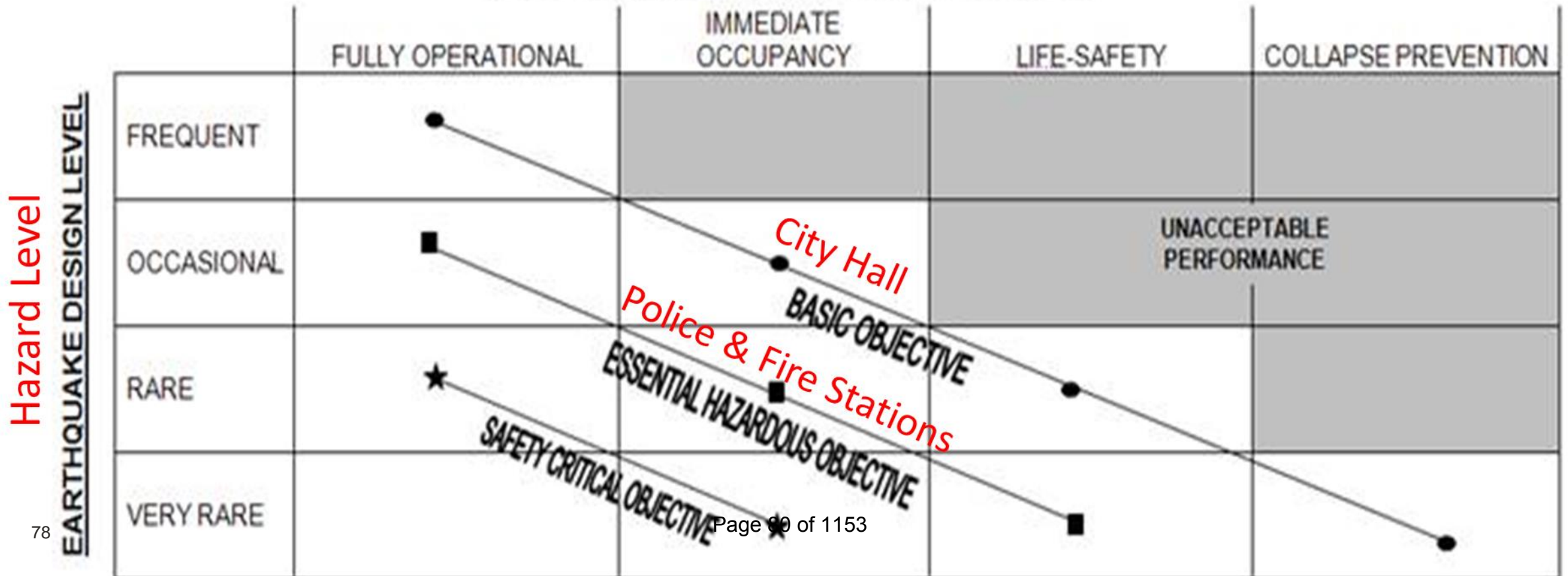
Life Safety



Collapse
Prevention

CIP Budget Enhancement No. 5 – Civic Center Voluntary Seismic Retrofit

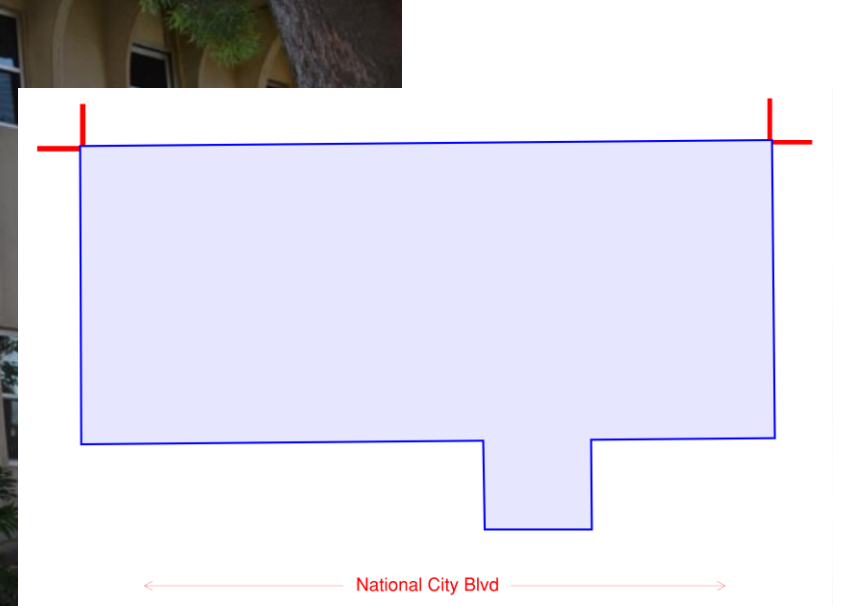
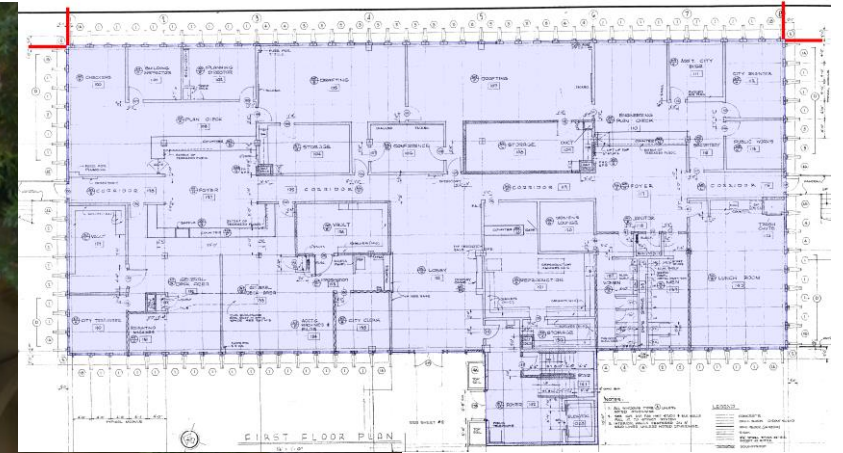
SEISMIC PERFORMANCE OPTIONS
EARTHQUAKE PERFORMANCE LEVEL



CIP Budget Enhancement No. 5 – Civic Center Voluntary Seismic Retrofit

Retrofit Cost

\$4M



CIP Budget Enhancement No. 5 – Civic Center Voluntary Seismic Retrofit (\$4,000,000)

**SEISMIC STRENGTHENING
INVESTIGATION
NATIONAL CITY CIVIC CENTER
CITY OF NATIONAL CITY, CA**

August 1999



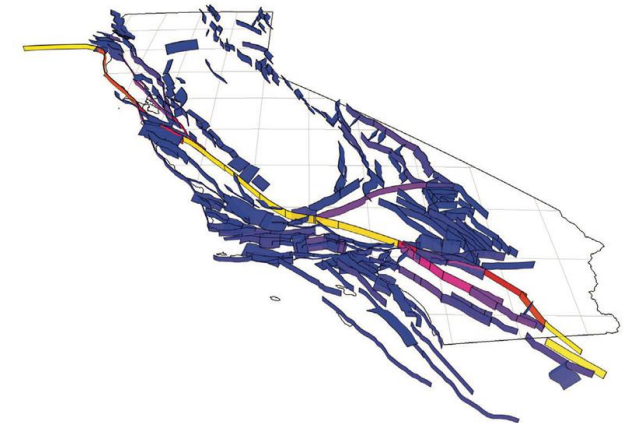
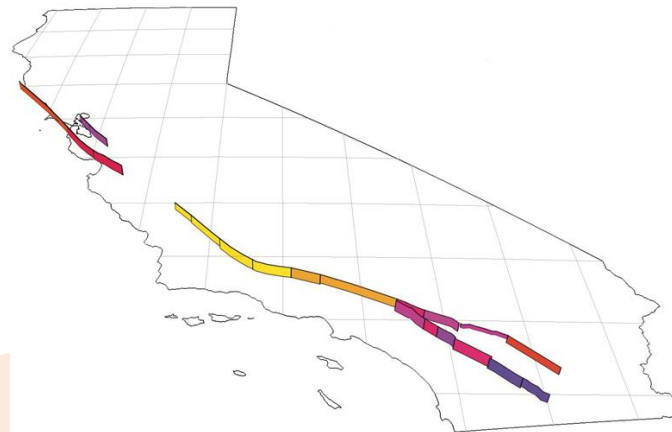
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CIP Budget Enhancement No. 6 – Youth Development Campus (\$100,000)

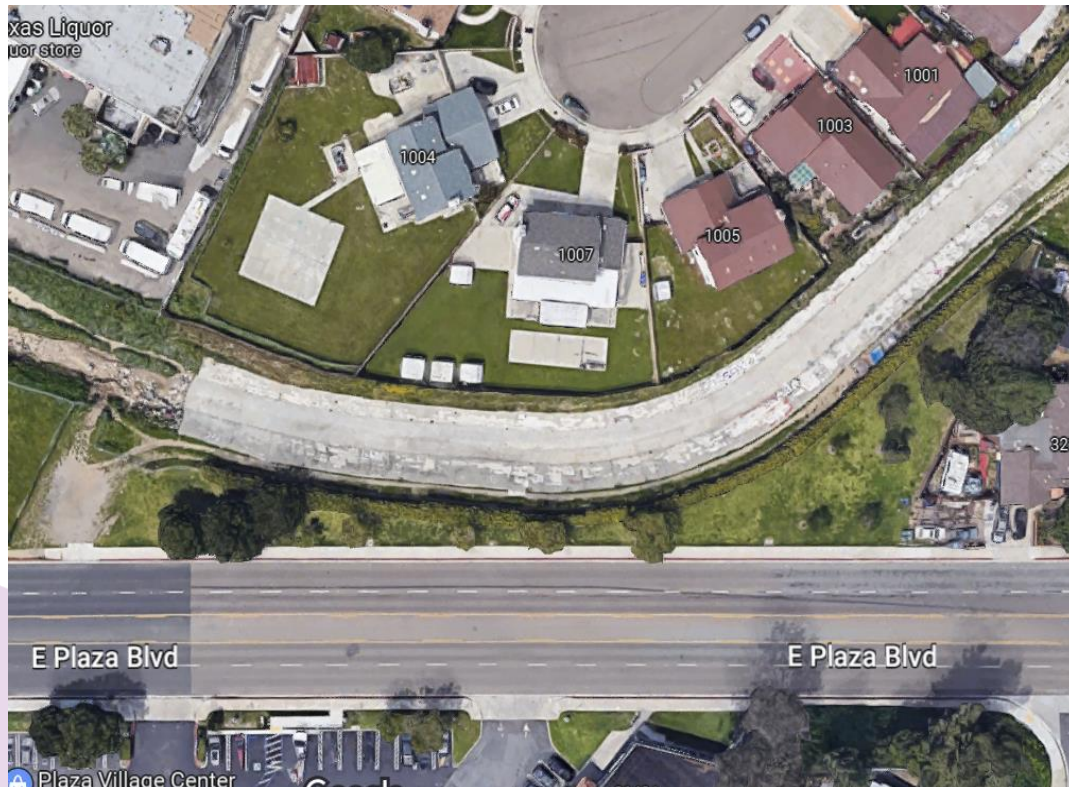
MASTER PLAN DEVELOPMENT AND BUDGET + MINOR MAINTENANCE

**KIMBALL RECREATIONAL CENTER WAS CONSTRUCTED IN 1973
RECOMMEND FULL RECONSTRUCTION**

BUDGET ENHANCEMENT IS TO DEVELOP A YOUTH DEVELOPMENT CAMPUS MASTER PLAN AND SEEK FUNDING IN ADDITION TO MINOR REPAIRS

CIP Budget Enhancement No. 7 – Clean National City (CNC) program (\$100,000)

PROGRAM TO BEAUTIFY AND ACTIVATE PUBLIC AREAS



FY2024 - Plaza and Harbison



Implement recommendations outlined in the January 5, 2023 – NCPD Crime Prevention Through Environmental Design (CPTED) report

- 1) Maintenance – Ongoing
- 2) Lighting – Installation has commenced
- 3) Landscaping / Fences - Funding
- 4) Cameras - Funding
- 5) Signage – Funding



Closing Comments, Next Steps



Operating Enhancement Decision Items

Item	FY24	Frequency
1. 5 New Police Staff	\$498,037	On-Going
2. 3 New Firefighters & 4-0 Staffing	\$139,313	On-Going
3. After School Programming	\$175,000	On-Going
4. Tree Trimming Crew	\$92,700	On-Going
5. Engineering Permit Technician	\$91,200	On-Going
6. Amortization	\$50,000	One-Time
6. PW Overtime	\$32,000	One-Time
6. Street Signs	\$25,000	One-Time
7. Communications Plan	\$100,000	One-Time
8. Chamber of Commerce	\$50,000	One-Time
9. Fund Reserves	\$430,000	One-Time
TOTAL	\$1,683,250	687k One-Time

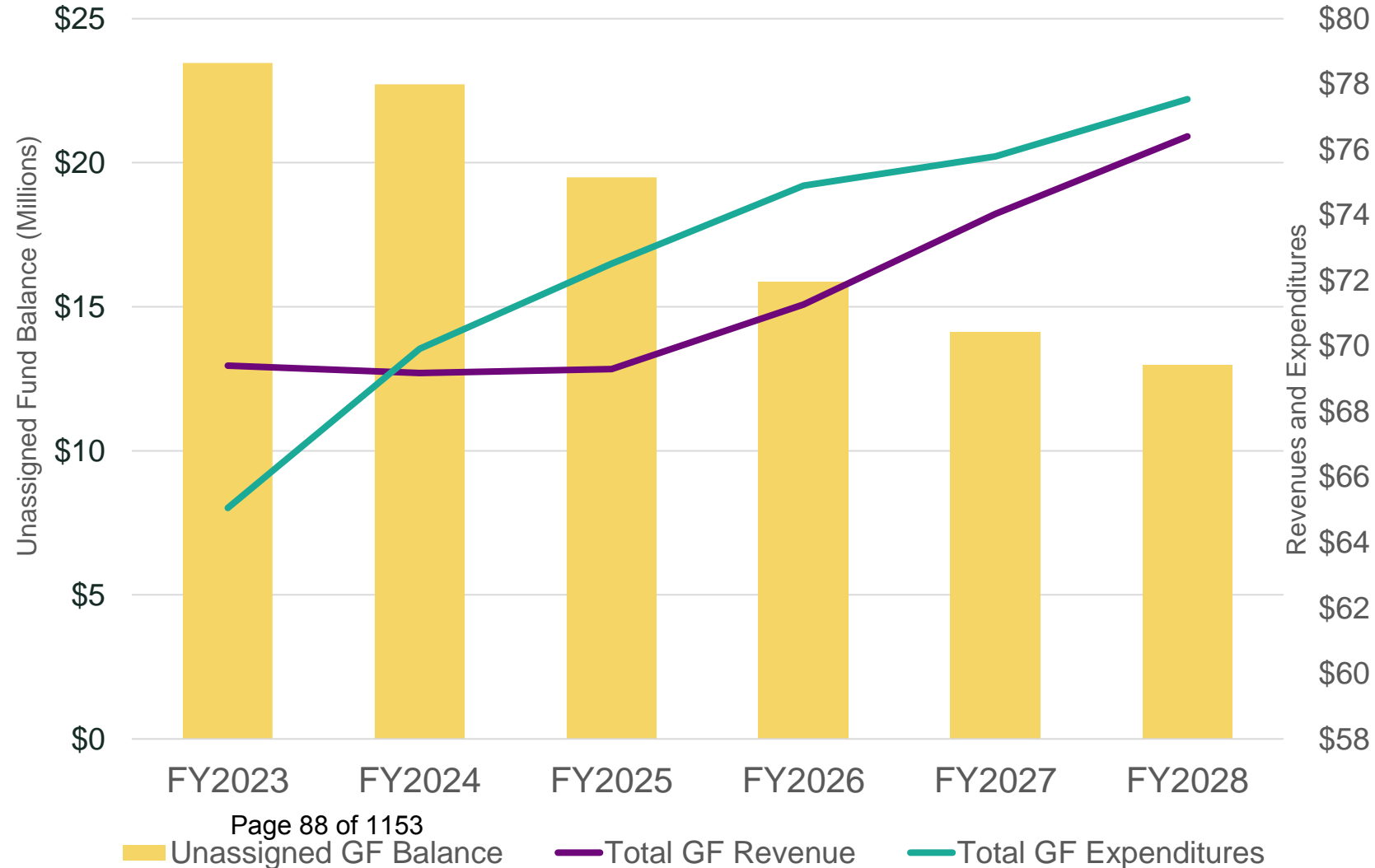
Capital Enhancement Decision Items

Item	FY24	Frequency
1. Las Palmas Wellness Center	\$2,700,000	One-Time
2. Pavement Rehab	\$500,000	On-Going
3. Storm Drains	\$300,000	On-Going
4. Granger Hall Plan & Estimate	\$100,000	One-Time
5. City Hall Seismic Upgrade	\$4,000,000	One-Time
6. Master Plan – Kimball Rec	\$100,000	One-Time
7. Clean NC – Plaza & Haribson	\$100,000	One-Time
TOTAL	\$7,800,000	



5-Year Forecast Including All Enhancements

Projected Revenues, Expenditures, and Unassigned General Fund Balance



Next Steps

- ❖ Focus on 2023-24 FY Budget:
 - ❖ Corrections, Adjustments, and Refinements
 - ❖ Enhancement Decision Items
- ❖ Additional follow-up at next budget workshop on May 16th
- ❖ Budget adoption in June





Public Comments





City Council Comments/Direction





Fiscal Year 2024 Preliminary Budget

**National City, California
Incorporated September 17, 1887**



Directory of City Officials

City Council

Ron Morrison
Mayor

Luz Molina
Vice Mayor

Jose Rodriguez
Councilmember

Marcus Bush
Councilmember

Ditas Yamane
Councilmember

City Treasurer

R. Mitchel Beauchamp

City Clerk

Shelley Chapel

City Manager

Brad Raulston

City Attorney

Barry Schultz

Department Heads

Frank Parra

Assistant City Manager

Jose Tellez

Chief of Police

Sergio Mora

Fire Chief

Molly Brennan

Director of Administrative Services

Armando Vergara

Director of Community Development

Roberto Yano

Director of Engineering & Public Works

Carlos Aguirre

Director of Housing Authority

Joyce Ryan

Director of Library & Community Services



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STRATEGIC PLAN 2020-2025

Overview

Strategic planning is a structured and coordinated process for fostering decision-making. A strategic plan communicates an organization's long-term goals and the objectives which must be met to achieve them. In order to remain useful, the strategic plan must be a dynamic, not static, document, consistently updated to address the most challenging issues facing the organization.

The City of National City's strategic plan is adopted by the City Council for a five-year period and is updated every two years. The most recent update of the strategic plan occurred in 2019.

To develop the strategic plan, City staff works with all departments, to assess needs and establish priorities for implementing policies, programs, plans, and projects. Staff then presents its recommendations to the City Council during a series of City Council meetings and workshops, where the strategic plan is refined and approved.

The 2020-2025 Strategic Plan was developed in late 2019. It was adopted by the City Council at its regular meeting of December 3, 2019.



Strategic Focus Area # 1 – Balanced Budget and Economic Development

- a) Maximize economic development strategies.
- b) Partner with other public agencies and non-profits, to increase revenue and augment services.
- c) Manage pension and other employee expenses.
- d) Optimize City assets and lease property, when appropriate.

Strategic Focus Area # 2 – Communication and Outreach

- a) Prepare effective budget, close deficit, accurately forecast funding sources, manage investments wisely, provide consistent financial reports, maintain clean audits, resolve findings/deficiencies in a timely manner, and update finance and budget policies.
- b) Connect the community with timely and transparent information.
- c) Increase meaningful outreach through quality engagement.
- d) Improve emergency preparedness and public noticing.
- e) Promote educational and economic opportunities.

Strategic Focus Area # 3 – Health, Environment, and Sustainability

- a) Update and implement the Climate Action Plan.
- b) Support a healthy community through active living and healthy eating.
- c) Create health and education hubs around major transit stops.
- d) Support an age-friendly community.

Strategic Focus Area # 4 – Housing and Community Development

- a) Pursue new housing options at all income levels.
- b) Ensure preservation of existing affordable housing stock.
- c) Streamline permitting and improve code compliance.
- d) Enhance role in reducing homelessness.

Strategic Focus Area # 5 – Parks, Recreation, and Library

- a) Improve outreach and increase participation.
- b) Organize community events and support other gatherings.
- c) Seek reliable funding and synergize with South Bay partners.
- d) Develop volunteer program and community services plan.



Strategic Focus Area # 6 – Public Safety

- a) Reduce overall crime and illegal activity.
- b) Improve operational readiness and community resilience.
- c) Enhance recruitment and retention and promote public safety pipeline.
- d) Expand community engagement and increase visibility.

Strategic Focus Area # 7 – Transportation Choices and Infrastructure

- a) Expand mobility choices by improving access to transit, biking, walking, rolling, and parking management.
- b) Improve traffic safety through traffic calming and safe routes.
- c) Update capital needs assessment and funding strategies.
- d) Maintain infrastructure and establish measurable targets.



BUDGET DOCUMENT READER'S GUIDE

The budget document has been designed to provide the public concise and readable information about the City of National City's Fiscal Year 2024 Preliminary Budget. The preamble provides an overview of the budget, while the pages that follow provide more specific and detailed information about the City's budget. The budget is separated into five major sections: General Information, Summary Schedules, Operating Budget (organized by department), Capital Improvement Program, and the Appendix.

Section I - General Information

The beginning of the budget document contains general information about the City of National City, a list of the City's Boards and Commissions, and a description of the City's Budget Controls, Process, Basis, and Policies.

Section II – Summary Schedules

The summary section includes an analysis of the budget's impact on fund balances, a schedule of operating transfers, revenue and expenditure summary reports, a schedule of internal service fund charges, and schedules showing authorized positions by classification for the City as a whole and by fund.

Section III – General Fund Revenue Detail vs Expenditures

This section shows the General Fund revenues versus Expenditures.

Section IV – Operating Budget

The operating budget section is organized by department. Each departmental section includes:

Department/Division Description. This summary provides an overview of the department or division, its goals and objectives, significant changes during the past fiscal year, and productivity/workload statistics, as applicable.

Department Organizational Chart. The organizational chart summarizes the department structure and lists the titles and numbers of full-time-equivalent employees ("FTEs") under each department and division or group within the department, followed by a position schedule, which reflects staffing by fund.

Revenues by Account. The table shows the revenues earned by the department by fund, activity, and account. The columns show actual revenue totals for Fiscal Years 2021 and 2022, the adopted budget for Fiscal Year 2023, and the preliminary budget for Fiscal Year 2024.

Expenditures by Account. The table details the expenditures for the department by fund, activity, and object. The columns show actual expenditure totals for Fiscal Years 2021 and 2022, the adopted budget for Fiscal Year 2023, and the preliminary budget for Fiscal Year 2024.

Section V – Capital Improvement Program

This section includes general information about the City's capital improvement program ("CIP") and its funding sources, a list of new capital projects recommended for Fiscal Year 2024, a five-year outlook for the CIP, and forms showing the projects by fund, compared to prior year actuals and budgets. This section also contains a table showing the City's proposed vehicle acquisitions for Fiscal Year 2024.



BUDGET DOCUMENT READER'S GUIDE

Section VI – Appendix The Appendix includes a glossary of terms and acronyms used throughout the budget's narrative, and schedules describing the funds and object (i.e., expenditure) accounts utilized by the City to develop the budget and track the utilization of resources.



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Section

1.

General Information

Preliminary Budget
Fiscal Year 2024



The National City Marine Terminal, part of the Unified Port of San Diego, is the most advanced vehicle import and export facility on the West Coast, processing more than 500,000 vehicles annually. Lumber is also imported from the Pacific Northwest for construction use throughout the region. National City's port area extends three miles along San Diego Bay and is part of the largest US Navy installation on the West Coast.

City Attractions

Shopping. National City is a great place for shopping. The City is served by several major shopping centers: South Bay Plaza, the first regional shopping center in San Diego; National City Plaza Shopping Center; Sweetwater Crossing; Bay Plaza Shopping Center; Grove Shopping Center; and Westfield Plaza Bonita, the largest enclosed mall in the South Bay. If you are shopping for a car, visit the "Mile of Cars," where you will find nine automobile dealers offering more than five thousand cars from over seventeen major brands. The Mile of Cars leads the San Diego area in per capita vehicle sales.

Dining. If you're in the mood for food, whether it be Mexican, Japanese, or a good old fashioned cheeseburger, National City has it all. The National City restaurant scene has over two hundred restaurants to choose from, running the full range from affordable fast food to interesting ethnic restaurants to fine dining.

Historical Sightseeing. National City's Victorian heritage is one of its most important assets. Visit one of the four buildings in the City that are listed in the National Register of Historic Places: Brick Row on Heritage Square, Granger Music Hall, the Santa Fe Rail Depot, and St. Matthews Episcopal Church.

City Parks. National City's 87.2 acres of park land exceed the statewide norm. The City's five major parks include El Toyon Park, Kimball Park, Las Palmas Park, Sweetwater Heights Park and Paradise Creek Park.

Recreation. Golfers of all ages are invited to golf the National City Golf Course. The nine-hole course offers discount rates for City residents and economical rates for non-residents as well. The National City recreation division provides programs at three recreation centers, a senior citizen center and a municipal pool. Instruction classes are offered at the various centers in athletics, fitness, dance, music and crafts. National





ABOUT NATIONAL CITY

City's recreation division offers a diverse year-round program of activities for all ages.

City Government

National City is a general law city and operates under the council-manager form of government. The City Council has five members, a mayor and four council members. The mayor is elected at large, while the council members are elected by district. They each have four year terms with a limit of three consecutive terms. By voter's decision, the City Treasurer and the City Clerk position has been "appointive" rather than elective.

The City Council is responsible for setting policies, enacting ordinances, adopting the budget, reviewing the General Plan, appointing committees, and appointing the City Manager and City Attorney. The City Manager is responsible for carrying out the policies and directives of the City Council, ensuring that the laws and ordinances are duly enforced, appointing City department heads, and overseeing the day-to-day operations of the City. The City Manager also serves as executive director and secretary of the Community Development Commission of the City of National City.

General information

Date of Incorporation: September 17, 1887

Population: 55,912 (2021, US Census Bureau estimate)

Area: 9.2 square miles
(Land Area: 7.3 square miles)

Location: National City is bordered by the City of San Diego to the north and east, the City of Chula Vista to the south, the unincorporated areas of Lincoln Acres and Bonita to the south and southeast, and San Diego Bay to the west.

Transportation Facilities and Services

Interstate Freeways:	I-5 and I-805 cross the City from north to south, and State Route 54 traverses the southern edge of town.
Port and Rail Facilities:	National City Marine Terminal, San Diego Unified Port District, Burlington Northern Santa Fe Railroad, San Diego & Arizona Eastern Railway
Public Transit:	Metropolitan Transit System (bus service through the City and adjacent areas) San Diego Trolley – two stations



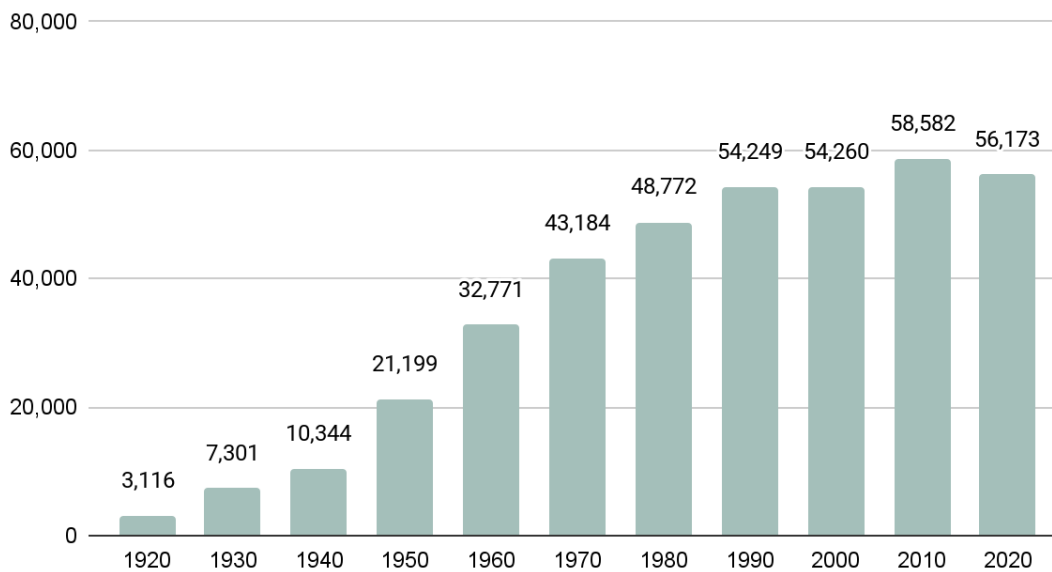
ABOUT NATIONAL CITY

Land Use and Development Pattern (2012 National City General Plan)

The following are estimates of land use areas within the City. Percentages are based on net acreage, excluding streets, highways, and other transportation facilities:

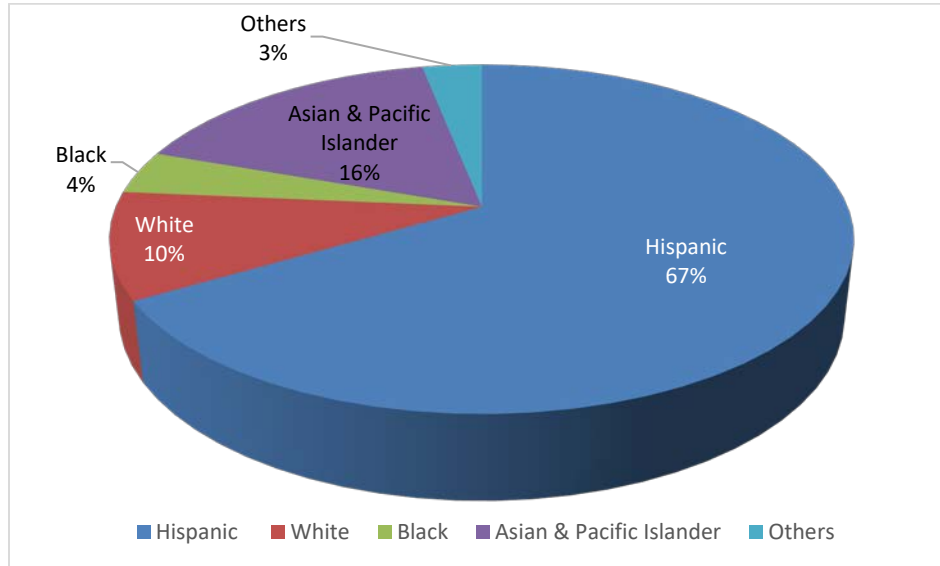
Land Use	% of Land Area
Residential	28.2%
Transportation	16.7%
Water	13.1%
Industrial	12.6%
Military	9.5%
Commercial	5.4%
Institution/Education	4.9%
Parks & Recreation	4.7%
Shopping Center	2.6%
Vacant	2.3%

National City, CA | Historical Population Growth



According to the U.S. Census Bureau, National City experienced a steady population expansion up until 2010, with 2020 representing the first decennial census in which the city saw a decline in overall population. The overall population decreased by 2,400 primarily due to a significant drop in the number of people counted in group quarters. Group quarters population decreased by 4,700 while household population grew by 2,300.

Population by Ethnic Group *



Property Valuation (Fiscal Year 2022, San Diego County Assessor)

Total Assessed Property Value (Gross): \$4,969,982.52
 Number of Assessed Parcels: 9,865

Housing Characteristics *

Total Housing Units: 18,249
 % vacant: 5.7%
 Average Household Size (persons): 3.16
 Household Population: 55,912
 Group Quarters Population: 1,020
 Owner-Occupied Housing: 30.5%
 Renter-Occupied Housing: 63.80%

(Group quarters population is primarily those onboard military ships, in addition to persons in residential care facilities or convalescent homes.)

Median Household Income: \$51,735 (US Census 2021)
 Median Age: 33.9 (US Census, 2018)

City Employment *

Civilian: 24,979 (87.1%)
 Military: 1,393 (13.8%)
 Total: 26,372

Elementary Schools: 11
 Intermediate Schools: 2
 High Schools:Community Colleges: 1



*We Pledge to Provide **Customer Service***

*through a **Culture of...***

Courtesy

We treat everyone with dignity and respect.

Collaboration

We work to achieve common goals and value our differences.

Communication

We communicate openly, honestly, and with clear, consistent messages.

*with a **Commitment to Our Community!***

Section

Summaries & Schedules

Preliminary Budget
Fiscal Year 2024

Preliminary Budget
Fiscal Year 2024

Fund Balances



**CITY OF NATIONAL CITY
BUDGET ANALYSIS BY FUND
FISCAL YEAR 2024**

Fund	Fund Name	Estimated Revenues	Transfers In	Transfers Out	Prelim Expenditures	Net Gain/(Use) FY24 Prelim
001	General Fund	\$ 67,166,961	\$ 2,005,500	\$ 2,829,069	\$ 65,085,303	\$ 1,258,089
104	Library Fund	1,006,586	1,256,616	-	2,263,202	0
105	Parks Maintenance Fund	1,172,181	967,800	-	2,139,981	(0)
108	Library Capital Outlay Fund	180,000		-	53,900	126,100
109	Gas Taxes Fund	3,286,920		-	2,833,192	453,728
117	American Rescue Plan Act - ARPA	-		2,000,000	-	(2,000,000)
125	Sewer Service Fund	9,931,785		-	13,182,495	(3,250,710)
130	EMT-D Revolving Fund	334,124		-	325,380	8,744
131	Asset Forfeiture Fund	1,500			67,500	(66,000)
166	Nutrition Fund	413,600	772,900	48,000	1,138,500	(0)
172	Trash Rate Stabilization Fund	215,000		-	503,731	(288,731)
195	Mile of Cars Landscape Maint. Dist. Fund	-	16,753	5,500	-	11,253
211	Security & Alarm Regulation Fund	47,000		-	-	47,000
212	Post-Employment Benefits Fund	-	360,000	-	360,000	-
258	Pension Obligation Bonds	-	5,806,468		5,806,468	-
259	Library Bonds Debt Service Fund	-		-	391,150	(391,150)
277	National City Public Library Donations Fund	400		-	-	400
282	Reimbursable Grants City-Wide Fund	592,685		-	653,791	(61,106)
290	Police Dept Grants	147,000		-	-	147,000
296	Engineering Department Grants Fund	-		-	-	-
301	Community Development Block Grant Fund	710,000	-	-	715,046	(5,046)
307	TransNet	1,849,000		-	1,849,000	-
320	Library Grants Fund	-		-	-	-
325	Development Impact Fees Fund	41,000		-	200,000	(159,000)
326	Transportation Impact Fee Fund	300,000		-	1,500,000	(1,200,000)
420	Parking Authority	359,548	-	-	359,547	1
501	Housing Authority Fund	297,430		545,000	1,076,327	(1,323,897)
502	Housing Choice Voucher Fund	15,583,578		-	15,429,016	154,562
505	HOME Fund	400,681		-	226,761	173,920
532	Low & Moderate Income Housing Asset Fund	125,000		-	162,981	(37,981)
626	Facilities Maintenance Fund	3,157,492	48,000	-	3,215,619	(10,127)
627	Liability Insurance Fund	4,000,000		-	4,975,787	(975,787)
629	Information Systems Maintenance Fund	3,127,507		-	3,128,087	(580)
630	Office Equipment Depreciation Fund				32,000	(32,000)
643	Motor Vehicle Service Fund	1,614,404		-	1,614,838	(434)
644	Vehicle Replacement Fund	1,657,758	450,000	-	1,761,000	346,758
Other Funds Total		\$ 50,552,179	\$ 9,678,537	\$ 2,598,500	\$ 65,965,299	\$ (8,333,083)
Total, All Funds		\$ 117,719,140	\$ 11,684,037	\$ 5,427,569	\$ 131,050,602	\$ (7,074,995)

Note: Funds projected to have no beginning available fund balance and no budgetary activity (revenues and/or expenditures) in Fiscal Year 2023 are not included.



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Preliminary Budget
Fiscal Year 2024

Interfund Transfers



**CITY OF NATIONAL CITY
FUND TRANSFERS DETAIL
FISCAL YEAR 2024**

From		To		Purpose	Proposed Transfers
001	General Fund	104	Library Fund	Operating Subsidy	\$ 1,256,616
001	General Fund	105	Parks Maintenance Fund	Operating Subsidy	967,800
001	General Fund	166	Nutrition Center Fund	Operating Subsidy	227,900
001	General Fund	212	Post-Employment Benefit Fund	Retiree Health Benefits	360,000
001	General Fund	195	Mile of Cars LMD	Maintenance District	16,753
				Total (Net) General Fund Impact	\$ 2,829,069
117	ARPA	001	General Fund	Operating Subsidy	2,000,000
166	Nutrition Center Fund	626	Facilities Maintenance Fund	Custodial Staffing	48,000
195	Mile of Cars LMD	001	General Fund	Administrative Transfer	5,500
501	Housing Authority	166	Nutrition Center Fund	Operating Subsidy	545,000
				Total (Net) Other Funds Impact	\$ 2,598,500
				Total, All Funds	\$ 5,427,569



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Preliminary Budget
Fiscal Year 2024

Expenditure & Revenue Summary



**CITY OF NATIONAL CITY
EXPENDITURE SUMMARY BY CATEGORY- ALL FUNDS
FISCAL YEAR 2024**

Fund	Fund Name	Personnel Services	Maintenance & Operations ¹	Capital Outlay	Capital Improvements	Alloc Costs & Internal Chrgs ²	Expenditure Total
001	General Fund						
	Department						
	413 Building	\$ 484,599	823,780.00	-	-	107,832.09	\$ 1,416,211
	401 City Council	\$ 370,698	\$ 43,176	\$ -	\$ -	\$ 130,060	\$ 543,933
	402 City Clerk	323,074	86,215	-	-	53,968	463,257
	410 City Treasurer	28,220	2,960	-	-	20,255	51,435
	403 City Manager	1,117,038	43,590	-	-	128,691	1,289,320
	405 City Attorney	782,436	199,050	-	-	99,552	1,081,038
	441 Community Services	931,804	609,090	-	-	732,853	2,273,747
	416 Engineering & Public Works	1,447,038	1,522,700	-	-	1,499,141	4,468,879
	404 Finance	1,918,087	369,307	-	-	268,683	2,556,077
	412 Fire	10,015,782	1,142,226	-	-	1,368,064	12,526,071
	419 Housing & Economic Development	92,905	67,900	-	-	126,618	287,423
	407 Human Resources	721,148	312,529	-	-	172,387	1,206,064
	420 Neighborhood Services	1,270,240	72,550	-	-	212,655	1,555,445
	409 Non-Departmental	1,300,000	1,054,581	-	2,000,000	125,000	4,479,581
	443 Planning	601,183	67,750	-	-	71,443	740,376
	411 Police	23,635,212	2,052,174	160,000	-	4,299,058	30,146,444
001	General Fund Total	\$ 45,039,464	\$ 8,469,578	\$ 160,000	\$ 2,000,000	\$ 9,416,261	\$ 65,085,303
104	Library Fund	1,282,013	130,140	-	-	851,049	2,263,202
105	Parks Maintenance Fund	1,267,992	539,900	-	-	332,090	2,139,981
108	Library Capital Outlay Fund	-	48,900	5,000	-	-	53,900
109	Gas Taxes Fund	466,606	563,100	-	1,519,578	283,907	2,833,192
117	American Rescue Plan Act - ARPA	-	-	-	-	-	-
125	Sewer Service Fund	1,380,406	8,356,300	-	3,000,000	445,789	13,182,495
130	EMT-D Revolving Fund	325,380	-	-	-	-	325,380
131	Asset Forfeiture Fund	-	17,500	50,000	-	-	67,500
166	Nutrition Fund	670,555	440,050	-	-	27,895	1,138,500
172	Trash Rate Stabilization Fund	193,002	10,000	-	300,000	729	503,731
195	Mile of Cars Landscape Maint. Dist. Fund	-	-	-	-	-	-
212	Post-Employment Benefits Fund	360,000	-	-	-	-	360,000
258	Pension Obligation Bonds	-	5,806,468	-	-	-	5,806,468
259	Library Bonds Debt Service Fund	-	391,150	-	-	-	391,150
277	National City Public Library Donations Fund	-	-	-	-	-	-
282	Reimbursable Grants Citywide	653,791	-	-	-	-	653,791
301	Community Development Block Grant Fund	86,965	628,081	-	-	-	715,046
307	TransNet	-	-	-	1,849,000	-	1,849,000
320	Library Grants Fund	-	-	-	-	-	-
325	Development Impact Fees	-	-	-	200,000	-	200,000
326	Transportation Impact Fee Fund	-	-	-	1,500,000	-	1,500,000
420	Parking Authority	268,047	91,500	-	-	-	359,547
501	Housing Authority	367,827	708,500	-	-	-	1,076,327
502	Housing Choice Voucher Fund	1,115,154	14,164,700	5,000	-	144,162	15,429,016
505	HOME Fund	173,011	53,750	-	-	-	226,761
532	Low & Moderate Income Housing Asset Fund	109,012	51,000	-	-	2,969	162,981
626	Facilities Maintenance Fund	1,003,928	2,079,872	-	-	131,820	3,215,619
627	Liability Insurance Fund	80,437	4,895,350	-	-	-	4,975,787
629	Information Systems Maintenance Fund *	595,946	1,971,524	455,750	100,000	4,867	3,128,087
630	Office Equipment Depreciation Fund	-	-	32,000	-	-	32,000
643	Motor Vehicle Service Fund *	533,994	1,077,200	-	-	3,644	1,614,838
644	Vehicle Replacement Fund *	-	45,000	1,716,000	-	-	1,761,000
	Other Funds Total	\$ 10,934,066	\$ 42,069,985	\$ 2,263,750	\$ 8,468,578	\$ 2,228,920	\$ 65,965,299
	Total, All Funds	\$ 55,973,530	\$ 50,539,563	\$ 2,423,750	\$ 10,468,578	\$ 11,645,181	\$ 131,050,602

**CITY OF NATIONAL CITY
REVENUE SUMMARY BY CATEGORY- ALL FUNDS
FISCAL YEAR 2024**

Fund	Fund Name	Sales & Use Tax	District Trans & Use Tax	Property Tax	Prop in Lieu of VLF	Other Revenues	Revenue Total
001	General Fund	24,394,000	15,004,000	2,598,287	8,599,000	16,571,674	67,166,961
104	Library Fund	-	-	1,002,176	-	4,410	1,006,586
105	Parks Maintenance Fund	-	-	1,167,036	-	5,145	1,172,181
108	Library Capital Outlay Fund	-	-	-	-	180,000	180,000
109	Gas Taxes Fund	-	-	-	-	3,286,920	3,286,920
117	American Rescue Plan Act - ARPA	-	-	-	-	-	-
125	Sewer Service Fund	-	-	-	-	9,931,785	9,931,785
130	EMT-D Revolving Fund	-	-	-	-	334,124	334,124
131	Asset Forfeiture Fund	-	-	-	-	1,500	1,500
166	Nutrition Fund	-	-	-	-	413,600	413,600
172	Trash Rate Stabilization Fund	-	-	-	-	215,000	215,000
195	Mile of Cars Landscape Maint. Dist. Fund	-	-	-	-	-	-
211	Security and Alarm Regulation Fund	-	-	-	-	47,000	47,000
212	Post-Employment Benefits Fund	-	-	-	-	-	-
259	Library Bonds Debt Service Fund	-	-	-	-	-	-
277	National City Public Library Donations Fund	-	-	-	-	400	400
282	Reimbursable Grants Citywide	-	-	-	-	592,685	592,685
290	Police Department Grants	-	-	-	-	147,000	147,000
301	Community Development Block Grant Fund	-	-	-	-	710,000	710,000
307	TransNet	-	-	-	-	1,849,000	1,849,000
320	Library Grants Fund	-	-	-	-	-	-
325	Development Impact Fees	-	-	-	-	41,000	41,000
326	Transportation Impact Fee Fund	-	-	-	-	300,000	300,000
420	Parking Authority	-	-	-	-	359,548	359,548
501	Housing Authority	-	-	-	-	297,430	297,430
502	Housing Choice Voucher Fund	-	-	-	-	15,583,578	15,583,578
505	HOME Fund	-	-	-	-	400,681	400,681
532	Low & Moderate Income Housing Asset Fund	-	-	-	-	125,000	125,000
626	Facilities Maintenance Fund	-	-	-	-	3,157,492	3,157,492
627	Liability Insurance Fund	-	-	-	-	4,000,000	4,000,000
629	Information Systems Maintenance Fund *	-	-	-	-	3,127,507	3,127,507
643	Motor Vehicle Service Fund *	-	-	-	-	1,614,404	1,614,404
644	Vehicle Replacement Fund *	-	-	-	-	1,657,758	1,657,758
All Funds Total		\$ 24,394,000	\$ 15,004,000	\$ 4,767,499	\$ 8,599,000	\$ 64,954,641	\$ 117,719,140

Preliminary Budget
Fiscal Year 2024

Cost Recovery



**CITY OF NATIONAL CITY
GENERAL FUND COST RECOVERY / COST ALLOCATION PLAN
FISCAL YEAR 2024**

Fund	Fund Name	Total
109	Gas Taxes Fund ³	\$ 128,529
125	Sewer Service Fund ¹	239,533
130	EMT-D Revolving Fund	16,964
172	Trash Rate Stabilization Fund	12,365
502	Housing Choice Voucher ²	180,000
Total Costs Recovered By General Fund		\$ <u>577,391.00</u>

¹ Cost Allocation Plan rate charged is 25.00% of the calculated allocated rate for the fiscal year.

² Cost Allocation Plan rate charged is 33.33% of the calculated allocated rate for the fiscal year.

³ Cost Allocation Plan rate charged is 50.00% of the calculated allocated rate for the fiscal year.



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Preliminary Budget
Fiscal Year 2024

Internal Service Charges



**CITY OF NATIONAL CITY
SUMMARY OF INTERNAL SERVICE CHARGES BY FUND DEPARTMENT
FISCAL YEAR 2024**

Fund / Dept	Fund/Dept/Div Name	Facilities Maintenance	Information Systems	Risk Management	Vehicle Leases & Replacement	Vehicle Maintenance	Total
001-401	City Council	\$ 56,375	\$ 66,383	\$ 7,301	\$ -	\$ -	\$ 130,060
001-402	City Clerk	\$ 18,792	\$ 31,793	\$ 3,383	\$ -	\$ -	\$ 53,968
001-403	City Manager	\$ 65,770	\$ 53,454	\$ 9,467	\$ -	\$ -	\$ 128,691
001-405	City Attorney	\$ 46,980	\$ 41,923	\$ 10,649	\$ -	\$ -	\$ 99,552
001-410	City Treasurer	\$ 9,395	\$ 10,131	\$ 729	\$ -	\$ -	\$ 20,255
001-411	Police	\$ 525,860	\$ 1,630,662	\$ 919,373	\$ 628,881	\$ 594,283	\$ 4,299,058
001-413	Building	\$ 37,583	\$ 57,652	\$ 5,816	\$ 4,000	\$ 2,781	\$ 107,832
001-416	Engineering & Public Works	\$ 516,971	\$ 212,029	\$ 391,740	\$ 287,733	\$ 90,668	\$ 1,499,141
001-412	Fire	\$ 331,173	\$ 195,965	\$ 66,115	\$ 482,768	\$ 292,042	\$ 1,368,064
001-404	Finance	\$ 126,846	\$ 129,243	\$ 12,594	\$ -	\$ -	\$ 268,683
001-419	Housing & Economic Develop.	\$ 50,737	\$ 56,419	\$ 4,986	\$ -	\$ 14,476	\$ 126,618
001-407	Human Resources	\$ 107,454	\$ 57,989	\$ 6,945	\$ -	\$ -	\$ 172,387
001-420	Neighborhood Services	\$ 28,188	\$ 100,250	\$ 8,190	\$ 38,080	\$ 37,948	\$ 212,655
001-441	Community Services	\$ 570,972	\$ 97,113	\$ 33,514	\$ 5,920	\$ 25,334	\$ 732,853
001-443	Planning	\$ 37,583	\$ 28,993	\$ 4,867	\$ -	\$ -	\$ 71,443
104-431	Library	\$ 557,168	\$ 211,304	\$ 60,431	\$ -	\$ 22,145	\$ 851,049
105-416	Parks Maintenance	\$ -	\$ 20,263	\$ 32,030	\$ 115,990	\$ 163,807	\$ 332,090
109-416	Public Works - Streets	\$ 19,898	\$ 11,530	\$ 39,393	\$ -	\$ 213,087	\$ 283,907
125-416	Sewer Service	\$ 19,898	\$ 17,464	\$ 312,263	\$ 21,300	\$ 74,864	\$ 445,789
166-441	Nutrition Fund	\$ -	\$ -	\$ 7,289	\$ -	\$ 20,607	\$ 27,895
172-416	Refuse	\$ -	\$ -	\$ 729	\$ -	\$ -	\$ 729
502-419	Housing Choice Voucher	\$ 29,848	\$ 93,978	\$ 8,554	\$ 9,000	\$ 2,781	\$ 144,162
626-416	Facilities Maintenance	\$ -	\$ -	\$ 8,151	\$ 64,087	\$ 59,581	\$ 131,820
629-403	Information Technology Services	\$ -	\$ -	\$ 4,867	\$ -	\$ -	\$ 4,867
643-416	Motor Vehicle Service Fund	\$ -	\$ -	\$ 3,644	\$ -	\$ -	\$ 3,644
532-419	Housing	\$ -	\$ 2,969	\$ -	\$ -	\$ -	\$ 2,969
Total		\$ 3,157,492	\$ 3,127,507	\$ 1,963,019	\$ 1,657,759	\$ 1,614,404	\$ 11,520,181



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Preliminary Budget
Fiscal Year 2024

Staffing Levels





AUTHORIZED POSITIONS

	FY 2022 Adopted	FY 2023 Adopted	FY 2024 Preliminary
CITY COUNCIL			
Confidential Assistant	1.00	1.00	
Councilmember	4.00	4.00	4.00
Executive Assistant IV			1.00
Mayor	1.00	1.00	1.00
CITY COUNCIL Total	6.00	6.00	6.00
CITY CLERK			
City Clerk	1.00	1.00	1.00
Deputy City Clerk	1.00	1.00	
Executive Secretary	1.00	1.00	1.00
CITY CLERK Total	3.00	3.00	2.00
CITY MANAGER			
Assistant City Manager	1.00	1.00	1.00
City Manager	1.00	1.00	1.00
Community Development Spec II	1.00		
Community Development Spec III		1.00	1.00
Executive Assistant IV	1.00	1.00	1.00
Information Technology Analyst	1.00		
Information Technology Manager	1.00	1.00	1.00
Information Technology Technician	2.00	2.00	2.00
Management Analyst II	1.00	1.00	
Management Analyst III			1.00
Senior Office Assistant	1.00	1.00	1.00
Sr Info Technology Analyst			1.00
Sr It Analyst		1.00	
CITY MANAGER Total	10.00	10.00	10.00
FINANCE			
Accountant	2.00	2.00	2.00
Accounting Assistant	5.00	2.00	2.00
Administrative Technician	1.00	1.00	1.00
Budget Manager	1.00	1.00	1.00
Buyer	1.00	1.00	1.00
Director Of Admin Services	0.50	0.50	0.50

* Starting in FY2022 Hourly/Non-benefited positions are no longer included in FTE count. Budgets for hourly positions can be found in the individual department pages of Section III of the document.



AUTHORIZED POSITIONS

	FY 2022 Adopted	FY 2023 Adopted	FY 2024 Preliminary
Financial Services Officer	1.00	1.00	1.00
Management Analyst II			1.00
Payroll Technician I			1.00
Payroll Technician I	1.00	1.00	
Payroll Technician II		1.00	1.00
Senior Accountant	1.00	1.00	1.00
Senior Accounting Assistant	1.00	2.00	2.00
FINANCE Total	14.50	13.50	14.50
CITY ATTORNEY			
Assistant City Attorney		1.00	1.00
City Attorney	1.00	1.00	1.00
Deputy City Attorney	1.00	1.00	1.00
Executive Assistant IV	1.00	1.00	1.00
Sr. Assistant City Attorney	1.00		
CITY ATTORNEY Total	4.00	4.00	4.00
HUMAN RESOURCES			
Administrative Secretary	1.00		
Director Of Admin Services	0.50	0.50	0.50
Executive Assistant IV		1.00	1.00
Human Resources Manager	1.00	1.00	1.00
Management Analyst II	1.00	1.50	1.50
Senior Office Assistant	1.00	1.00	1.00
HUMAN RESOURCES Total	4.50	5.00	5.00
CITY TREASURER			
City Treasurer	1.00	1.00	1.00
CITY TREASURER Total	1.00	1.00	1.00
POLICE			
Administrative Secretary	1.00	1.00	1.00
Animal Regulations Officer	2.00	3.00	3.00
Assistant Chief Of Police		1.00	1.00
Community Services Officer	2.00	2.00	2.00
Crime Analyst	1.00	1.00	1.00

* Starting in FY2022 Hourly/Non-benefited positions are no longer included in FTE count. Budgets for hourly positions can be found in the individual department pages of Section III of the document.



AUTHORIZED POSITIONS

	FY 2022 Adopted	FY 2023 Adopted	FY 2024 Preliminary
Crime Scene Specialist	1.00	1.00	1.00
Executive Assistant II	1.00	1.00	1.00
Information Technology Analyst	1.00	1.00	1.00
Management Analyst II		1.00	1.00
Police Captain	2.00	2.00	2.00
Police Chief	1.00	1.00	1.00
Police Corporal	21.00	21.00	21.00
Police Dispatcher	11.00	11.00	11.00
Police Investigator	1.00	1.00	1.00
Police Lieutenant	5.00	5.00	5.00
Police Officer	44.00	46.00	46.00
Police Operations Assistant	1.00	1.00	1.00
Police Records Clerk	5.00	5.00	5.00
Police Records Supervisor	1.00	1.00	1.00
Police Sergeant	13.00	13.00	13.00
Police Support Services Mgr.	1.00	1.00	1.00
Property & Evidence Spec I	1.00	1.00	1.00
Property & Evidence Spec II	1.00	1.00	1.00
Property & Evidence Supervisor	1.00	1.00	1.00
Senior Office Assistant	1.00	1.00	1.00
Senior Police Dispatcher	2.00	2.00	2.00
Stop Grant Office Coordinator	1.00	1.00	1.00
Training Coordinator	1.00	1.00	1.00
POLICE Total	123.00	128.00	128.00
FIRE			
Administrative Secretary	1.00	1.00	
Battalion Chief	1.00	1.00	1.00
Deputy Fire Marshal	1.00	1.00	1.00
Director Of Emergency Services	1.00	1.00	
Executive Secretary			1.00
Fire Battalion Chief	3.00	3.00	3.00
Fire Captain	12.00	12.00	12.00
Fire Chief			1.00
Fire Engineer	9.00	9.00	9.00

* Starting in FY2022 Hourly/Non-benefited positions are no longer included in FTE count. Budgets for hourly positions can be found in the individual department pages of Section III of the document.



AUTHORIZED POSITIONS

	FY 2022 Adopted	FY 2023 Adopted	FY 2024 Preliminary
Fire Inspector	2.00	2.00	3.00
Firefighter	20.00	20.00	20.00
Management Analyst III	1.00	1.00	1.00
Senior Office Assistant	1.00	1.00	1.00
FIRE Total	52.00	52.00	53.00
BUILDING & SAFETY			
Building Official	1.00	1.00	1.00
Permit Technician	2.00	2.00	3.00
Senior Building Inspector	1.00	1.00	1.00
BUILDING & SAFETY Total	4.00	4.00	5.00
ENGINEERING & PUBLIC WORKS			
Administrative Secretary	1.00	1.00	1.00
Assistant Engineer-Civil	2.00	2.00	2.00
Associate Civil Engineer		1.00	1.00
Asst Director Engineering / PW		1.00	
Asst Director Of Engineering/Pw			1.00
Building Trades Specialist	3.00	3.00	3.00
Civil Engineering Technician	1.00	1.00	1.00
Custodian	7.00	7.00	7.00
Director Of Pw/City Engineer	1.00	1.00	1.00
Equip. Maint. Supervisor	1.00	1.00	1.00
Equipment Mechanic	3.00	3.00	3.00
Equipment Operator	4.00	4.00	4.00
Executive Secretary	1.00	1.00	1.00
Facilities Maint. Supervisor	1.00	1.00	1.00
Lead Equipment Mechanic	1.00	1.00	1.00
Lead Tree Trimmer	1.00	1.00	1.00
Maintenance Worker	8.00	8.00	8.00
Management Analyst II	1.00	1.00	
Management Analyst III			1.00
Park Caretaker	4.00	4.00	4.00
Park Superintendent	1.00	1.00	1.00
Park Supervisor	1.00	1.00	1.00

* Starting in FY2022 Hourly/Non-benefited positions are no longer included in FTE count. Budgets for hourly positions can be found in the individual department pages of Section III of the document.



AUTHORIZED POSITIONS

	FY 2022 Adopted	FY 2023 Adopted	FY 2024 Preliminary
Parks Equipment Operator	1.00	1.00	1.00
Principal Civil Engineer	1.00		
Senior Civil Engineering Tech	1.00	1.00	1.00
Senior Construction Inspector	1.00	1.00	1.00
Senior Equipment Operator	2.00	2.00	2.00
Senior Office Assistant	1.00	1.00	1.00
Senior Park Caretaker	4.00	4.00	4.00
Senior Traffic Painter	1.00	1.00	1.00
St & Wastewater Maint Super	1.00	1.00	1.00
Street Sweeper Operator	2.00	2.00	2.00
Supervising Custodian	1.00	1.00	1.00
Traffic Painter	1.00	1.00	1.00
Tree Trimmer	1.00	1.00	1.00
ENGINEERING & PUBLIC WORKS Total	60.00	61.00	61.00

HOUSING AND ECONOMIC DEVELOPMENT

Community Development Manager	1.00	1.00	1.00
Community Development Spec II	1.00	1.00	1.00
Dir Of Housing & Economic Dev	1.00	1.00	1.00
Executive Assistant IV	1.00	1.00	
Executive Secretary			1.00
Homelessness Outreach Coordinator		1.00	
Housing Assistant	2.00	2.00	2.00
Housing Inspector I	1.00		
Housing Programs Manager	1.00	1.00	1.00
Housing Specialist	5.00	5.00	5.00
Property Agent	1.00	1.00	1.00
Senior Accountant			1.00
Senior Housing Specialist	1.00	1.00	1.00
HOUSING AND ECONOMIC DEVELOPMENT Total	15.00	15.00	15.00

NEIGHBORHOOD SERVICES

Administrative Secretary	1.00	1.00	1.00
Code Conformance Officer I		1.00	
Code Conformance Officer II	1.00	1.00	

* Starting in FY2022 Hourly/Non-benefited positions are no longer included in FTE count. Budgets for hourly positions can be found in the individual department pages of Section III of the document.



AUTHORIZED POSITIONS

	FY 2022 Adopted	FY 2023 Adopted	FY 2024 Preliminary
Community Development Spec III			1.00
Director Of Comm Development	1.00	1.00	1.00
Executive Secretary			1.00
Graffiti Removal Assistant	1.00	1.00	1.00
Graffiti Removal Technician	1.00	1.00	1.00
Homelessness Outreach Coordinator			1.00
Housing Inspector I		1.00	1.00
Neighborhood Services Mgr	1.00	1.00	1.00
Parking Regulations Officer	3.00	3.00	3.00
Senior Office Assistant	1.00	1.00	1.00
Sr Code Conformance Officer			1.00
NEIGHBORHOOD SERVICES Total	10.00	12.00	14.00
LIBRARY			
Academic Enrichment Prog Coord	1.00	1.00	1.00
Administrative Secretary	1.00	1.00	1.00
Circulation Supervisor			1.00
Librarian			2.00
Library/Comm Svcs Director	0.50	0.50	0.50
Management Analyst II		0.50	0.50
Principal Library	1.00	1.00	1.00
Senior Librarian	1.00	1.00	1.00
Senior Library Technician	3.00	3.00	
LIBRARY Total	7.50	8.00	8.00
COMMUNITY SERVICES			
Community Services Manager		1.00	1.00
Executive Chef	1.00	1.00	1.00
Food Services Worker	0.75	0.75	0.75
Home Delivered Meals Coord	1.00	1.00	1.00
Home Delivered Meals Driver	1.50	1.50	2.00
Library/Comm Svcs Director	0.50	0.50	0.50
Management Analyst II		0.50	0.50
Nutrition Program Manager	1.00	1.00	
Nutrition Services Supervisor			1.00

* Starting in FY2022 Hourly/Non-benefited positions are no longer included in FTE count. Budgets for hourly positions can be found in the individual department pages of Section III of the document.



AUTHORIZED POSITIONS

	FY 2022 Adopted	FY 2023 Adopted	FY 2024 Preliminary
Recreation Center Supervisor	2.75		
Recreation Superintendent	1.00		
Recreation Supervisor		2.75	2.75
Senior Office Assistant	1.00	1.00	1.00
Sous Chef	1.00	1.00	1.00
COMMUNITY SERVICES Total	11.50	12.00	12.50
PLANNING			
Assistant Planner	1.00	1.00	1.00
Associate Planner	1.00	1.00	1.00
Community Health & Environ Planner			1.00
Executive Secretary	1.00	1.00	
Planning Manager		1.00	1.00
Planning Technician	1.00	1.00	1.00
Principal Planner	1.00	1.00	
PLANNING Total	5.00	6.00	5.00
Grand Total	331.00	340.50	344.00

* Starting in FY2022 Hourly/Non-benefited positions are no longer included in FTE count. Budgets for hourly positions can be found in the individual department pages of Section III of the document.



AUTHORIZED POSITIONS

	FY 2022 Adopted	FY 2023 Adopted	FY 2024 Preliminary
GENERAL FUND			
Accountant	2.00	2.00	2.00
Accounting Assistant	5.00	2.00	2.00
Administrative Secretary	4.70	3.70	2.70
Administrative Technician	1.00	1.00	1.00
Animal Regulations Officer	2.00	3.00	3.00
Assistant Chief Of Police		1.00	1.00
Assistant City Attorney		1.00	1.00
Assistant City Manager	1.00	1.00	1.00
Assistant Engineer-Civil	1.50	1.50	1.50
Assistant Planner	1.00	1.00	1.00
Associate Civil Engineer		0.60	0.60
Associate Planner	1.00	1.00	1.00
Asst Director Engineering / PW		0.70	
Asst Director Of Engineering/Pw			0.70
Battalion Chief	1.00	1.00	1.00
Budget Manager	1.00	1.00	1.00
Building Official	1.00	1.00	1.00
Buyer	1.00	1.00	1.00
City Attorney	1.00	1.00	1.00
City Clerk	1.00	1.00	1.00
City Manager	1.00	1.00	1.00
City Treasurer	1.00	1.00	1.00
Civil Engineering Technician	0.80	0.80	0.80
Code Conformance Officer I		1.00	
Code Conformance Officer II	1.00	1.00	
Community Development Spec II	1.00		
Community Development Spec III		1.00	2.00
Community Health & Environ Planner			1.00
Community Services Manager		1.00	1.00
Community Services Officer	2.00	2.00	2.00
Confidential Assistant	1.00	1.00	
Councilmember	4.00	4.00	4.00
Crime Analyst	1.00	1.00	1.00

* Starting in FY2022 Hourly/Non-benefited positions are no longer included in FTE count. Budgets for hourly positions can be found in the individual department pages of Section III of the document.



AUTHORIZED POSITIONS

	FY 2022 Adopted	FY 2023 Adopted	FY 2024 Preliminary
Crime Scene Specialist	1.00	1.00	1.00
Deputy City Attorney	1.00	1.00	1.00
Deputy City Clerk	1.00	1.00	
Deputy Fire Marshal	1.00	1.00	1.00
Director Of Admin Services	1.00	1.00	1.00
Director Of Comm Development	1.00	1.00	1.00
Director Of Emergency Services	1.00	1.00	
Director Of Pw/City Engineer	0.60	0.60	0.60
Equipment Operator	0.50	0.50	1.32
Executive Assistant II	1.00	1.00	1.00
Executive Assistant IV	2.00	3.00	4.00
Executive Secretary	2.70	2.70	3.70
Financial Services Officer	1.00	1.00	1.00
Fire Battalion Chief	3.00	3.00	3.00
Fire Captain	12.00	12.00	12.00
Fire Chief			1.00
Fire Engineer	9.00	9.00	9.00
Fire Inspector	2.00	2.00	3.00
Firefighter	15.00	15.00	15.00
Graffiti Removal Assistant	1.00	1.00	1.00
Graffiti Removal Technician	1.00	1.00	1.00
Homelessness Outreach Coordinator		1.00	1.00
Human Resources Manager	1.00	1.00	1.00
Information Technology Analyst	1.00	1.00	1.00
Library/Comm Svcs Director	0.50	0.50	0.50
Management Analyst II	2.70	4.70	4.00
Management Analyst III	1.00	1.00	2.70
Mayor	1.00	1.00	1.00
Neighborhood Services Mgr	1.00	1.00	1.00
Payroll Technician I			1.00
Payroll Technician I	1.00	1.00	
Payroll Technician II		1.00	1.00
Permit Technician	2.00	2.00	3.00
Planning Manager		1.00	1.00

* Starting in FY2022 Hourly/Non-benefited positions are no longer included in FTE count. Budgets for hourly positions can be found in the individual department pages of Section III of the document.



AUTHORIZED POSITIONS

	FY 2022 Adopted	FY 2023 Adopted	FY 2024 Preliminary
Planning Technician	1.00	1.00	1.00
Police Captain	2.00	2.00	2.00
Police Chief	1.00	1.00	1.00
Police Corporal	21.00	21.00	21.00
Police Dispatcher	11.00	11.00	11.00
Police Investigator	1.00	1.00	1.00
Police Lieutenant	5.00	5.00	5.00
Police Officer	44.00	46.00	46.00
Police Operations Assistant	1.00	1.00	1.00
Police Records Clerk	5.00	5.00	5.00
Police Records Supervisor	1.00	1.00	1.00
Police Sergeant	13.00	13.00	13.00
Police Support Services Mgr.	1.00	1.00	1.00
Principal Civil Engineer	0.70		
Principal Planner	1.00	1.00	
Property & Evidence Spec I	1.00	1.00	1.00
Property & Evidence Spec II	1.00	1.00	1.00
Property & Evidence Supervisor	1.00	1.00	1.00
Property Agent	0.50	0.50	0.50
Recreation Center Supervisor	2.75		
Recreation Superintendent	1.00		
Recreation Supervisor		2.75	2.75
Senior Accountant	1.00	1.00	1.25
Senior Accounting Assistant	1.00	2.00	2.00
Senior Building Inspector	1.00	1.00	1.00
Senior Civil Engineering Tech	0.80	0.80	0.80
Senior Construction Inspector	0.80	0.80	0.80
Senior Equipment Operator	0.25	0.25	0.66
Senior Office Assistant	4.70	4.70	4.70
Senior Police Dispatcher	2.00	2.00	2.00
Senior Traffic Painter			0.55
Sr Code Conformance Officer			1.00
Sr. Assistant City Attorney	1.00		
Stop Grant Office Coordinator	1.00	1.00	1.00

* Starting in FY2022 Hourly/Non-benefited positions are no longer included in FTE count. Budgets for hourly positions can be found in the individual department pages of Section III of the document.



AUTHORIZED POSITIONS

	FY 2022 Adopted	FY 2023 Adopted	FY 2024 Preliminary
Traffic Painter			0.55
Training Coordinator	1.00	1.00	1.00
GENERAL FUND Total	237.50	246.10	250.68

LIBRARY FUND

Academic Enrichment Prog Coord		1.00	1.00
Administrative Secretary	1.00	1.00	1.00
Circulation Supervisor			1.00
Librarian			2.00
Library/Comm Svcs Director	0.50	0.50	0.50
Management Analyst II		0.50	0.50
Principal Library	1.00	1.00	1.00
Senior Librarian	1.00	1.00	1.00
Senior Library Technician	3.00	3.00	
LIBRARY FUND Total	6.50	8.00	8.00

PARKS MAINTENANCE FUND

Lead Tree Trimmer	1.00	1.00	1.00
Park Caretaker	4.00	4.00	4.00
Park Superintendent	1.00	1.00	1.00
Park Supervisor	1.00	1.00	1.00
Parks Equipment Operator	1.00	1.00	1.00
Senior Park Caretaker	4.00	4.00	4.00
Tree Trimmer	1.00	1.00	1.00
PARKS MAINTENANCE FUND Total	13.00	13.00	13.00

GAS TAXES FUND

Equipment Operator	1.50	1.50	0.68
Maintenance Worker	4.50	4.50	2.03
Senior Equipment Operator	0.75	0.75	0.34
Senior Traffic Painter	1.00	1.00	0.45
St & Wastewater Maint Super	0.50	0.50	0.23
Traffic Painter	1.00	1.00	0.45
GAS TAXES FUND Total	9.25	9.25	4.18

SEWER SERVICE FUND

* Starting in FY2022 Hourly/Non-benefited positions are no longer included in FTE count. Budgets for hourly positions can be found in the individual department pages of Section III of the document.



AUTHORIZED POSITIONS

	FY 2022 Adopted	FY 2023 Adopted	FY 2024 Preliminary
Administrative Secretary	0.30	0.30	0.30
Assistant Engineer-Civil	0.50	0.50	0.50
Associate Civil Engineer		0.40	0.40
Asst Director Engineering / PW		0.30	
Asst Director Of Engineering/Pw			0.30
Civil Engineering Technician	0.20	0.20	0.20
Director Of Pw/City Engineer	0.40	0.40	0.40
Equipment Operator	2.00	2.00	2.00
Executive Secretary	0.30	0.30	0.30
Maintenance Worker	3.50	3.50	5.97
Management Analyst II	0.30	0.30	
Management Analyst III			0.30
Principal Civil Engineer	0.30		
Senior Civil Engineering Tech	0.20	0.20	0.20
Senior Construction Inspector	0.20	0.20	0.20
Senior Equipment Operator	1.00	1.00	1.00
Senior Office Assistant	0.30	0.30	0.30
St & Wastewater Maint Super	0.50	0.50	0.77
SEWER SERVICE FUND Total	10.00	10.40	13.14
NUTRITION			
Executive Chef	1.00	1.00	1.00
Food Services Worker	0.75	0.75	0.75
Home Delivered Meals Coord	1.00	1.00	1.00
Home Delivered Meals Driver	1.50	1.50	2.00
Nutrition Program Manager	1.00	1.00	
Nutrition Services Supervisor			1.00
Senior Office Assistant	1.00	1.00	1.00
Sous Chef	1.00	1.00	1.00
NUTRITION Total	7.25	7.25	7.75
TRASH RATE STABILIZATION FUND			
Street Sweeper Operator	2.00	2.00	2.00
TRASH RATE STABILIZATION FUND Total	2.00	2.00	2.00

REIMBURSABLE GRANTS CITYWIDE

* Starting in FY2022 Hourly/Non-benefited positions are no longer included in FTE count. Budgets for hourly positions can be found in the individual department pages of Section III of the document.



AUTHORIZED POSITIONS

	FY 2022 Adopted	FY 2023 Adopted	FY 2024 Preliminary
Firefighter	5.00	5.00	5.00
REIMBURSABLE GRANTS CITYWIDE Total	5.00	5.00	5.00
GRANT-C.D.B.G.			
Academic Enrichment Prog Coord	1.00		
Community Development Manager	0.70	0.70	0.20
Community Development Spec II	1.00	0.90	0.50
Dir Of Housing & Economic Dev	0.20	0.10	
Executive Assistant IV		0.35	
GRANT-C.D.B.G. Total	2.90	2.05	0.70
PARKING AUTHORITY			
Parking Regulations Officer	3.00	3.00	3.00
PARKING AUTHORITY Total	3.00	3.00	3.00
HOUSING AUTHORITY			
Community Development Manager			0.60
Dir Of Housing & Economic Dev	0.50	0.10	0.50
Executive Assistant IV	1.00	0.25	
Executive Secretary			0.70
Housing Inspector I	1.00	1.00	1.00
HOUSING AUTHORITY Total	2.50	1.35	2.80
SECTION 8 FUND			
Dir Of Housing & Economic Dev	0.10	0.10	0.10
Executive Secretary			0.15
Housing Assistant	2.00	2.00	2.00
Housing Programs Manager	1.00	1.00	1.00
Housing Specialist	5.00	5.00	5.00
Senior Accountant			0.50
Senior Housing Specialist	1.00	1.00	1.00
SECTION 8 FUND Total	9.10	9.10	9.75
HOME FUND			
Community Development Manager	0.30	0.30	0.20
Community Development Spec II		0.10	0.50

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AUTHORIZED POSITIONS

	FY 2022 Adopted	FY 2023 Adopted	FY 2024 Preliminary
Dir Of Housing & Economic Dev		0.50	0.20
Executive Assistant IV		0.15	
Executive Secretary			0.15
Property Agent		0.25	0.25
HOME FUND Total	0.30	1.30	1.30
LOW&MOD INCOME HOUSING ASSET FUND			
Director of Housing & Economic Dev	0.20	0.20	0.20
Executive Assistant IV		0.25	
Property Agent	0.50	0.25	0.25
Senior Accountant			0.25
LOW&MOD INCOME HOUSING ASSET FUND Total	0.70	0.70	0.70
FACILITIES MAINT FUND			
Building Trades Specialist	3.00	3.00	3.00
Custodian	7.00	7.00	7.00
Facilities Maint. Supervisor	1.00	1.00	1.00
Supervising Custodian	1.00	1.00	1.00
FACILITIES MAINT FUND Total	12.00	12.00	12.00
LIABILITY INS. FUND			
Senior Office Assistant	1.00	1.00	1.00
LIABILITY INS. FUND Total	1.00	1.00	1.00
INFORMATION SYSTEMS MAINTENANC			
Information Technology Analyst	1.00		
Information Technology Manager	1.00	1.00	1.00
Information Technology Technician	2.00	2.00	2.00
Sr Info Technology Analyst			1.00
Sr It Analyst		1.00	
INFORMATION SYSTEMS MAINTENANC Total	4.00	4.00	4.00
MOTOR VEHICLE SVC FUND			
Equip. Maint. Supervisor	1.00	1.00	1.00
Equipment Mechanic	3.00	3.00	3.00
Lead Equipment Mechanic	1.00	1.00	1.00

* Starting in FY2022 Hourly/Non-benefited positions are no longer included in FTE count. Budgets for hourly positions can be found in the individual department pages of Section III of the document.



AUTHORIZED POSITIONS

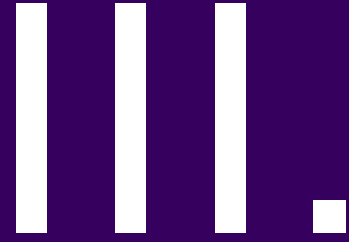
	FY 2022 Adopted	FY 2023 Adopted	FY 2024 Preliminary
MOTOR VEHICLE SVC FUND Total	5.00	5.00	5.00
Grand Total	331.00	340.50	344.00

* Starting in FY2022 Hourly/Non-benefited positions are no longer included in FTE count. Budgets for hourly positions can be found in the individual department pages of Section III of the document.



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Section



General Fund Revenue Detail vs. Expenditure

Preliminary Budget
Fiscal Year 2024



GENERAL FUND

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
001-00000-3634	MISC. REVENUE	\$7,755	\$6,262	\$10,000	\$10,000
001-00000-3000	CURRENT YEAR-SECURED	\$3,884,648	\$4,038,412	\$4,294,800	\$4,460,000
001-00000-3043	SB1186 DISABILITY ACCESS	\$18,938	\$23,071	\$6,000	\$0
001-00000-3300	INVESTMENT EARNINGS	\$505,028	\$415,584	\$150,000	\$400,000
001-00000-3302	UNREALIZED GAIN/LOSS ON INVESTM	(\$578,269)	(\$1,283,433)	\$0	\$0
001-00000-3314	RENTAL-LAND	\$607,134	\$1,047,683	\$600,000	\$900,000
001-00000-3420	STATE HOPTR	\$13,566	\$12,526	\$14,000	\$11,500
001-00000-3040	BUSINESS LICENSE TAX	\$543,960	\$624,124	\$530,000	\$624,000
001-00000-3603	LITIGATION RECOVERY PROCEEDS	\$1,642	\$10,599	\$0	\$0
001-00000-3033	REFUSE FRANCHISE	\$752,122	\$633,729	\$575,000	\$637,500
001-00000-3636	REFUNDS & REIMBURSEMENTS	\$125,834	\$91,703	\$100,000	\$90,000
001-00000-3637	DONATIONS	\$0	\$2,050,000	\$0	\$0
001-00000-3654	ADMINISTRATIVE COSTS REIMBURSE	\$245,444	\$250,000	\$230,000	\$190,000
001-00000-3698	INDIRECT/OVERHEAD COSTS RECOV	\$565,960	\$565,960	\$577,391	\$577,391
001-00000-3999	TRANSFERS FROM OTHER FUNDS	\$5,500	\$2,065,500	\$2,005,500	\$2,005,500
001-00000-3001	CURRENT YEAR-UNSECURED	\$118,807	\$105,075	\$108,000	\$128,000
001-00000-3452	MANDATED COST REIMBURSEMENT	\$147,934	\$37	\$45,000	\$32,000
001-00000-3016	AB1290 PROPERTY TAX PASS THRU P	\$653,029	\$662,474	\$650,000	\$705,993
001-00000-3002	SUPPLEMENTAL ROLL	\$174,665	\$253,633	\$170,000	\$170,000
001-00000-3003	PRIOR YEAR-SECURED & UNSECURE	\$1,208	\$2,677	\$1,500	\$1,500
001-00000-3006	INTEREST, PENALTIES & DELINQ.	\$10,724	\$7,715	\$8,000	\$8,000
001-00000-3009	PROPERTY TAXES ALLOCATED	(\$1,900,033)	(\$1,999,888)	(\$2,084,947)	(\$2,169,213)
001-00000-3010	SALES & USE TAXES	\$22,139,734	\$23,849,256	\$23,905,000	\$24,394,000
001-00000-3012	PROPERTY TAX: IN LIEU OF VLF	\$7,634,768	\$7,895,180	\$8,223,000	\$8,599,000
001-00000-3041	RESIDENTIAL RENTAL FEE	\$193,475	\$169,529	\$140,000	\$173,400
001-00000-3015	DISTRICT TRANSACTION & USE TAX	\$13,118,582	\$15,246,516	\$14,951,000	\$15,004,000
001-00000-3017	SA RESIDUAL BALANCE DISTRIBUTIO	\$3,087,411	\$2,964,320	\$2,950,000	\$3,062,000
001-00000-3018	US FISH & WILDLIFE IN LIEU OF PROP	\$1,013	\$542	\$100	\$500
001-00000-3020	TRANSIENT LODGING TAX	\$1,600,549	\$1,862,718	\$1,600,000	\$1,836,000



GENERAL FUND

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
001-00000-3030	CABLE TV FRANCHISE	\$398,810	\$347,356	\$350,000	\$350,000
001-00000-3031	ELECTRIC FRANCHISE	\$863,049	\$1,034,922	\$1,000,000	\$1,020,000
001-00000-3032	GAS FRANCHISE	\$90,455	\$115,152	\$90,000	\$90,000
001-00000-3014	PROP 172-PUBLIC SAFETY SALES TA	\$182,325	\$219,475	\$223,000	\$233,000
Total		\$55,215,767	\$63,288,409	\$61,422,344	\$63,544,071
GENERAL REVENUES Total		\$55,215,767	\$63,288,409	\$61,422,344	\$63,544,071
001-01000-3644	SPECIAL EVENTS	\$0	\$5,000	\$0	\$0
Total		\$0	\$5,000	\$0	\$0
GENERAL REVENUES Total		\$0	\$5,000	\$0	\$0
001-01729-3300	INVESTMENT EARNINGS	\$1,330,536	(\$1,230,008)	\$0	\$0
Total		\$1,330,536	(\$1,230,008)	\$0	\$0
GENERAL REVENUES Total		\$1,330,536	(\$1,230,008)	\$0	\$0
001-02000-3634	MISC. REVENUE	\$57,958	\$200	\$60,000	\$200
001-02000-3585	MISC. USER CHARGES	\$646	\$287	\$290	\$200
Total		\$58,604	\$487	\$60,290	\$400
CITY CLERK Total		\$58,604	\$487	\$60,290	\$400
001-04045-3101	ADMINISTRATIVE FEES	\$6,294	\$6,604	\$6,500	\$6,500
001-04045-3141	GARAGE SALE PERMITS	\$287	\$1,239	\$1,000	\$1,200
001-04045-3560	CANNABIS BUSINESS FEES	\$0	\$130,608	\$0	\$0
001-04045-3585	MISC. USER CHARGES	\$0	\$0	\$200	\$0
001-04045-3589	RETURNED CHECK CHARGES	\$323	\$233	\$300	\$250
Total		\$6,904	\$138,684	\$8,000	\$7,950
FINANCE Total		\$6,904	\$138,684	\$8,000	\$7,950
001-04046-3631	CASH OVER/SHORT	\$3	\$75	\$0	\$0



GENERAL FUND

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Total		\$3	\$75	\$0	\$0
FINANCE Total		\$3	\$75	\$0	\$0
001-06027-3634	MISC. REVENUE	\$2,807	\$9,500	\$1,500	\$4,600
001-06027-3521	COASTAL DEVELOPMENT PERMIT	\$0	\$7,050	\$3,350	\$2,400
001-06027-3530	APPEAL FEE	\$0	\$0	\$1,000	\$2,000
001-06027-3532	PROCESSING FEE	\$240	\$180	\$2,000	\$500
001-06027-3546	PRELIM SITE PLAN REVIEW	\$0	\$4,800	\$4,200	\$3,000
001-06027-3581	ENVIRONMENTAL ASSESSMENT FOR	\$1,800	\$2,200	\$2,200	\$1,100
001-06027-3591	GENERAL PLAN UPDATE FEE	\$0	\$225	\$3,000	\$0
001-06027-3511	TENTATIVE SUBDIVISION MAP	\$1,000	(\$5,500)	\$4,000	\$4,000
001-06027-3588	ZONING/REBUILD LETTER	\$6,472	\$13,565	\$2,400	\$4,500
001-06027-3512	ZONE CHANGE PERMIT	\$0	\$0	\$11,000	\$1,000
001-06027-3510	TENTATIVE PARCEL MAP	\$6,000	\$7,000	\$9,000	\$5,000
001-06027-3509	STREET VACATIONS	\$4,000	\$1,000	\$3,200	\$2,100
001-06027-3506	PLANNED DEVELOPMENT PERMIT	\$0	\$0	\$3,700	\$0
001-06027-3503	G.P./S.P. CHANGES	\$0	\$6,500	\$4,000	\$2,000
001-06027-3502	CONDITIONAL USE PERMIT	\$14,800	\$55,500	\$44,000	\$44,000
001-06027-3500	ANNEXATION	\$0	\$4,500	\$0	\$0
001-06027-3143	HOME OCCUPATION PERMITS	\$2,500	\$2,900	\$5,200	\$3,330
001-06027-3513	ZONE VARIANCE PERMIT	\$0	\$3,700	\$3,700	\$3,700
Total		\$39,619	\$113,120	\$107,450	\$83,230
PLANNING Total		\$39,619	\$113,120	\$107,450	\$83,230
001-06028-3552	CONST. & DEMOLITION ADMIN FEE	\$0	\$2	\$0	\$0
001-06028-3101	ADMINISTRATIVE FEES	\$47,987	\$38,473	\$30,000	\$30,000
001-06028-3120	BUILDING PERMITS	\$478,011	\$396,551	\$423,000	\$423,000
001-06028-3204	ENFORCEMENT FINES & PENALTIES	\$19,331	\$9,063	\$0	\$0
001-06028-3545	PLAN CHECKING FEE	\$358,692	\$777,773	\$500,000	\$500,000
001-06028-3585	MISC. USER CHARGES	\$571	\$403	\$0	\$0



GENERAL FUND

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Total		\$904,590	\$1,222,265	\$953,000	\$953,000
BUILDING Total		\$904,590	\$1,222,265	\$953,000	\$953,000
001-06029-3152	DUMPSTER PERMITS	\$325	\$100	\$375	\$375
001-06029-3636	REFUNDS & REIMBURSEMENTS	\$0	\$0	\$0	\$0
001-06029-3634	MISC. REVENUE	\$2,200	\$404	\$2,000	\$0
001-06029-3585	MISC. USER CHARGES	\$0	\$0	\$600	\$0
001-06029-3559	ADDRESSING	\$7,646	\$10,388	\$2,000	\$0
001-06029-3557	TRAFFIC CONTROL PLAN/IMPACT STU	\$4,146	\$3,034	\$20,000	\$20,000
001-06029-3100	LICENSES AND PERMITS	\$0	\$21,199	\$0	\$0
001-06029-3160	UTILITY COMPANY PERMITS	\$79,240	\$137,852	\$130,000	\$130,000
001-06029-3648	WITOD IMPROVEMENTS	\$1,571,291	\$177,796	\$0	\$0
001-06029-3147	MISCELLANEOUS PERMITS	\$150	\$880	\$0	\$0
001-06029-3146	PARKING DISTRICT PERMIT	\$6,347	\$6,249	\$7,000	\$7,000
001-06029-3144	HOUSE MOVING PERMITS	\$3,366	\$2,760	\$1,500	\$1,500
001-06029-3142	GRADING PERMITS	\$22,927	\$22,251	\$30,000	\$30,000
001-06029-3130	STREET & CURB PERMITS	\$698	\$0	\$500	\$500
001-06029-3125	SEWER PERMITS	\$7,552	\$27,823	\$4,000	\$4,000
001-06029-3547	STORM WATER MGT FEE (NPDES)	\$910	\$260	\$1,000	\$1,000
Total		\$1,706,798	\$410,996	\$198,975	\$194,375
ENGINEERING & PUBLIC WORKS Total		\$1,706,798	\$410,996	\$198,975	\$194,375
001-06030-3168	CROWN CASTLE	\$55,658	\$27,379	\$0	\$0
Total		\$55,658	\$27,379	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$55,658	\$27,379	\$0	\$0
001-06031-3562	INSPECTION FEE	\$73,201	\$65,215	\$0	\$0
Total		\$73,201	\$65,215	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$73,201	\$65,215	\$0	\$0



GENERAL FUND

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
001-11000-3533	BOOKING FEES	\$28,752	\$16,825	\$25,000	\$25,000
001-11000-3634	MISC. REVENUE	\$1,927	\$8,620	\$7,700	\$7,700
001-11000-3586	PHOTOCOPY SALES	\$22,944	\$24,010	\$20,000	\$20,000
001-11000-3567	POLICE REGULATED BUSINESSES FE	\$1,255	\$3,380	\$1,800	\$1,800
001-11000-3558	TOW/IMPOUND REFERRAL FEES	\$122,520	\$225,426	\$100,000	\$100,000
001-11000-3556	POLICE & FIRE SVCS - PORT OF SAN	\$712,409	\$733,781	\$736,642	\$778,468
001-11000-3551	ADMINISTRATIVE IMPOUND FEE	\$126,604	\$86,304	\$45,500	\$45,500
001-11000-3537	MISC. POLICE SERVICES	\$8,204	\$7,625	\$4,500	\$4,500
001-11000-3469	OVERTIME REIMBURSEMENTS	\$5,187	\$150,378	\$40,000	\$40,000
001-11000-3220	OTHER FORFEITS & PENALTIES	\$2,164	\$3,557	\$2,000	\$2,000
001-11000-3205	CITATION SIGN-OFF FEE	\$0	\$750	\$2,000	\$2,000
001-11000-3200	VEHICLE CODE FINES	\$73,916	\$71,147	\$69,500	\$69,500
001-11000-3100	LICENSES AND PERMITS	\$8,143	\$9,155	\$7,320	\$7,320
001-11000-3636	REFUNDS & REIMBURSEMENTS	\$3,137	\$3,807	\$2,300	\$2,300
001-11000-3550	VEHICLE IMPOUND FEES	\$4,321	\$3,389	\$4,000	\$4,000
Total		\$1,121,483	\$1,348,154	\$1,068,262	\$1,110,088
POLICE Total		\$1,121,483	\$1,348,154	\$1,068,262	\$1,110,088
001-11107-3467	SCHOOL DISTRICT CONTRACT REIMB	\$77,068	\$77,068	\$77,068	\$77,068
Total		\$77,068	\$77,068	\$77,068	\$77,068
POLICE Total		\$77,068	\$77,068	\$77,068	\$77,068
001-11108-3467	SCHOOL DISTRICT CONTRACT REIMB	\$105,000	\$105,000	\$105,000	\$105,000
Total		\$105,000	\$105,000	\$105,000	\$105,000
POLICE Total		\$105,000	\$105,000	\$105,000	\$105,000
001-11110-3550	VEHICLE IMPOUND FEES	\$18,822	\$9,986	\$20,000	\$20,000
Total		\$18,822	\$9,986	\$20,000	\$20,000



GENERAL FUND

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
POLICE Total		\$18,822	\$9,986	\$20,000	\$20,000
001-11112-3461	P.O.S.T. REIMBURSEMENT	\$23,343	\$17,567	\$20,000	\$20,000
Total		\$23,343	\$17,567	\$20,000	\$20,000
POLICE Total		\$23,343	\$17,567	\$20,000	\$20,000
001-12000-3469	OVERTIME REIMBURSEMENTS	\$934,641	\$838,356	\$723,490	\$723,490
Total		\$934,641	\$838,356	\$723,490	\$723,490
FIRE Total		\$934,641	\$838,356	\$723,490	\$723,490
001-12124-3553	FIRE PERMIT REVIEW FEE	\$13,581	\$14,477	\$14,000	\$14,000
001-12124-3561	WEED ABATEMENT	\$20,779	\$11,942	\$0	\$0
001-12124-3541	PLAN REVIEW FIRE SYSTEMS	\$75,061	\$62,149	\$57,000	\$57,000
001-12124-3122	STORAGE TANK PERMITS	\$3,635	\$2,500	\$879	\$879
Total		\$113,056	\$91,068	\$71,879	\$71,879
FIRE Total		\$113,056	\$91,068	\$71,879	\$71,879
001-12125-3322	AMR LEASE - FIRE STATION	\$89,721	\$132,142	\$98,399	\$113,936
001-12125-3544	MISC. FIRE SERVICES	\$13,784	\$13,207	\$40,000	\$40,000
001-12125-3555	FIRE PROT SVCS-LOWER SWEETWAT	\$314,590	\$338,792	\$235,530	\$235,530
001-12125-3556	POLICE & FIRE SVCS - PORT OF SAN	\$559,750	\$576,543	\$578,790	\$611,654
001-12125-3566	FIRE/LIFE SAFETY ANNUAL INSPECTI	\$388,916	\$379,473	\$463,300	\$463,300
001-12125-3636	REFUNDS & REIMBURSEMENTS	\$2,035	\$3,665	\$25,000	\$25,000
001-12125-3202	FALSE ALARM FINES	\$30,474	\$54,492	\$55,000	\$55,000
Total		\$1,399,271	\$1,498,314	\$1,496,019	\$1,544,420
FIRE Total		\$1,399,271	\$1,498,314	\$1,496,019	\$1,544,420
001-14000-3632	COMP INSURANCE REIMBURSEMENT	\$0	\$2,138	\$0	\$0
001-14000-3636	REFUNDS & REIMBURSEMENTS	\$88,808	\$45,841	\$0	\$75,000



GENERAL FUND

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Total		\$88,808	\$47,979	\$0	\$75,000
GENERAL REVENUES Total		\$88,808	\$47,979	\$0	\$75,000
001-22000-3634	MISC. REVENUE	\$420	\$3,974	\$0	\$0
Total		\$420	\$3,974	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$420	\$3,974	\$0	\$0
001-22223-3634	MISC. REVENUE	\$900	\$4,273	\$0	\$0
Total		\$900	\$4,273	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$900	\$4,273	\$0	\$0
001-41000-3598	CONTRACT CLASS RECREATION	\$6,696	\$19,729	\$33,000	\$20,000
001-41000-3637	SPONSORSHIPS AND DONATIONS	\$9,697	\$6,265	\$8,000	\$8,000
001-41000-3574	SWIMMING POOL REVENUE	\$339,139	\$160,589	\$85,000	\$340,000
001-41000-3572	RECREATION PROGRAM REVENUE	\$907	\$4,169	\$2,300	\$2,300
001-41000-3317	RENTAL-LAS PALMAS GOLF COURSE	\$36,000	\$225,388	\$98,000	\$98,000
001-41000-3312	RENT AND LEASES	\$6,215	\$1,984	\$3,000	\$5,000
001-41000-3650	CASA YOUTH FUNDRAISING	\$0	\$149	\$2,000	\$2,000
Total		\$398,654	\$418,273	\$231,300	\$475,300
RECREATION Total		\$398,654	\$418,273	\$231,300	\$475,300
001-42000-3634	MISC. REVENUE	\$0	\$11,333	\$0	\$0
Total		\$0	\$11,333	\$0	\$0
PARKS Total		\$0	\$11,333	\$0	\$0
001-43326-3463	OTHER STATE GRANTS	\$0	\$271,929	\$0	\$0
Total		\$0	\$271,929	\$0	\$0
HOUSING Total		\$0	\$271,929	\$0	\$0



GENERAL FUND

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
001-45462-3634	MISC. REVENUE	\$0	\$0	\$0	\$150,690
001-45462-3636	REFUNDS & REIMBURSEMENTS	\$0	\$7	\$0	\$0
Total		\$0	\$7	\$0	\$150,690
HOUSING Total		\$0	\$7	\$0	\$150,690
category					
001-45464-3585	MISC. USER CHARGES	\$15,077	\$18,165	\$16,000	\$16,000
001-45464-3201	PARKING CITATIONS	\$370,859	\$0	\$0	\$0
001-45464-3206	RV PERMITS	\$378	\$364	\$500	\$500
Total		\$386,314	\$18,529	\$16,500	\$16,500
NEIGHBORHOOD SERVICES Total		\$386,314	\$18,529	\$16,500	\$16,500
GENERAL FUND REVENUE Total		\$64,059,458	\$68,803,432	\$66,579,577	\$69,172,461
GENERAL FUND EXPENDITURE Total		\$62,466,829	\$59,676,481	\$66,294,667	\$67,914,372
REVENUES LESS EXPENDITURES		\$1,592,629	\$9,126,951	\$284,910	\$1,258,089

Section

IV.

Departmental Operating Budget

Preliminary Budget
Fiscal Year 2024

Preliminary Budget
Fiscal Year 2024

Mayor
&
City Council





DEPARTMENT DESCRIPTION

The City of National City's five-member City Council is comprised of four Council members and the Mayor who are the legislative and policy-making body of the City.

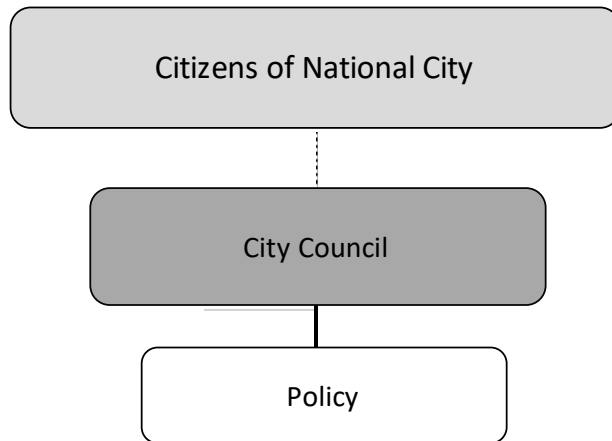
The Mayor is elected at-large and two of the four Council members were elected by District 1 and District 3 in the 2022 elections. In the 2024 elections, District 2 and 4 District will elect their Council members. Each Council member holds office for a four-year term for no more than three consecutive years. The Mayor acts as the presiding officer of the City Council, which works closely with the City Manager to ensure policies are effectively put into action. Goals and objectives of the governing body are accomplished through adoption of ordinances and policy resolutions, adoption of the City budget, approval of contracts and agreements, and review of the City's General Plan.

City Council meetings are held the first and third Tuesdays at 6 p.m. in the council chambers. Meetings are streamed live on the city's website and archived online.

GOALS & OBJECTIVES

1. Serve the best interests of all National City residents and ensure the City is a desirable place to live, work, do business, and visit by implementing the objectives set forth in the City Council's adopted Strategic Plan.
2. Engage, inform, and empower the community by improving communications and building programs that leverage the efforts of residents and businesses.
3. Attract diverse revenue generating projects, leverage financial incentives, and maximize funding sources such as grants.
4. Build the image of the City by distinguishing important community assets and marketing them to the region.

DEPARTMENT ORGANIZATIONAL CHART



SIGNIFICANT CHANGE

No significant changes anticipated



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	001 401 000				
Personnel Services					
100	PART-TIME SALARIES	\$1,805	\$12,177	\$0	\$0
101	FULL-TIME SALARIES	\$160,492	\$153,718	\$173,492	\$209,143
102	OVERTIME	\$0	\$0	\$3,000	\$3,000
110	ALLOWANCES & STIPENDS	\$25,234	\$19,449	\$21,120	\$12,185
120	DIFFERENTIAL PAY	\$1,297	\$1,161	\$1,300	\$1,300
140	WORKERS' COMPENSATION	\$5,957	\$5,558	\$5,547	\$6,487
150	HEALTH INSURANCE	\$59,600	\$51,441	\$85,960	\$87,753
160	RETIREMENT PLAN CHARGES	\$53,379	\$53,806	\$52,771	\$47,797
161	MEDICARE	\$2,754	\$2,860	\$2,516	\$3,033
199	PERSONNEL COMPENSATION	\$2,000	\$250	\$0	\$0
Personnel Services Total		\$312,517	\$300,420	\$345,706	\$370,698
Maintenance & Operations					
212	GOVERNMENTAL PURPOSES	\$6,422	\$0	\$5,100	\$5,100
212	GOVERNMENTAL PURPOSES- DISTRICT 3	\$250	\$0	\$1,050	\$1,050
212	EVENTS	\$16,334	\$6,000	\$18,000	\$18,000
212	GOV PURPOSES - MAYOR	\$1,283	\$1,221	\$1,836	\$1,836
212	GOVERNMENTAL PURPOSES- DISTRICT 1	\$35	\$164	\$1,050	\$1,050
212	GOVERNMENTAL PURPOSES-RODRIGUEZ	\$718	\$1,008	\$1,050	\$1,050
212	GOVERNMENTAL PURPOSES-BUSH	\$479	\$69	\$1,050	\$1,050
226	TRAINING, TRAVEL & SUBSISTENCE	\$0	\$0	\$1,060	\$1,060
226	TRAINING-DISTRICT 3	\$0	\$2,937	\$2,000	\$2,000
226	TRAINING-MAYOR	\$50	\$2,000	\$2,000	\$2,000
226	TRAINING- DISTRICT 1	\$50	\$0	\$2,000	\$2,000
226	TRAINING-RODRIGUEZ	\$0	\$195	\$2,000	\$2,000
226	TRAINING-BUSH	\$0	\$1,003	\$2,000	\$2,000
307	DUPLICATING SUPPLIES	\$0	\$140	\$140	\$140
399	MATERIALS & SUPPLIES	\$0	\$944	\$2,840	\$2,840
Maintenance & Operations Total		\$25,621	\$15,681	\$43,176	\$43,176
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$54,734	\$49,600	\$54,628	\$56,375



CITY COUNCIL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
755	INFO. SYSTEMS MAINT. CHARGE	\$52,392	\$51,493	\$57,575	\$66,383
790	INSURANCE CHARGES	\$6,431	\$6,431	\$6,431	\$7,301
Internal Service Charges and Reserves Total		\$113,557	\$107,524	\$118,634	\$130,060
OPERATIONS Total		\$451,695	\$423,625	\$507,516	\$543,933
CITY COUNCIL Total		\$451,695	\$423,625	\$507,516	\$543,933
GENERAL FUND Total		\$451,695	\$423,625	\$507,516	\$543,933

Preliminary Budget Fiscal Year 2024

City Clerk





DEPARTMENT DESCRIPTION

The City Clerk of the City of National City is responsible for producing City Council Meeting documents including Agenda, Reports, Minutes, Resolutions and Ordinances and is the Parliamentarian for City Council Meetings. The City Clerk serves as a liaison between the public and the City Council.

The Office of the City Clerk serves as the impartial link between City government and those it serves, providing access to public records, and publishing legal noticing as required by law.

Serving as the City's Election Official, it is the responsibility of the City Clerk to plan and conduct the City's elections in accordance with all applicable local, state and federal laws. The Elections Official issues, reviews, and accepts nomination petitions, processes initiative, referendum and City Measures for placement on the ballot. In addition, serves as the campaign filing acceptance officer receiving, reviewing, and maintaining campaign financial disclosures submitted by candidates and committees that receive and spend campaign related funds as well as Statements of Economic Interest from approximately 150 designated filers.

The City Clerk's Office serves as the public records manager, receives public records requests, and oversees the City-wide records management program including records storage, retention schedule and destruction; Certifying City documents, maintains the Municipal Code, authorized agent of the City to receive service of all legal processes. Processes all incoming mail for the City, and manages the boards, commissions and committees application and appointment process.

GOALS & OBJECTIVES

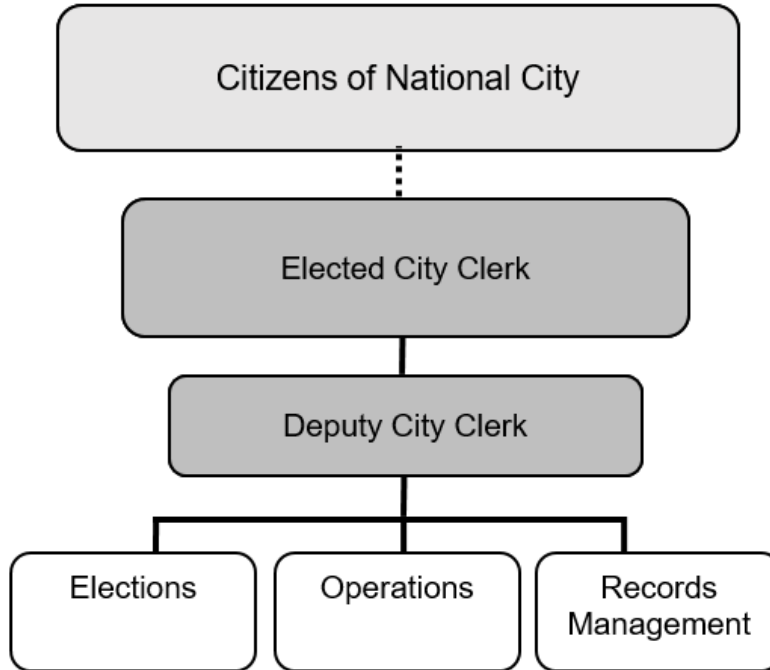
- Continue evaluating current processes for efficiencies and streamlining when applicable.
- Automate the Boards/Commission/Committee application process by providing a public portal for processes.
- Update the City-Wide Records Management Program including the Records Retention Schedule.
- Increase the quantity of documents made available on the City website for public access and transparency.



PRODUCTIVITY/WORKLOAD STATISTICS

	FY 21 Actual	FY 22 Actual	FY 23 Estimated	FY 24 Projected
City Council Meetings:				
Number of City Council / Agency Meetings	56	51	35	35
Requests for records/documents (PRAs)	449	537	400	300
City Council/CDC Resolutions	201	211	200	200
Ordinance processed	7	12	10	10
Meeting minutes sets - prepared	56	51	50	50
Contracts processed, filed, & distributed	92	136	100	100
Incoming mail counted/processed	15,674	8,876	8,000	8,000
Economic Interest Form 700s received	155	153	150	150
Candidate processing	0	6	0	6
Campaign Filings – documents received	60	31	20	60
Initiatives/Referendums/Measures	0	1/0/2	0	1
Oaths administered	135	142	100	100
Claims / Subpoenas/Summons Processed	101	59/33/8	25/25/5	25/25/2
Appointments for Boards, Commissions, Committees	63	18	20	20
Processed Written Comments for City Council Meetings	223	239	200	200

DEPARTMENT ORGANIZATIONAL CHART



SIGNIFICANT CHANGES

Elected City Clerk – Now Appointed City Clerk
Add Executive Secretary



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
001-02000-3634	MISC. REVENUE	\$57,958	\$200	\$60,000	\$200
001-02000-3585	MISC. USER CHARGES	\$646	\$287	\$290	\$200
Total		\$58,604	\$487	\$60,290	\$400
CITY CLERK Total		\$58,604	\$487	\$60,290	\$400
GENERAL FUND Total		\$58,604	\$487	\$60,290	\$400



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	001 402 000				
Personnel Services					
100	PART-TIME SALARIES	\$0	\$0	\$20,000	\$20,600
101	FULL-TIME SALARIES	\$17,149	\$119,576	\$161,417	\$197,476
102	OVERTIME	\$0	\$651	\$500	\$500
120	DIFFERENTIAL PAY	\$0	\$0	\$0	\$0
140	WORKERS' COMPENSATION	\$676	\$1,235	\$1,582	\$1,935
150	HEALTH INSURANCE	\$18,667	\$20,421	\$26,795	\$25,240
151	LTD INSURANCE	\$0	\$597	\$731	\$731
160	RETIREMENT PLAN CHARGES	\$8,255	\$45,625	\$49,098	\$45,131
161	MEDICARE	\$317	\$1,712	\$2,341	\$2,863
199	PERSONNEL COMPENSATION	\$16,662	\$1,524	\$0	\$0
Personnel Services Total		\$61,726	\$191,341	\$262,464	\$294,477
Maintenance & Operations					
212	GOVERNMENTAL PURPOSES	\$1,024	\$380	\$100	\$100
213	PROFESSIONAL SERVICES	\$35,024	\$67,281	\$43,000	\$43,000
222	MEMBERSHIPS & SUBSCRIPTIONS	\$135	\$124	\$800	\$800
226	TRAINING, TRAVEL & SUBSISTENCE	\$150	\$2,128	\$7,465	\$11,365
230	PRINTING & BINDING	\$42	\$0	\$200	\$200
250	POSTAGE	\$0	\$0	\$3,000	\$3,000
260	ADVERTISING	\$5,012	\$12,608	\$10,000	\$10,000
399	MATERIALS & SUPPLIES	\$215	\$1,142	\$2,060	\$2,100
Maintenance & Operations Total		\$41,601	\$83,663	\$66,625	\$70,565
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$18,245	\$16,534	\$18,210	\$18,792
755	INFO. SYSTEMS MAINT. CHARGE	\$25,092	\$24,661	\$27,574	\$31,793
790	INSURANCE CHARGES	\$2,980	\$2,980	\$2,980	\$3,383
Internal Service Charges and Reserves Total		\$46,317	\$44,175	\$48,764	\$53,968
OPERATIONS Total		\$149,644	\$319,179	\$377,853	\$419,010



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	ELECTED				
Activity No.	001 402 013				
Personnel Services					
101	FULL-TIME SALARIES	\$0	\$10,748	\$11,028	\$11,028
140	WORKERS' COMPENSATION	\$0	\$873	\$489	\$489
150	HEALTH INSURANCE	\$0	\$9,058	\$14,400	\$14,400
160	RETIREMENT PLAN CHARGES	\$0	\$3,701	\$3,354	\$2,520
161	MEDICARE	\$0	\$286	\$160	\$160
Personnel Services Total		\$0	\$24,666	\$29,431	\$28,597
Maintenance & Operations					
222	MEMBERSHIPS & SUBSCRIPTIONS	\$0	\$0	\$250	\$250
226	TRAINING, TRAVEL & SUBSISTENCE	\$0	\$850	\$2,000	\$2,000
399	MATERIALS & SUPPLIES	\$0	\$0	\$100	\$100
Maintenance & Operations Total		\$0	\$850	\$2,350	\$2,350
ELECTED Total		\$0	\$25,516	\$31,781	\$30,947
Activity	RECORDS MANAGEMENT				
Activity No.	001 402 020				
Maintenance & Operations					
212	GOVERNMENTAL PURPOSES	\$4,957	\$3,975	\$2,400	\$6,800
213	PROFESSIONAL SERVICES	(\$256)	\$1,385	\$6,000	\$6,000
268	RENTALS & LEASES	\$1,295	\$552	\$0	\$0
399	MATERIALS & SUPPLIES	\$287	\$189	\$500	\$500
Maintenance & Operations Total		\$6,283	\$6,101	\$8,900	\$13,300
RECORDS MANAGEMENT Total		\$6,283	\$6,101	\$8,900	\$13,300
Activity	ELECTIONS				
Activity No.	001 402 021				
Refunds, Contributions & Special Paymnts					
620	RETURN OF FEES	\$0	\$0	\$0	\$0
Refunds, Contributions & Special Paymnts Total		\$0	\$0	\$0	\$0



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Maintenance & Operations					
212	GOVERNMENTAL PURPOSES	\$101,408	\$0	\$185,000	\$0
Maintenance & Operations Total		\$101,408	\$0	\$185,000	\$0
ELECTIONS Total		\$101,408	\$0	\$185,000	\$0
CITY CLERK Total		\$257,335	\$350,796	\$603,534	\$463,257
GENERAL FUND Total		\$257,335	\$350,796	\$603,534	\$463,257



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Preliminary Budget
Fiscal Year 2024

City Treasurer



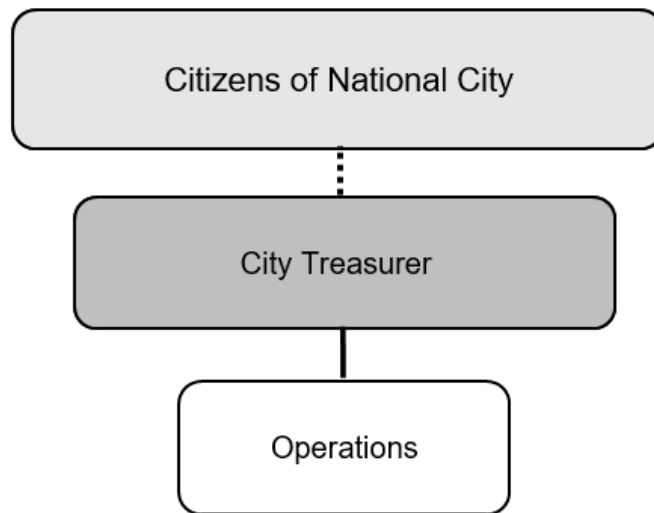
DEPARTMENT DESCRIPTION

The City Treasurer is an elected position that serves National City residents acting as the custodian of public funds under control of the City. The official duties of the City Treasurer are mandated by state law and city policies and include managing all money coming into the public trust, compliance with laws governing, depositing and securing those funds, distributing accounts payable, submitting monthly reports to the City Council and other interested parties accounting for receipts, disbursements, and balances in the City Treasury.

GOALS & OBJECTIVES

To serve the citizens of National City with honesty and transparency.

DEPARTMENT ORGANIZATIONAL CHART



SIGNIFICANT CHANGES

No significant change anticipated.



CITY TREASURER

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	001 410 000				
Personnel Services					
101	FULL-TIME SALARIES	\$11,532	\$11,069	\$11,031	\$11,031
140	WORKERS' COMPENSATION	\$213	\$195	\$108	\$108
150	HEALTH INSURANCE	\$11,281	\$9,859	\$14,400	\$14,400
160	RETIREMENT PLAN CHARGES	\$3,744	\$3,741	\$3,355	\$2,521
161	MEDICARE	\$315	\$289	\$160	\$160
Personnel Services Total		\$27,085	\$25,153	\$29,054	\$28,220
Maintenance & Operations					
222	MEMBERSHIPS & SUBSCRIPTIONS	\$0	\$140	\$250	\$250
226	TRAINING, TRAVEL & SUBSISTENCE	\$0	\$0	\$2,000	\$2,000
258	TRAVEL & SUBSISTENCE	\$0	\$345	\$700	\$700
301	OFFICE SUPPLIES	\$48	\$0	\$10	\$10
Maintenance & Operations Total		\$48	\$485	\$2,960	\$2,960
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$9,122	\$8,266	\$9,104	\$9,395
755	INFO. SYSTEMS MAINT. CHARGE	\$7,996	\$7,859	\$8,787	\$10,131
790	INSURANCE CHARGES	\$642	\$642	\$642	\$729
Internal Service Charges and Reserves Total		\$17,760	\$16,767	\$18,533	\$20,255
OPERATIONS Total		\$44,893	\$42,405	\$50,547	\$51,435
CITY TREASURER Total		\$44,893	\$42,405	\$50,547	\$51,435
GENERAL FUND Total		\$44,893	\$42,405	\$50,547	\$51,435

Preliminary Budget
Fiscal Year 2024

City Attorney





DEPARTMENT DESCRIPTION

The City Attorney's Office acts as legal counsel to multiple entities, including the City, Community Development Commission – Housing Authority, Successor Agency to the National City Redevelopment Agency ("Successor Agency"), the Parking Authority, and Joint Powers Financing Authority. The City Attorney's Office also serves as the legal advisor to the City Council, City Manager, Departments, Boards, Commissions, Committees, and other City offices, providing a full range of legal services.

These services include legal advice regarding proposed actions and the defense of civil actions filed against the City and its employees acting in the scope of employment. The issues include the exercise of police powers, land use, environmental regulations, public works, contracts, personnel and labor, economic development, and various other topics. The City Attorney's Office prepares and reviews City Council reports, legal opinions, ordinances, resolutions, contracts, agreements, leases, and other documents. The City Attorney and staff are tasked with enforcing the municipal code in civil actions and serving as prosecutor involving ordinance violations.

In general, the City Attorney's Office provides the legal services needed to establish the policy makers' programs.

RISK MANAGEMENT – GENERAL LIABILITY

The City Attorney's Office manages the City's liability program and purchases property, fidelity, and special event coverage. It's the Risk Manager's responsibility to adjust all liability claims against the City, assist the City Attorney in defending litigated claims, and handle the City's first-party property and subrogation claims, and review contracts and permits for insurance compliance. The Risk Manager serves as the City's representative to the statewide (CSAC-EIA) insurance joint power authority, which provides training, risk-sharing mechanisms, and group purchase insurance programs.

GOALS & OBJECTIVES

1. Continue to provide updates and training to City Council, City staff, City Boards, Committees, and Commissions on significant municipal law developments, including the Brown Act, the Public Records Act, Political Reform Act, and other applicable areas of the law.
2. Continue to provide timely and thorough drafting and review of legal documents, including City ordinances, resolutions, contracts, and other agreements.
3. Continue to update construction contracts to conform to evolving legal developments and provide City staff training on the updates.
4. Provide City Council the drafted significant amendments to Municipal Code Title 1.
5. Continue to provide successful and cost-effective defense of civil litigation cases.
6. Work with Department Directors to align legal support services with departmental support needs.

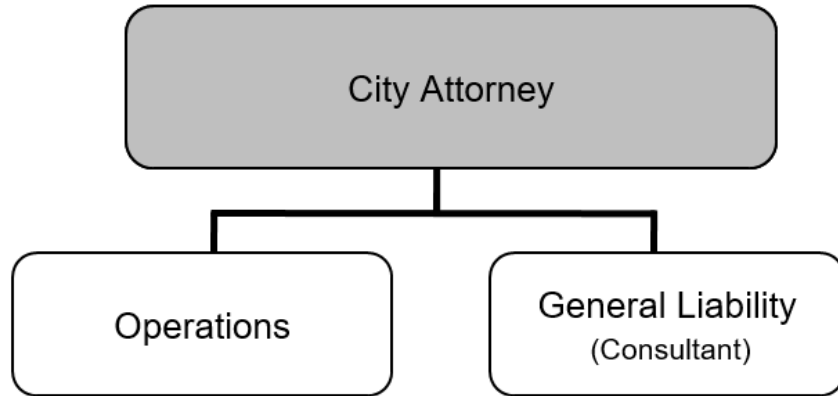


7. Provide legal support for specific upcoming planning-related matters.
8. Continue to update existing policy and provide training on recent developments under the Public Records Act in response to the California Supreme Court's San Jose decision.
9. Continue to work with the Finance, Police and Planning Departments to prepare new ordinances regulating the establishment and operation of various businesses in the City.
10. Continue to work with Police, Fire, Neighborhood Services, and Building Departments to address vacant and other nuisance properties.
11. Continue to assist with the comprehensive review and updating of leases and of maintenance and operating agreements for the lessees and operators of City facilities.
12. Administer the City's program of self-insurance for liability claims and suits.
13. Consistent with City Council Policy 1001, interpret and advise the Risk Manager on the Government Claims Act, as well as provide legal analysis in crafting proactive risk management policies and procedures.
14. To serve as legal counsel at City Council, City boards, committees, and commission meetings.
15. Continue to represent the City Council and staff in administrative hearings, civil litigations, and legislative matters.

PRODUCTIVITY/WORKLOAD STATISTICS

	FY 21 Actual	FY 22 Actual	FY 23 Estimated	FY 24 Projected
Resolutions	198	215	212	219
Ordinances	7	19	20	30
Requests for Legal Services	327	255	260	270
Trainings	3	3	5	5
Liability Claims Processed	61	44	52	48

DEPARTMENT ORGANIZATIONAL CHART



SIGNIFICANT CHANGES

No significant changes anticipated.



CITY ATTORNEY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	001 405 000				
Personnel Services					
100	PART-TIME SALARIES	\$0	\$5,920	\$34,570	\$35,607
101	FULL-TIME SALARIES	\$478,693	\$450,050	\$532,099	\$540,303
102	OVERTIME	\$0	\$0	\$500	\$500
110	ALLOWANCES & STIPENDS	\$8,183	\$11,835	\$9,000	\$9,000
140	WORKERS' COMPENSATION	\$7,785	\$7,251	\$5,215	\$5,295
150	HEALTH INSURANCE	\$51,982	\$54,109	\$57,160	\$58,953
151	LTD INSURANCE	\$1,763	\$1,797	\$1,463	\$1,463
160	RETIREMENT PLAN CHARGES	\$171,776	\$166,435	\$163,145	\$123,481
161	MEDICARE	\$7,987	\$6,662	\$7,715	\$7,834
199	PERSONNEL COMPENSATION	\$62,238	\$5,849	\$0	\$0
Personnel Services Total		\$790,407	\$709,908	\$810,867	\$782,436
Maintenance & Operations					
209	LEGAL SERVICES	\$0	\$0	\$100,000	\$125,000
212	GOVERNMENTAL PURPOSES	\$272	\$753	\$2,000	\$2,000
213	PROFESSIONAL SERVICES	\$101,151	\$184,440	\$25,000	\$25,000
222	MEMBERSHIPS & SUBSCRIPTIONS	\$2,055	\$6,032	\$15,000	\$15,000
226	TRAINING, TRAVEL & SUBSISTENCE	\$3,805	\$3,137	\$7,000	\$15,000
250	POSTAGE	\$0	\$0	\$50	\$50
299	CONTRACT SERVICES	\$3,350	\$3,174	\$10,000	\$10,000
301	OFFICE SUPPLIES	\$0	\$0	\$2,000	\$2,000
304	BOOKS	\$11,721	\$2,259	\$0	\$5,000
399	MATERIALS & SUPPLIES	\$2,121	\$895	\$0	\$0
Maintenance & Operations Total		\$124,475	\$200,690	\$161,050	\$199,050
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$45,612	\$41,334	\$45,524	\$46,980
755	INFO. SYSTEMS MAINT. CHARGE	\$33,087	\$32,520	\$36,360	\$41,923
790	INSURANCE CHARGES	\$9,380	\$9,380	\$9,380	\$10,649
Internal Service Charges and Reserves Total		\$88,079	\$83,234	\$91,264	\$99,552
OPERATIONS Total		\$1,002,961	\$993,832	\$1,063,181	\$1,081,038



CITY ATTORNEY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
	CITY ATTORNEY Total	\$1,002,961	\$993,832	\$1,063,181	\$1,081,038
	GENERAL FUND Total	\$1,002,961	\$993,832	\$1,063,181	\$1,081,038



CITY ATTORNEY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	RISK MANAGEMENT				
Activity No.	627 405 081				
Maintenance & Operations					
213	PROFESSIONAL SERVICES	\$158,444	\$71,780	\$160,000	\$160,000
299	CONTRACT SERVICES	\$6,167	\$4,606	\$10,000	\$10,000
399	MATERIALS & SUPPLIES	\$885	\$599	\$600	\$850
Maintenance & Operations Total		\$165,496	\$76,985	\$170,600	\$170,850
Fixed Charges & Debt Services					
410	PROPERTY INSURANCE	\$154,566	\$190,785	\$236,000	\$243,000
420	GENERAL LIABILITY INSURANCE	\$587,518	\$703,992	\$895,800	\$1,020,400
421	POLLUTION PROGRAM INSURANCE	\$0	\$0	\$27,000	\$37,200
430	FIDELITY INSURANCE	\$2,250	\$2,250	\$8,500	\$8,300
432	LIABILITY CLAIM COST	\$437,059	\$393,511	\$1,000,000	\$1,116,000
Fixed Charges & Debt Services Total		\$1,181,393	\$1,290,538	\$2,167,300	\$2,424,900
RISK MANAGEMENT Total		\$1,346,889	\$1,367,523	\$2,337,900	\$2,595,750
CITY ATTORNEY Total		\$1,346,889	\$1,367,523	\$2,337,900	\$2,595,750
LIABILITY INS. FUND Total		\$1,346,889	\$1,367,523	\$2,337,900	\$2,595,750

Preliminary Budget Fiscal Year 2024

City Manager





DEPARTMENT DESCRIPTION

The City Manager is appointed by the five-member City Council, which acts as a board of directors to the City of National City. The position acts in the way a CEO would serve a private corporation, except in a public capacity. In general, the City Manager provides the overall management, leadership and guidance regarding all City services and activities, while ensuring City Council policies are applied throughout the organization.

The City Manager is responsible for overseeing the work of all City departments and directing the fiscal accountability of the City such as planning, budget preparation, long-term capital financing, as assigned by the City Council.

A core duty of the City Manager is to ensure the needs and concerns of the community are addressed in a manner that maintains National City's quality of life. In addition, the position is focused on providing an efficient, cost-effective delivery of public services to taxpayers, citizens, visitors, business owners and developers.

Economic Development, Communications including the website and social media and the Community & Police Relations Commission are managed by the City Manager's Office.

ECONOMIC DEVELOPMENT

The goals of the Economic Development division are to collaborate and communicate, support business, promote vibrant neighborhoods, support employment and increase city revenues. Creating incentives to leverage the investment / involvement of different public and private sectors; advocate for the well-being of the community through policy creation and implementation; and tracking of economic trends to measure success and prepare for changes.

INFORMATION TECHNOLOGY SERVICES DIVISION

The Information Technology Services Division is responsible for the overall security of the City's computer systems, network and applications. That includes maintaining, managing, repairing, and overseeing of the City's information technology (IT) infrastructure (hardware and software). IT Services program staff are responsible for developing and implementing IT operational policies and standards, managing IT contracts and budgets, providing support for citywide technologies and applications, coordinating major citywide IT activities, IT procurement, and managing the network and communication systems.

GOALS & OBJECTIVES

1. Carry out the objectives set forth in the City Council's Strategic Plan
 - a. Balanced Budget and Economic Development
 - b. Communication and Outreach
 - c. Health, Environment, and Sustainability
 - d. Housing and Community Development

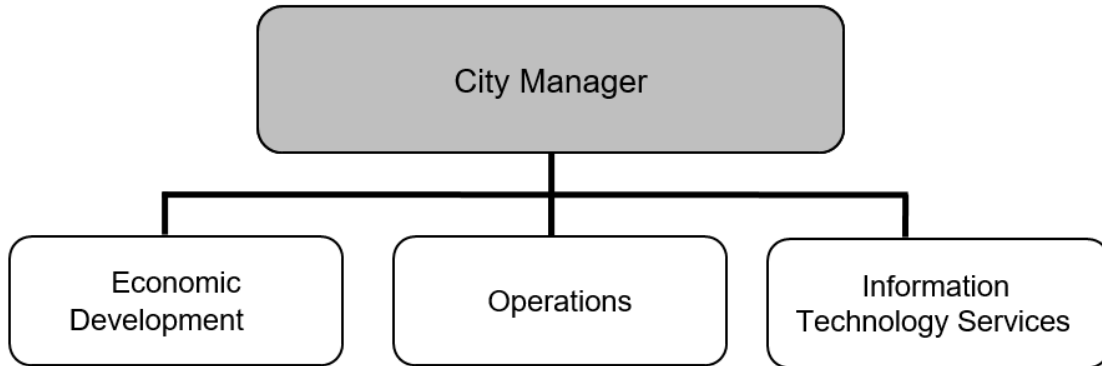


- e. Parks, Recreation and Library
 - f. Public Safety
 - g. Transportation Choices
2. Work within the County, State, and Federal legislative processes to promote laws of importance and interest to National City.
 3. Provide technologies to expand public access to City services.
 4. Implement new software and upgrade existing systems.
 5. Manage technologies to ensure a secure and reliable IT infrastructure.
 6. Disaster Recovery and Resiliency.

PRODUCTIVITY/WORKLOAD STATISTICS

	FY 21 Actual	FY 22 Actual	FY 23 Estimated	FY 24 Projected
City Council / CDC / Housing Authority / Successor Agency meeting agendas	50	50	50	50
Electronic newsletters	2	2	4	4
Subscribers to weekly e-mail updates	85	85	93	200
E-mail notifications	28,000	28,000	43,054	50,000
Facebook followers	6,500	6,500	8,100	9,000
Twitter followers	2,700	2,700	3,017	3,500
Instagram	2,000	2,000	2,410	2,800
Scheduled network uptime	99%	99%	99%	99%

DEPARTMENT ORGANIZATIONAL CHART



SIGNIFICANT CHANGES

No significant changes anticipated.



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
629-00000-3700	INTERNAL SERVICE CHARGES	\$2,468,045	\$2,425,979	\$2,712,516	\$3,127,507
629-00000-3636	REFUNDS & REIMBURSEMENTS	\$160,103	\$0	\$0	\$0
Total		\$2,628,148	\$2,425,979	\$2,712,516	\$3,127,507
INFORMATION TECHNOLOGY Total		\$2,628,148	\$2,425,979	\$2,712,516	\$3,127,507
INFORMATION SYSTEMS MAINTENANC Total		\$2,628,148	\$2,425,979	\$2,712,516	\$3,127,507



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	001 403 000				
Personnel Services					
101	FULL-TIME SALARIES	\$643,842	\$524,480	\$581,293	\$668,022
102	OVERTIME	\$368	\$0	\$500	\$500
110	ALLOWANCES & STIPENDS	\$13,904	\$12,585	\$13,800	\$9,000
120	DIFFERENTIAL PAY	\$2,067	\$2,842	\$2,600	\$2,600
140	WORKERS' COMPENSATION	\$6,902	\$5,611	\$5,697	\$6,547
150	HEALTH INSURANCE	\$76,979	\$55,449	\$69,555	\$69,793
151	LTD INSURANCE	\$2,465	\$1,433	\$731	\$731
160	RETIREMENT PLAN CHARGES	\$213,786	\$185,374	\$176,812	\$152,670
161	MEDICARE	\$10,338	\$8,637	\$8,429	\$9,686
199	PERSONNEL COMPENSATION	\$64,309	\$31,091	\$0	\$0
Personnel Services Total		\$1,034,960	\$827,502	\$859,417	\$919,549
Maintenance & Operations					
212	GOVERNMENTAL PURPOSES	\$1,010	\$1,726	\$1,100	\$1,100
213	PROFESSIONAL SERVICES	\$360	\$8,852	\$0	\$0
222	MEMBERSHIPS & SUBSCRIPTIONS	\$4,221	\$4,350	\$5,650	\$5,650
226	TRAINING, TRAVEL & SUBSISTENCE	\$1,187	\$5,992	\$7,250	\$7,250
230	PRINTING & BINDING	\$0	\$50	\$290	\$290
299	CONTRACT SERVICES	\$25,504	\$1,596	\$0	\$0
307	DUPLICATING SUPPLIES	\$328	\$535	\$1,100	\$1,100
399	MATERIALS & SUPPLIES	\$1,267	\$1,812	\$2,000	\$3,000
Maintenance & Operations Total		\$33,877	\$24,913	\$17,390	\$18,390
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$63,856	\$57,866	\$63,732	\$65,770
755	INFO. SYSTEMS MAINT. CHARGE	\$42,188	\$41,464	\$46,361	\$53,454
790	INSURANCE CHARGES	\$8,339	\$8,339	\$8,339	\$9,467
Internal Service Charges and Reserves Total		\$114,383	\$107,669	\$118,432	\$128,691
OPERATIONS Total		\$1,183,220	\$960,084	\$995,239	\$1,066,630



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	NEIGHBORHOOD COUNCIL				
Activity No.	001 403 414				
Maintenance & Operations					
264	PROMOTIONAL ACTIVITIES	\$0	\$2,236	\$0	\$8,500
399	MATERIALS & SUPPLIES	\$30	\$0	\$0	\$2,000
Maintenance & Operations Total		\$30	\$2,236	\$0	\$10,500
NEIGHBORHOOD COUNCIL Total		\$30	\$2,236	\$0	\$10,500
Activity	COMMUNITY & POLICE RELATIONS COMMITTEE				
Activity No.	001 403 415				
Maintenance & Operations					
222	MEMBERSHIPS & SUBSCRIPTIONS	\$0	\$400	\$600	\$600
226	TRAINING, TRAVEL & SUBSISTENCE	\$1,360	\$1,507	\$3,500	\$3,500
399	MATERIALS & SUPPLIES	\$0	\$0	\$100	\$100
Maintenance & Operations Total		\$1,360	\$1,907	\$4,200	\$4,200
COMMUNITY & POLICE RELATIONS COMMI		\$1,360	\$1,907	\$4,200	\$4,200
Activity	ECONOMIC DEVELOPMENT				
Activity No.	001 403 476				
Refunds, Contributions & Special Paymnts					
650	AGENCY CONTRIBUTIONS	\$0	\$12,000	\$0	\$0
Refunds, Contributions & Special Paymnts Total		\$0	\$12,000	\$0	\$0
Personnel Services					
100	PART-TIME SALARIES	\$0	\$26,404	\$91,000	\$93,730
101	FULL-TIME SALARIES	\$71,574	\$11,997	\$95,000	\$74,167
140	WORKERS' COMPENSATION	\$680	\$371	\$931	\$727
150	HEALTH INSURANCE	\$13,047	\$2,212	\$12,395	\$10,840
160	RETIREMENT PLAN CHARGES	\$24,266	\$21,306	\$30,321	\$16,950
161	MEDICARE	\$904	\$538	\$1,378	\$1,075
199	PERSONNEL COMPENSATION	\$2,000	\$426	\$0	\$0
Personnel Services Total		\$112,471	\$63,254	\$231,025	\$197,489



CITY MANAGER

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Maintenance & Operations					
226	TRAINING, TRAVEL & SUBSISTENCE	\$695	\$695	\$1,000	\$1,000
299	CONTRACT SERVICES	\$0	\$8,500	\$8,500	\$8,500
399	MATERIALS & SUPPLIES	\$0	\$0	\$1,000	\$1,000
Maintenance & Operations Total		\$695	\$9,195	\$10,500	\$10,500
ECONOMIC DEVELOPMENT Total		\$113,166	\$84,449	\$241,525	\$207,989
CITY MANAGER Total		\$1,297,776	\$1,048,676	\$1,240,964	\$1,289,320
GENERAL FUND Total		\$1,297,776	\$1,048,676	\$1,240,964	\$1,289,320



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	MIS				
Activity No.	629 403 082				
Personnel Services					
101	FULL-TIME SALARIES	\$364,882	\$313,043	\$380,007	\$407,918
102	OVERTIME	\$28,288	\$19,598	\$0	\$10,000
140	WORKERS' COMPENSATION	\$4,000	\$3,423	\$3,724	\$3,998
150	HEALTH INSURANCE	\$63,009	\$49,083	\$56,280	\$61,659
151	LTD INSURANCE	\$708	\$618	\$731	\$731
160	RETIREMENT PLAN CHARGES	\$119,778	\$113,777	\$115,587	\$93,226
161	MEDICARE	\$5,795	\$5,033	\$5,510	\$5,915
199	PERSONNEL COMPENSATION	\$19,896	\$18,895	\$12,500	\$12,500
Personnel Services Total		\$606,356	\$523,470	\$574,339	\$595,946
Maintenance & Operations					
226	TRAINING, TRAVEL & SUBSISTENCE	\$8,333	\$9,076	\$15,975	\$16,175
248	TEL & TEL & TELEGRAPH	\$285,974	\$347,392	\$374,240	\$376,000
268	RENTALS & LEASES	\$63,031	\$66,195	\$69,000	\$69,000
281	R & M - OFFICE EQUIPMENT	\$788,504	\$731,993	\$943,804	\$1,039,242
299	CONTRACT SERVICES	\$292,075	\$244,658	\$673,860	\$446,107
306	COMPUTER SUPPLIES	\$40,621	\$11,820	\$25,000	\$25,000
Maintenance & Operations Total		\$1,478,538	\$1,411,134	\$2,101,879	\$1,971,524
Internal Service Charges and Reserves					
790	INSURANCE CHARGES	\$4,287	\$4,287	\$4,287	\$4,867
Internal Service Charges and Reserves Total		\$4,287	\$4,287	\$4,287	\$4,867
Capital Outlay					
502	COMPUTER EQUIPMENT	\$136,609	\$159,820	\$414,000	\$455,750
Capital Outlay Total		\$136,609	\$159,820	\$414,000	\$455,750
MIS Total		\$2,225,791	\$2,098,711	\$3,094,505	\$3,028,087
Activity GAAP ADJUSTMENT					
Activity No. 629 403 999					
Internal Service Charges and Reserves					
720	DEPRECIATION EXPENSE	\$187,485	\$158,879	\$0	\$0



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
	Internal Service Charges and Reserves Total	\$187,485	\$158,879	\$0	\$0
	GAAP ADJUSTMENT Total	\$187,485	\$158,879	\$0	\$0
	CITY MANAGER Total	\$2,413,276	\$2,257,590	\$3,094,505	\$3,028,087
	INFORMATION SYSTEMS MAINTENANC Total	\$2,413,276	\$2,257,590	\$3,094,505	\$3,028,087



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Preliminary Budget
Fiscal Year 2024

Community Development





COMMUNITY DEVELOPMENT

DEPARTMENT DESCRIPTION

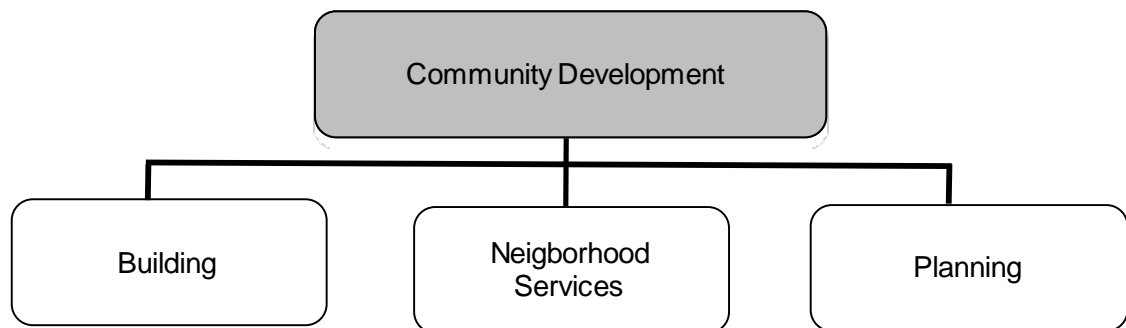
The Community Development Department plays a key role in shaping the future of urban development in National City. The department consists of three divisions; Neighborhood Services, Planning, and Building. The Planning and Building divisions develop guiding policies in the City's General Plan, and review new construction through zoning, building permits, subdivision regulations, code enforcement, and community design guidelines. The Neighborhood Services division houses the Code Enforcement Unit, Graffiti Abatement Unit, Housing Unit, Parking Regulations Unit, and Homeless Outreach and is the division in which to apply for Special Events and Temporary Use permits.

The Community Development Department serves National City residents directly at the public counter, and indirectly by guiding the City's urban form from concept to construction. The Department's primary goal is to ensure and enhance the quality of life in the community.

The Community Development Department staff provides high quality service and we pledge Commitment-Customer Service-Courtesy-Communication and Collaboration. We will:

- Listen to understand your needs
- Give clear, accurate and prompt answers to your questions
- Explain how you can achieve your goals under the City's rules
- Help resolve problems in an open, objective manner
- Maintain high ethical standards
- Work to improve our service efficiency

DEPARTMENT ORGANIZATIONAL CHART





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Preliminary Budget
Fiscal Year 2024

Building





DIVISION DESCRIPTION

The Building Division provides assistance to residents and the development community on building codes, reviews building plans, and conducts on-site inspections to ensure construction projects are safe and comply with the current adopted building codes. The Division maintains data on building permits issued throughout the City and coordinates final permits with the assessor's office to ensure accurate land use valuation for tax purposes.

GOALS AND OBJECTIVES

Strategic Goal 1 - Provide Quality Services with an Efficient Organization

- The Building Division will continue to explore ways to improve customer service at the building counter and to quickly resolve issues in the inspection process. One way is to provide the required training and certification of our Building Inspector and Permit Technicians so that they are up-to-date on current building methods, procedures and materials. On January 1, 2020 the City of National City adopted the current 2019 California Building Codes which were mandated by the State of California.
- The Building Division is an active member of the San Diego Chapter of the International Code Council. Participation in the chapter ensures staff members are updated on upcoming state mandates and regulations; and, new building products, methods and procedures. This will be especially helpful with the new Green Building Codes that may become mandatory with the new code adoption. This also provides consistency in code interpretation within the various jurisdictions that fall within the County of San Diego.
- The Building Division participates in regular Community Development staff meetings in an effort to coordinate activities between the three Divisions that will effectively reduce redundancy and streamline permit processing. The goal is to explore ways to better serve residents and the development community.

Strategic Goal 2 - Improve Quality of Life

- The Building Division is the primary enforcement department for the adopted "Construction and Demolition and Debris" regulations (Ordinance 2309). The purpose of the ordinance is to reduce the amount of construction debris that ends up in local landfills. The ordinance requires the builder to recycle 75% of inert debris and 65% of all other construction and demolition debris. This practice will allow our landfills to stay in operation longer and eliminate debris that can be recycled and reused.



- The Building Division assures that through the review of building plans, issuance of building permits, and inspection of residential/commercial projects, buildings are built safe and as per the approved plans.
- The Building Division also conducts inspections on complaints from citizens regarding construction without proper permits. Several building code violations were cited last year and owners are asked to bring their structures into compliance by obtaining a building permit if the zoning allows it in that area. These types of inspections assure that projects are constructed to the current building codes and are in compliance.

Strategic Goal 3 - Improve Housing Conditions

- In order to streamline building permit processes and assist homeowners and contractors, staff will conduct a comprehensive review of all counter handouts. The handouts will be revised to reflect current building codes and updated construction practices.
- Inspectors regularly look for non-permitted construction during routine inspection calls. If a project is found to be in violation, a stop work order is issued and the owner of the property is asked to submit plans and/or obtain a building permit to legalize the work. This practice helps to improve our housing stock in National City. We will also continue to assist and work closely with the Code Enforcement Division the Housing Division and our City Attorney’s office to as needed to achieve compliance and keep our housing stock as safe as possible.
- The City Council approved amended permit fees on May 21, 2019. Some of these amendments will assist our citizens and developers to construct their projects with the required permits and inspections, thus ensuring safer dwellings and structures.

PRODUCTIVITY/WORKLOAD STATISTICS

	FY 21 Actual	FY 22 Actual	FY 23 Estimated	FY24 Projected
Inspections	1,345	1,885	1,900	1,905
Plan Checks	1,125	916	1,100	1,125
Permits Issued	921	822	900	915

SIGNIFICANT CHANGES

No significant changes anticipated



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
001-06028-3585	MISC. USER CHARGES	\$571	\$403	\$0	\$0
001-06028-3552	CONST. & DEMOLITION ADMIN FEE	\$0	\$2	\$0	\$0
001-06028-3545	PLAN CHECKING FEE	\$358,692	\$777,773	\$500,000	\$500,000
001-06028-3204	ENFORCEMENT FINES & PENALTIES	\$19,331	\$9,063	\$0	\$0
001-06028-3120	BUILDING PERMITS	\$478,011	\$396,551	\$423,000	\$423,000
001-06028-3101	ADMINISTRATIVE FEES	\$47,987	\$38,473	\$30,000	\$30,000
Total		\$904,590	\$1,222,265	\$953,000	\$953,000
BUILDING Total		\$904,590	\$1,222,265	\$953,000	\$953,000
GENERAL FUND Total		\$904,590	\$1,222,265	\$953,000	\$953,000



BUILDING

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	BUILDING				
Activity No.	001 413 028				
Refunds, Contributions & Special Paymnts					
620	RETURN OF FEES	\$0	\$0	\$0	\$0
Refunds, Contributions & Special Paymnts Total		\$0	\$0	\$0	\$0
Personnel Services					
101	FULL-TIME SALARIES	\$185,972	\$99,630	\$298,638	\$331,501
102	OVERTIME	\$0	\$0	\$0	\$3,000
120	DIFFERENTIAL PAY	\$0	\$2,547	\$2,600	\$2,600
140	WORKERS' COMPENSATION	\$10,744	\$1,122	\$9,178	\$8,439
150	HEALTH INSURANCE	\$37,103	\$21,958	\$51,584	\$57,760
151	LTD INSURANCE	\$0	\$0	\$731	\$731
160	RETIREMENT PLAN CHARGES	\$100,767	\$70,966	\$90,837	\$75,761
161	MEDICARE	\$3,378	\$1,582	\$4,330	\$4,807
Personnel Services Total		\$337,964	\$197,805	\$457,898	\$484,599
Maintenance & Operations					
213	PROFESSIONAL SERVICES	\$593,611	\$793,192	\$600,000	\$800,000
222	MEMBERSHIPS & SUBSCRIPTIONS	\$685	\$265	\$930	\$930
226	TRAINING, TRAVEL & SUBSISTENCE	\$847	\$1,295	\$2,350	\$2,350
230	PRINTING & BINDING	\$7,000	\$1,773	\$15,000	\$15,000
304	BOOKS	\$0	\$0	\$500	\$1,000
399	MATERIALS & SUPPLIES	\$1,344	\$2,953	\$3,000	\$4,500
Maintenance & Operations Total		\$603,487	\$799,478	\$621,780	\$823,780
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$36,489	\$33,066	\$36,418	\$37,583
750	VEHICLE SERVICES CHARGES	\$1,927	\$2,042	\$2,354	\$2,781
752	VEHICLE LEASE CHARGE	\$4,000	\$4,000	\$4,000	\$4,000
755	INFO. SYSTEMS MAINT. CHARGE	\$45,501	\$44,720	\$50,002	\$57,652
790	INSURANCE CHARGES	\$5,123	\$5,123	\$5,123	\$5,816
Internal Service Charges and Reserves Total		\$93,040	\$88,951	\$97,897	\$107,832
BUILDING Total		\$1,034,491	\$1,086,234	\$1,177,575	\$1,416,211



BUILDING

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
	BUILDING & SAFETY Total	\$1,034,491	\$1,086,234	\$1,177,575	\$1,416,211
	GENERAL FUND Total	\$1,034,491	\$1,086,234	\$1,177,575	\$1,416,211



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Preliminary Budget
Fiscal Year 2024

Neighborhood Services





DIVISION DESCRIPTION

The Neighborhood Services Division houses the Code Enforcement Unit, Graffiti Abatement Unit, Housing Inspection Unit, Parking Regulations Unit, and Homeless Outreach and is the division in which to apply for Special Events and Temporary Use permits.

Code Enforcement tackles quality of life issues, such as property appearance, land use, and zoning, and enforces the City's Municipal Code relating to these areas. The Code Conformance Officers also work with the Housing Inspector that deals with housing quality issues related to violations of the Health & Safety Code.

The Graffiti Abatement Unit removes graffiti on our public rights-of-way and private property.

The Parking Regulations Unit is responsible for the enforcement of local ordinances and California Vehicle Code regulations related to the parking of vehicles. Our Parking Unit also responds to service calls related to abandoned vehicles and works special traffic enforcement details.

The Housing Inspector performs inspections of habitability to ensure that all residents are living in safe, sanitary environments and assist code enforcement staff with field inspections.

The Division addresses local homelessness issues as a part of Homeless Outreach and plans to initiate the City's first Homeless Outreach and Mobile Engagement (HOME) Team in FY 2023. . The Code Enforcement Unit, along with other City departments including Housing, Grants, and Asset Management; Public Works; and, Police, work to address issues related to homelessness. This unit is responsible for conducting encampment cleanups, service outreach/referrals, and collaboration with other service organizations to decrease homelessness in National City.

The Neighborhood Services Division also processes Temporary Use Permits (TUP) used for special activities, events, or structures that are beneficial to the public for limited periods of time with coordination of temporary compliance with building, fire, zoning, and other local codes.

GOALS & OBJECTIVES

1. Customer Service:
 - a. Efforts to increase community responsiveness, engagement & public outreach.
2. Improve Quality of Life:
 - a. Implementing Neighborhood Action Plans, the Together We Can Campaign, and continue amortization efforts by working with residents/community.
3. Enhancing Neighborhood Service Programs:
 - a. In addition to full-time staff, two part-time Code Conformance officers and one Housing Inspector provide six day a week City-wide coverage and proactive enforcement efforts.
 - b. Neighborhood Preservation clean-ups and Homeless Outreach Program with the Alpha Project and McAlister Institute.
4. Advancing Field Technology:
 - a. Implementing computer software technology for field reporting via CityWorks and tracking of complaints.
 - b. Online and future capabilities with smartphone reporting for code officers; and,
 - c. Enhanced parking enforcement technology using LPR-Camera Systems, digital-chalking, and smartphone handhelds for field officers.



- d. Study and evaluation of Parking Meter Technology and other enhancements to Title 11, the City’s Parking Ordinance, to be implemented in FY 2023.
- 5. Collaboration on City Ordinance and Policy:
 - a. Constant review and development of policy with ordinance changes reflective of state and local codes.

PRODUCTIVITY/WORKLOAD STATISTICS

	FY 21 Actual	FY 22 Actual	FY 23 Estimated	FY 24 Projected
Graffiti removal incidents	5,931	6,309	6,500	6,750
Parking citations issued	4,955	8,672	9,000	9,250
Code conformance/Housing cases	529	611	650	675

SIGNIFICANT CHANGES

No significant changes anticipated.



NEIGHBORHOOD SERVICES

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
001-45464-3585	MISC. USER CHARGES	\$15,077	\$18,165	\$16,000	\$16,000
001-45464-3206	RV PERMITS	\$378	\$364	\$500	\$500
001-45464-3201	PARKING CITATIONS	\$370,859	\$0	\$0	\$0
Total		\$386,314	\$18,529	\$16,500	\$16,500
NEIGHBORHOOD SERVICES Total		\$386,314	\$18,529	\$16,500	\$16,500
GENERAL FUND Total		\$386,314	\$18,529	\$16,500	\$16,500



NEIGHBORHOOD SERVICES

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
420-00000-3999	TRANSFERS FROM OTHER FUNDS	\$0	\$19,457	\$0	\$0
Total		\$0	\$19,457	\$0	\$0
NEIGHBORHOOD SERVICES Total		\$0	\$19,457	\$0	\$0
420-45464-3203	PARKING CITATION ADMIN FEE	\$0	\$1,146	\$2,500	\$2,500
420-45464-3201	PARKING CITATIONS	\$0	\$315,771	\$263,000	\$357,048
Total		\$0	\$316,917	\$265,500	\$359,548
NEIGHBORHOOD SERVICES Total		\$0	\$316,917	\$265,500	\$359,548
PARKING AUTHORITY Total		\$0	\$336,374	\$265,500	\$359,548



NEIGHBORHOOD SERVICES

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	NEIGHBORHOOD SERVICES				
Activity No.	001 420 057				
Personnel Services					
100	PART-TIME SALARIES	\$55,713	\$42,380	\$51,000	\$52,530
101	FULL-TIME SALARIES	\$468,177	\$447,688	\$602,789	\$841,490
102	OVERTIME	\$2,677	\$4,361	\$7,000	\$7,000
110	ALLOWANCES & STIPENDS	\$4,276	\$3,508	\$4,274	\$4,213
120	DIFFERENTIAL PAY	\$9,873	\$9,894	\$9,768	\$9,768
140	WORKERS' COMPENSATION	\$39,005	\$36,202	\$18,516	\$25,889
150	HEALTH INSURANCE	\$100,917	\$92,856	\$103,169	\$122,640
151	LTD INSURANCE	\$708	\$562	\$731	\$2,194
160	RETIREMENT PLAN CHARGES	\$184,057	\$156,690	\$183,350	\$192,314
161	MEDICARE	\$7,582	\$7,797	\$8,740	\$12,202
199	PERSONNEL COMPENSATION	\$17,137	\$12,324	\$0	\$0
Personnel Services Total		\$890,123	\$814,262	\$989,337	\$1,270,240
Maintenance & Operations					
211	LAUNDRY & CLEANING SERVICES	\$0	\$0	\$0	\$1,000
212	GOVERNMENTAL PURPOSES	\$23	\$97	\$350	\$550
222	MEMBERSHIPS & SUBSCRIPTIONS	\$475	\$285	\$550	\$1,000
226	TRAINING, TRAVEL & SUBSISTENCE	(\$528)	\$6,164	\$6,500	\$8,000
299	CONTRACT SERVICES	\$1,620	\$1,641	\$2,000	\$2,000
301	OFFICE SUPPLIES	\$1,267	\$1,126	\$1,500	\$1,500
318	WEARING APPAREL	\$1,711	\$2,553	\$2,100	\$6,500
329	PAINTING SUPPLIES	\$14,641	\$13,092	\$14,000	\$14,000
399	MATERIALS & SUPPLIES	\$811	\$480	\$2,000	\$2,000
Maintenance & Operations Total		\$20,020	\$25,438	\$29,000	\$36,550
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$27,367	\$24,800	\$27,314	\$28,188
750	VEHICLE SERVICES CHARGES	\$26,288	\$27,855	\$32,116	\$37,948
752	VEHICLE LEASE CHARGE	\$33,759	\$38,080	\$38,080	\$38,080
755	INFO. SYSTEMS MAINT. CHARGE	\$79,121	\$77,762	\$86,948	\$100,250
790	INSURANCE CHARGES	\$7,214	\$7,214	\$7,214	\$8,190
Internal Service Charges and Reserves Total		\$173,749	\$175,711	\$191,672	\$212,655



NEIGHBORHOOD SERVICES

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
NEIGHBORHOOD SERVICES Total		\$1,083,892	\$1,015,411	\$1,210,009	\$1,519,445
Activity	PARKING ENFORCEMENT				
Activity No.	001 420 137				
Personnel Services					
101	FULL-TIME SALARIES	\$125,181	\$5,764	\$0	\$0
110	ALLOWANCES & STIPENDS	\$1,254	\$36	\$0	\$0
120	DIFFERENTIAL PAY	\$1,840	\$89	\$0	\$0
140	WORKERS' COMPENSATION	\$9,029	\$310	\$0	\$0
150	HEALTH INSURANCE	\$30,695	\$1,358	\$0	\$0
160	RETIREMENT PLAN CHARGES	\$46,734	\$718	\$0	\$0
161	MEDICARE	\$2,034	\$81	\$0	\$0
Personnel Services Total		\$216,767	\$8,356	\$0	\$0
PARKING ENFORCEMENT Total		\$216,767	\$8,356	\$0	\$0
Activity	NEIGHBORHOOD PRESERVATION				
Activity No.	001 420 473				
Maintenance & Operations					
399	MATERIALS & SUPPLIES	\$25	\$2,531	\$36,000	\$36,000
Maintenance & Operations Total		\$25	\$2,531	\$36,000	\$36,000
NEIGHBORHOOD PRESERVATION Total		\$25	\$2,531	\$36,000	\$36,000
NEIGHBORHOOD SERVICES Total		\$1,300,684	\$1,026,298	\$1,246,009	\$1,555,445
GENERAL FUND Total		\$1,300,684	\$1,026,298	\$1,246,009	\$1,555,445



NEIGHBORHOOD SERVICES

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	HOUSING INSPECTION PROGRAM				
Activity No.	301 420 467				
Maintenance & Operations					
226	TRAINING, TRAVEL & SUBSISTENCE	\$1,485	\$2,361	\$0	\$0
270	PERMITS & LICENSES	\$0	\$63	\$0	\$0
301	OFFICE SUPPLIES	\$44	\$122	\$0	\$0
399	MATERIALS & SUPPLIES	\$15,804	\$3,000	\$0	\$0
Maintenance & Operations Total		\$17,334	\$5,546	\$0	\$0
HOUSING INSPECTION PROGRAM Total		\$17,334	\$5,546	\$0	\$0
NEIGHBORHOOD SERVICES Total		\$17,334	\$5,546	\$0	\$0
GRANT-C.D.B.G. Total		\$17,334	\$5,546	\$0	\$0



NEIGHBORHOOD SERVICES

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	PARKING ENFORCEMENT				
Activity No.	420 420 137				
Personnel Services					
101	FULL-TIME SALARIES	\$0	\$138,585	\$163,930	\$178,046
102	OVERTIME	\$0	\$1,782	\$0	\$3,000
110	ALLOWANCES & STIPENDS	\$0	\$1,150	\$1,256	\$1,322
120	DIFFERENTIAL PAY	\$0	\$1,624	\$1,300	\$1,300
140	WORKERS' COMPENSATION	\$0	\$9,589	\$7,262	\$7,887
150	HEALTH INSURANCE	\$0	\$31,569	\$37,184	\$32,520
160	RETIREMENT PLAN CHARGES	\$0	\$46,026	\$49,863	\$40,691
161	MEDICARE	\$0	\$2,368	\$2,377	\$2,582
199	PERSONNEL COMPENSATION	\$0	\$2,597	\$700	\$700
Personnel Services Total		\$0	\$235,290	\$263,872	\$268,047
Maintenance & Operations					
213	PROFESSIONAL SERVICES	\$0	\$0	\$0	\$80,000
226	TRAINING, TRAVEL & SUBSISTENCE	\$0	\$1,484	\$1,600	\$2,500
301	OFFICE SUPPLIES	\$0	\$1,130	\$0	\$1,500
318	WEARING APPAREL	\$0	\$1,262	\$0	\$2,500
355	MINOR EQUIPMENT- LESS THAN \$5,000.00	\$0	\$0	\$0	\$5,000
Maintenance & Operations Total		\$0	\$3,876	\$1,600	\$91,500
Capital Outlay					
515	COMMUNICATIONS EQUIPMENT	\$0	\$20,068	\$0	\$0
Capital Outlay Total		\$0	\$20,068	\$0	\$0
PARKING ENFORCEMENT Total		\$0	\$259,234	\$265,472	\$359,547
NEIGHBORHOOD SERVICES Total		\$0	\$259,234	\$265,472	\$359,547
PARKING AUTHORITY Total		\$0	\$259,234	\$265,472	\$359,547



NEIGHBORHOOD SERVICES

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	HOUSING INSPECTION PROGRAM				
Activity No.	501 420 467				
Personnel Services					
101	FULL-TIME SALARIES	\$0	\$0	\$63,558	\$71,017
120	DIFFERENTIAL PAY	\$0	\$0	\$0	\$0
140	WORKERS' COMPENSATION	\$0	\$0	\$2,816	\$3,146
150	HEALTH INSURANCE	\$0	\$0	\$12,395	\$10,840
160	RETIREMENT PLAN CHARGES	\$0	\$0	\$19,332	\$16,230
161	MEDICARE	\$0	\$0	\$922	\$1,030
Personnel Services Total		\$0	\$0	\$99,023	\$102,263
HOUSING INSPECTION PROGRAM Total		\$0	\$0	\$99,023	\$102,263
NEIGHBORHOOD SERVICES Total		\$0	\$0	\$99,023	\$102,263
HOUSING AUTHORITY Total		\$0	\$0	\$99,023	\$102,263



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Preliminary Budget Fiscal Year 2024

Planning





DIVISION DESCRIPTION

The Planning Division is responsible for guiding city development in a way that achieves a balance between the economic stability of the City, quality of life for residents and sensitivity to the environment.

In order to maintain this stability, the City must follow a carefully prepared General Plan and Zoning regulations. Specifically, this Division is in charge of reviewing land development proposals as well as ensuring compliance with local and state land use regulations such as the Local Coastal Program and California Environmental Quality Act (CEQA).

The Planning Division also provides support to the City's Planning Commission and recommends and implements changes to the land use section of the Land Use Code.

This Division is focused on two strategies to accomplish City development goals.

CURRENT PLANNING

Current Planning exists to execute the City's General Plan and is achieved through the review of specific requests for property development or use.

This area is responsible for reviewing, analyzing, evaluating and acting or recommending action on land use and development proposals; as well as permit applications that involve environmental and natural resource impact analysis, infrastructure improvement, and best management practices for projects.

Planning staff in this area assists the public with questions relating to the Land Use Code, zoning verification, business licenses, and permitting, and application processes for zoning changes.

ADVANCE PLANNING

Advance Planning considers future development of the City and includes major long-range planning efforts such as reviewing, analyzing, evaluating, and developing policies on land use, growth and development, the environment and natural resources, infrastructure and capital improvements, sustainability, and other related policies.

An example of Advance Planning is the City's General Plan, which guides community development typically for 15 to 20 years. Other examples include the Housing Element, Five-Year Strategic Plan, Downtown, Harbor and Westside Specific plans.

The Advance Planning area is also responsible for recommending revisions, amendments and new policies as necessary to the Planning Commission and/or City Council.



GOALS & OBJECTIVES

1. Continue to implement online services and explore additional technological opportunities including data and permit management.
2. Pursue an updated amortization program related to nonconforming businesses per Council policy.
3. Update the Municipal Code with regard to interim uses.
4. Implement the Balanced Plan within the Marina/Tidelands Planning Area, and update the Local Coastal Plan.
5. Amend the Municipal Code to be consistent with changing local and state housing policies.
6. Implement Energy Roadmap, and other sustainability policies, as part of Climate Action Plan implementation.
7. Continue work on a focused update to the General Plan, including the Circulation and Safety Elements, as well as update the Climate Action Plan.

PRODUCTIVITY/WORKLOAD STATISTICS

	FY 21 Actual	FY 22 Actual	FY 23 Estimated	FY 24 Projected
Conditional Use Permits	13	17	15	15
Zone Variances	0	0	1	1
Amendments	5	3	1	1
Subdivisions	6	2	3	3
Coastal Permits	0	2	1	1
Other	7	14	10	12

SIGNIFICANT CHANGES

1. Hiring of new Health and Environmental Justice Planner (Associate level) per direction from City Council.



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
001-06027-3513	ZONE VARIANCE PERMIT	\$0	\$3,700	\$3,700	\$3,700
001-06027-3500	ANNEXATION	\$0	\$4,500	\$0	\$0
001-06027-3502	CONDITIONAL USE PERMIT	\$14,800	\$55,500	\$44,000	\$44,000
001-06027-3503	G.P./S.P. CHANGES	\$0	\$6,500	\$4,000	\$2,000
001-06027-3506	PLANNED DEVELOPMENT PERMIT	\$0	\$0	\$3,700	\$0
001-06027-3509	STREET VACATIONS	\$4,000	\$1,000	\$3,200	\$2,100
001-06027-3510	TENTATIVE PARCEL MAP	\$6,000	\$7,000	\$9,000	\$5,000
001-06027-3143	HOME OCCUPATION PERMITS	\$2,500	\$2,900	\$5,200	\$3,330
001-06027-3512	ZONE CHANGE PERMIT	\$0	\$0	\$11,000	\$1,000
001-06027-3634	MISC. REVENUE	\$2,807	\$9,500	\$1,500	\$4,600
001-06027-3521	COASTAL DEVELOPMENT PERMIT	\$0	\$7,050	\$3,350	\$2,400
001-06027-3530	APPEAL FEE	\$0	\$0	\$1,000	\$2,000
001-06027-3532	PROCESSING FEE	\$240	\$180	\$2,000	\$500
001-06027-3546	PRELIM SITE PLAN REVIEW	\$0	\$4,800	\$4,200	\$3,000
001-06027-3581	ENVIRONMENTAL ASSESSMENT FOR	\$1,800	\$2,200	\$2,200	\$1,100
001-06027-3588	ZONING/REBUILD LETTER	\$6,472	\$13,565	\$2,400	\$4,500
001-06027-3591	GENERAL PLAN UPDATE FEE	\$0	\$225	\$3,000	\$0
001-06027-3511	TENTATIVE SUBDIVISION MAP	\$1,000	(\$5,500)	\$4,000	\$4,000
Total		\$39,619	\$113,120	\$107,450	\$83,230
PLANNING Total		\$39,619	\$113,120	\$107,450	\$83,230
GENERAL FUND Total		\$39,619	\$113,120	\$107,450	\$83,230



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	PLANNING				
Activity No.	001 443 055				
Personnel Services					
100	PART-TIME SALARIES	\$6,400	\$6,600	\$9,552	\$9,839
101	FULL-TIME SALARIES	\$248,990	\$142,871	\$263,251	\$329,657
102	OVERTIME	\$588	\$1,637	\$3,000	\$3,000
120	DIFFERENTIAL PAY	\$6,139	\$399	\$0	\$0
140	WORKERS' COMPENSATION	\$3,231	\$2,396	\$5,956	\$10,342
150	HEALTH INSURANCE	\$43,515	\$24,441	\$51,584	\$50,480
151	LTD INSURANCE	\$987	\$634	\$731	\$1,463
160	RETIREMENT PLAN CHARGES	\$87,704	\$72,000	\$80,431	\$75,340
161	MEDICARE	\$5,185	\$2,454	\$3,817	\$4,780
Personnel Services Total		\$402,740	\$253,432	\$418,322	\$484,901
Maintenance & Operations					
212	GOVERNMENTAL PURPOSES	\$4,199	\$0	\$2,500	\$2,500
213	PROFESSIONAL SERVICES	\$25,560	\$41,271	\$50,000	\$50,000
222	MEMBERSHIPS & SUBSCRIPTIONS	\$803	\$888	\$2,000	\$2,000
226	TRAINING, TRAVEL & SUBSISTENCE	\$1,452	\$840	\$7,000	\$7,000
250	POSTAGE	\$283	\$0	\$250	\$250
260	ADVERTISING	\$4,930	\$3,526	\$5,000	\$2,500
301	OFFICE SUPPLIES	\$0	\$0	\$0	\$1,500
399	MATERIALS & SUPPLIES	\$2,119	\$2,681	\$2,000	\$2,000
Maintenance & Operations Total		\$39,346	\$49,206	\$68,750	\$67,750
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$36,489	\$33,066	\$36,418	\$37,583
755	INFO. SYSTEMS MAINT. CHARGE	\$22,883	\$22,491	\$25,146	\$28,993
790	INSURANCE CHARGES	\$4,287	\$4,287	\$4,287	\$4,867
Internal Service Charges and Reserves Total		\$63,659	\$59,844	\$65,851	\$71,443
PLANNING Total		\$505,745	\$362,482	\$552,923	\$624,094

Activity SB2 PLANNING GRANTS PROGRAM
Activity No. 001 443 326



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Personnel Services					
101	FULL-TIME SALARIES	\$4,573	\$53,908	\$72,763	\$81,907
102	OVERTIME	\$0	\$606	\$0	\$0
120	DIFFERENTIAL PAY	\$0	\$0	\$0	\$0
140	WORKERS' COMPENSATION	\$236	\$2,623	\$3,223	\$3,628
150	HEALTH INSURANCE	\$738	\$6,629	\$12,395	\$10,840
160	RETIREMENT PLAN CHARGES	\$651	\$20,179	\$22,132	\$18,719
161	MEDICARE	\$77	\$857	\$1,055	\$1,188
Personnel Services Total		\$6,275	\$84,802	\$111,568	\$116,282
Maintenance & Operations					
213	PROFESSIONAL SERVICES	\$226,381	\$25,876	\$0	\$0
Maintenance & Operations Total		\$226,381	\$25,876	\$0	\$0
SB2 PLANNING GRANTS PROGRAM Total		\$232,656	\$110,678	\$111,568	\$116,282
PLANNING Total		\$738,401	\$473,160	\$664,491	\$740,376
GENERAL FUND Total		\$738,401	\$473,160	\$664,491	\$740,376

Preliminary Budget
Fiscal Year 2024

Engineering / Public Works





DEPARTMENT DESCRIPTION

The Department of Engineering & Public Works oversees the following core activities on behalf of the City of National City: 1) planning, design, engineering, construction and management of capital projects; 2) maintenance of City-owned facilities, parks, streets and other infrastructure; 3) environmental compliance; and 4) engineering permits, plan reviews and inspections.

ENGINEERING DIVISION

Environmental Compliance:

- Coordinates with environmental regulatory agencies, residents, local businesses, and other City departments to implement and enforce programs and best management practices (BMPs) to protect the environment.
- Oversees compliance, inspections and reporting requirements related to storm water pollution prevention; air pollution controls; wastewater discharges; Fats, Oils and Grease (FOG) and organic waste programs for local businesses; and hazardous materials (HAZMAT).
- Regulates and enforces Clean Water Act standards as prescribed by the National Pollutant Discharge Elimination System (NPDES) permit program, which controls water pollution by regulating point sources that discharge pollutants into water bodies. Examples include, 1) inspection and educational programs for local businesses, 2) preparation and enforcement of National City's Jurisdictional Urban Runoff Management Plan (JURMP) used to reduce the discharge of pollutants to water bodies (to the maximum extent practicable), and 3) preparation and enforcement of National City's Standard Urban Storm Water Mitigation Plan (SUSMP) designed to reduce pollutants and runoff flows from new development and redevelopment projects.

Capital Improvement Program (CIP):

- Manages National City's CIP, which represents a "sliding" five-year budgeting process for establishing the City's capital priorities and funding plan. The CIP addresses the repair, replacement and expansion of the City's physical infrastructure including streets, sidewalks, sewers, storm drains, street lights, traffic signals, buildings, and parks.
- Oversees planning, design, engineering, construction and management for National City's capital projects, including implementation of National City's Pavement Management Program, Sewer Master Plan, Circulation Element to the General Plan, Bicycle Master Plan, Active Transportation Plan, and Americans with Disabilities Act (ADA) Transition Plan.
- Prepares grant applications to obtain funding for capital projects.

Traffic Safety:

- Manages traffic signal timing and operations.
- Provides data collection and analysis related to traffic safety and operations, including sight distance evaluations, speed surveys and counter measures, traffic control warrants, parking surveys, and evaluation of traffic calming measures.



ENGINEERING & PUBLIC WORKS

- Prepares reports to the Traffic Safety Committee, a panel of five volunteers from the Community appointed by City Council, whose primary function is to review and make recommendations on matters related to driver, bicycle and pedestrian safety.

Engineering Permits & Inspections:

- Reviews plans and permit applications, and provides inspections for grading, utilities, traffic control, construction of retaining walls, driveways, sidewalks, curbs and gutters, pedestrian curb ramps and storm water BMPs.
- Reviews subdivision maps, plat and legal descriptions, encroachment permits, easements, grant deeds, and requests for lot line adjustments.

Records Management:

- Manages engineering records and files such as engineering permits, utility permits, engineering plans and as-builts, grading certifications, sewer maps, right of way maps, and flood plain documents.
- Provides records and maps to the public upon request.

PUBLIC WORKS DIVISION

Streets:

- Responsible for maintenance and repair of street infrastructure, including patching potholes; sidewalk repairs; street light and traffic signal maintenance; traffic signage and striping (such as crosswalks, pavement legends and curb markings); street sweeping; and traffic control.
- Provides “Quality of Life” services such as removing trash, illegal postings, shopping carts and weeds; repairing potholes and sidewalks; and clearing debris from storm drains and channels.

Wastewater:

- Responsible for maintenance of sewer mains, including flushing, rodding, repairs, raising manholes and closed circuit television inspections.
- Responsible for maintenance of pump stations, storm drains and catch basins; and responding to citizen concerns regarding sewer issues.

Equipment Maintenance:

- Provides inspections, preventative maintenance and repairs for the City’s fleet, which consists of approximately 220 vehicles and heavy equipment used to support City departments in delivering municipal services to residents, local businesses and visitors.
- Coordinates with City departments to assess vehicle and equipment needs; provides specifications, cost estimates and recommendations for repair, replacement and modernization of the City’s fleet.

Facilities Maintenance:

- Responsible for the repair, maintenance and operation of City-owned facilities.



- Provides custodial services for City-owned facilities, including set-up / clean-up for special events held at the City's community and recreation centers.

Parks:

- Responsible for landscape maintenance and irrigation of Community parks, roadway medians, bioretention / infiltration basins, and around City-owned buildings.
- Provides tree planting, trimming and removal services for City-owned trees along roadway corridors and within Community parks.

GOALS & OBJECTIVES

1. Implement project accounting software for management of capital improvement projects.
2. Emphasize Customer Service and Responsiveness
3. Perform management, inspections and reporting to ensure environmental compliance with Federal, State and Regional regulations involving storm water pollution prevention; air pollution controls; wastewater discharges; Fats, Oils and Grease (FOG) and organic waste programs for local businesses; and hazardous materials (HAZMAT).
4. Maintain Parks, Streets, Infrastructure
5. Manage City Facilities/Department Maintenance Requests
6. Modernize and Maintain Fleet
7. Implement Energy Efficiency and Decarbonization
8. Improve Traffic Systems
9. Provide opportunities for City crews to construct smaller capital projects related to sidewalk removal and replacement for compliance with the Americans with Disabilities Act (ADA), roadway signing and striping, slurry seals, and drainage improvements.
10. Update Circulation Element as part of Focused General Plan Update.
11. Update Bike Master Plan.
12. Update Sewer Master Plan.
13. Update ADA Transition Plan.
14. Update Capital Needs Assessment.
15. Continue implementation of a grid-based system for tree trimming and landscape maintenance services to provide residents a consistent schedule, with prioritization given to emergency work and calls for service related to safety.
16. Continue to provide "Quality of Life" services such as removing trash, illegal postings, shopping carts and weeds; repairing potholes and sidewalks; and clearing debris from storm drains and channels.
17. Complete construction of the following capital projects in fiscal year 2023:
 - Paradise Creek Improvements at Kimball (19-35)



ENGINEERING & PUBLIC WORKS

- El Toyon Las Palmas Bicycle Corridor (19-02)
 - National City Blvd Inter-City Bike Connections;
 - Safe Routes to School (19-04)
 - City Hall Electrical Room Upgrades (20-03)
 - Camacho Gym AC Units and Control Upgrades (20-07)
 - Street Resurfacing FY 22 (22-19) – Per Pavement Management Program (PMP);
 - Communications Infrastructure Expansion / Public Safety Cameras;
 - Paradise Creek Park Expansion (19-33)
 - Sewer Replacement / Upsizing FY22 (20-01)
 - Fire Arms Training Range (20-04)
 - Police Department Records Management Center (22-03)
 - Parking Deck Waterproofing (22-04)
18. Continue implementation of Citywide Safe Routes to School Education and Encouragement Sustainability Program, including partnerships with the school districts, local schools, parents, teachers, non-profit organizations, National City Police Department, and volunteers.
19. Continue implementation of community-based Active Transportation programs and projects.
20. Continue public outreach for capital projects through workshops, presentations, community events, and management of the [CIP Projects Dashboard](#).
21. Continue to aggressively apply for competitive grants to fund capital projects with a goal of achieving a minimum of \$5 million in grant awards for fiscal year 2023.
22. Continue to review procedures for management of capital projects to ensure compliance with Federal and State regulations involving public contracting, labor laws and project accounting.

PRODUCTIVITY/WORKLOAD STATISTICS

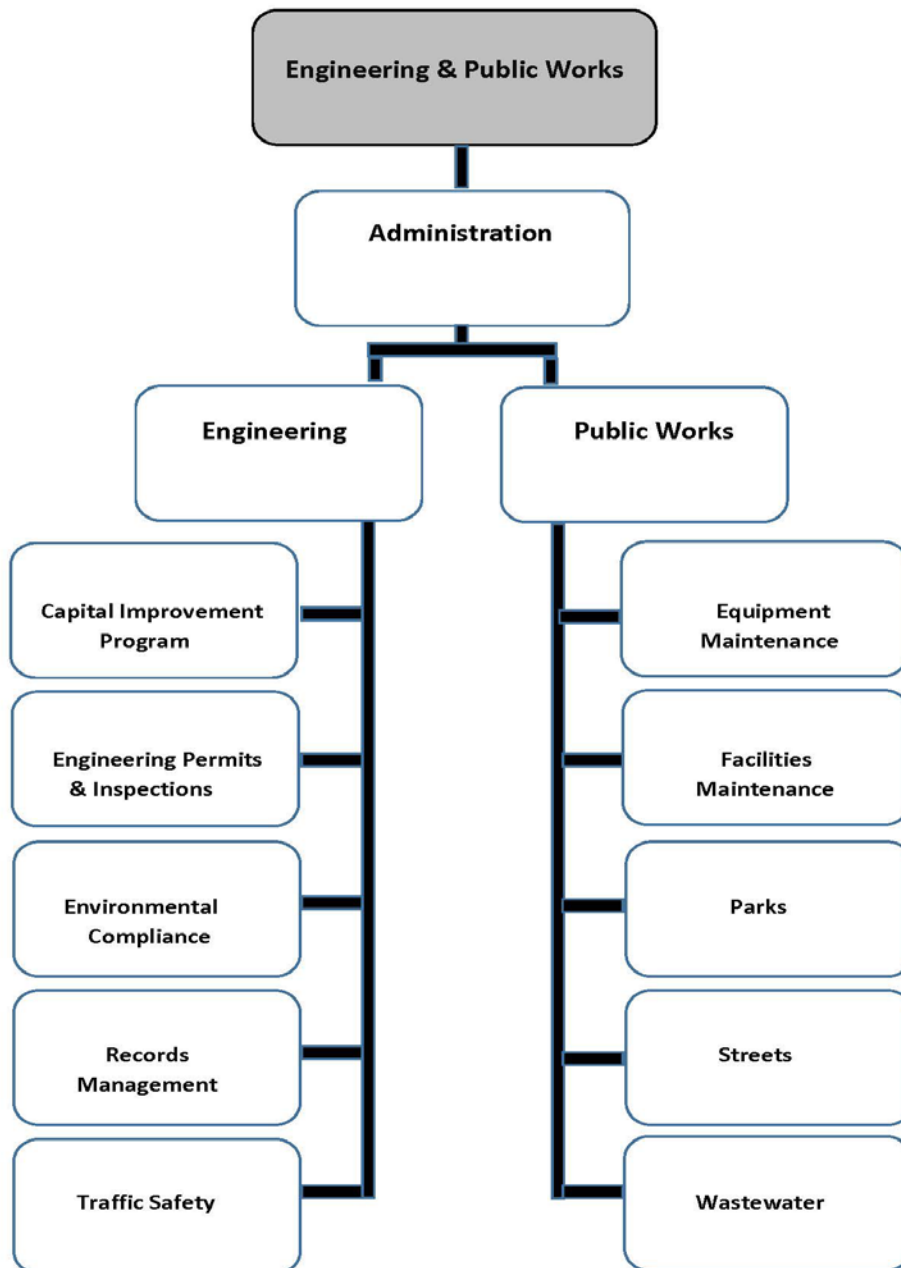
	FY 21 Actual	FY 22 Actual	FY 23 Estimated	FY 24 Projected
<i>Public Works:</i>				
Park permits issued	16	20	20	20
Jumper permits issued	0	70	80	80
Trees trimmed	2264	2500	2500	2500
Potholes repaired	775	1553	1500	1500
Sidewalks repaired	42	48	50	50
Shopping cart removals	356	321	400	400
Illegal dumping / trash removals	1014	952	1000	1000
Illegal posting removals	1096	1041	1200	1200
Misc. clean-ups (medians, parkways, sidewalks, bus stops, alleys, etc.)	1014	923	1000	1000



ENGINEERING & PUBLIC WORKS

	FY 21 Actual	FY 22 Actual	FY 22 Estimated	FY 23 Projected
Streetlights maintained	848	848	848	848
Traffic signals maintained	80	80	80	80
Traffic signs installed	191	300	300	300
Linear feet of sewers cleaned	224,400	248,729	230,000	230,000
Storm drains / catch basins cleaned	415	294	400	400
Channels Cleaned	65	41	50	50
<i>Engineering:</i>				
Annual parking permits issued	34	250	250	250
Temporary parking permits issued	92	60	100	100
Temporary RV parking permits issued	162	160	160	160
Engineering permits issued	620	600	600	600
Private development plans / maps reviewed	550	500	500	500
Engineering inspections conducted	750	800	800	800
Miles of streets resurfaced (grinding and overlay 1" thick or greater)	.5	1.1	4	4
Miles of streets slurry sealed (less than 1" thick overlay)	1	1.5	3	3
Number of items taken to Traffic Safety Committee	29	18	30	30

DEPARTMENT ORGANIZATIONAL CHART





ENGINEERING & PUBLIC WORKS

SIGNIFICANT CHANGES

No significant changes anticipated.



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
001-06029-3160	UTILITY COMPANY PERMITS	\$79,240	\$137,852	\$130,000	\$130,000
001-06029-3648	WITOD IMPROVEMENTS	\$1,571,291	\$177,796	\$0	\$0
001-06029-3636	REFUNDS & REIMBURSEMENTS	\$0	\$0	\$0	\$0
001-06029-3634	MISC. REVENUE	\$2,200	\$404	\$2,000	\$0
001-06029-3585	MISC. USER CHARGES	\$0	\$0	\$600	\$0
001-06029-3559	ADDRESSING	\$7,646	\$10,388	\$2,000	\$0
001-06029-3100	LICENSES AND PERMITS	\$0	\$21,199	\$0	\$0
001-06029-3547	STORM WATER MGT FEE (NPDES)	\$910	\$260	\$1,000	\$1,000
001-06029-3152	DUMPSTER PERMITS	\$325	\$100	\$375	\$375
001-06029-3147	MISCELLANEOUS PERMITS	\$150	\$880	\$0	\$0
001-06029-3146	PARKING DISTRICT PERMIT	\$6,347	\$6,249	\$7,000	\$7,000
001-06029-3144	HOUSE MOVING PERMITS	\$3,366	\$2,760	\$1,500	\$1,500
001-06029-3142	GRADING PERMITS	\$22,927	\$22,251	\$30,000	\$30,000
001-06029-3130	STREET & CURB PERMITS	\$698	\$0	\$500	\$500
001-06029-3125	SEWER PERMITS	\$7,552	\$27,823	\$4,000	\$4,000
001-06029-3557	TRAFFIC CONTROL PLAN/IMPACT ST	\$4,146	\$3,034	\$20,000	\$20,000
Total		\$1,706,798	\$410,996	\$198,975	\$194,375
ENGINEERING & PUBLIC WORKS Total		\$1,706,798	\$410,996	\$198,975	\$194,375
001-06030-3168	CROWN CASTLE	\$55,658	\$27,379	\$0	\$0
Total		\$55,658	\$27,379	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$55,658	\$27,379	\$0	\$0
001-06031-3562	INSPECTION FEE	\$73,201	\$65,215	\$0	\$0
Total		\$73,201	\$65,215	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$73,201	\$65,215	\$0	\$0
001-22000-3634	MISC. REVENUE	\$420	\$3,974	\$0	\$0
Total		\$420	\$3,974	\$0	\$0



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
ENGINEERING & PUBLIC WORKS Total		\$420	\$3,974	\$0	\$0
001-22223-3634	MISC. REVENUE	\$900	\$4,273	\$0	\$0
Total		\$900	\$4,273	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$900	\$4,273	\$0	\$0
GENERAL FUND Total		\$1,836,977	\$511,837	\$198,975	\$194,375



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
109-00000-3414	GAS TAX 2103	\$414,308	\$495,497	\$618,014	\$609,136
109-00000-3643	INSURANCE SETTLEMENTS	\$0	\$811	\$0	\$0
109-00000-3416	GAS TAX 2032	\$1,151,225	\$1,258,716	\$1,430,342	\$1,519,578
109-00000-3413	GAS TAX 2105	\$316,373	\$347,669	\$404,847	\$403,372
109-00000-3412	GAS TAX 2107.5	\$7,500	\$7,500	\$7,500	\$7,500
109-00000-3411	GAS TAX 2107	\$428,106	\$415,595	\$553,086	\$484,503
109-00000-3410	GAS TAX 2106	\$204,144	\$227,603	\$255,864	\$262,831
109-00000-3302	UNREALIZED GAIN/LOSS ON INVESTM	(\$21,635)	(\$22,219)	\$0	\$0
109-00000-3300	INVESTMENT EARNINGS	\$12,625	\$8,597	\$0	\$0
109-00000-3636	REFUNDS & REIMBURSEMENTS	\$41,607	\$0	\$0	\$0
Total		\$2,554,252	\$2,739,769	\$3,269,653	\$3,286,920
ENGINEERING & PUBLIC WORKS Total		\$2,554,252	\$2,739,769	\$3,269,653	\$3,286,920
GAS TAXES FUND Total		\$2,554,252	\$2,739,769	\$3,269,653	\$3,286,920



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
125-00000-3300	INVESTMENT EARNINGS	\$198,133	\$132,771	\$0	\$0
125-00000-3302	UNREALIZED GAIN/LOSS ON INVESTM	(\$194,958)	(\$407,674)	\$0	\$0
Total		\$3,174	(\$274,903)	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$3,174	(\$274,903)	\$0	\$0
125-22222-3563	SEWER SERVICE CHARGE	\$10,051,087	\$11,055,251	\$9,931,785	\$9,931,785
125-22222-3610	SEWER CONNECTION FEES	\$0	\$67,550	\$0	\$0
Total		\$10,051,087	\$11,122,801	\$9,931,785	\$9,931,785
ENGINEERING & PUBLIC WORKS Total		\$10,051,087	\$11,122,801	\$9,931,785	\$9,931,785
SEWER SERVICE FUND Total		\$10,054,261	\$10,847,898	\$9,931,785	\$9,931,785



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
172-00000-3642	RATE STABILIZATION RECEIPTS	\$50,464	\$241,445	\$215,000	\$215,000
172-00000-3463	OTHER STATE GRANTS	\$15,539	\$105,280	\$0	\$0
172-00000-3999	TRANSFERS FROM OTHER FUNDS	\$0	\$263,564	\$0	\$0
Total		\$66,003	\$610,289	\$215,000	\$215,000
ENGINEERING & PUBLIC WORKS Total		\$66,003	\$610,289	\$215,000	\$215,000
TRASH RATE STABILIZATION FUND Total		\$66,003	\$610,289	\$215,000	\$215,000



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
296-06035-3498	OTHER FEDERAL GRANTS	\$11,400	\$78,770	\$0	\$0
Total		\$11,400	\$78,770	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$11,400	\$78,770	\$0	\$0
296-06043-3498	OTHER FEDERAL GRANTS	\$158,879	\$132,477	\$0	\$0
Total		\$158,879	\$132,477	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$158,879	\$132,477	\$0	\$0
296-06044-3463	OTHER STATE GRANTS	\$0	\$86,515	\$0	\$0
Total		\$0	\$86,515	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$0	\$86,515	\$0	\$0
296-06045-3498	OTHER FEDERAL GRANTS	\$42,817	\$321,148	\$0	\$0
Total		\$42,817	\$321,148	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$42,817	\$321,148	\$0	\$0
296-06046-3498	OTHER FEDERAL GRANTS	\$11,677	\$201,783	\$0	\$0
Total		\$11,677	\$201,783	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$11,677	\$201,783	\$0	\$0
296-06047-3498	OTHER FEDERAL GRANTS	\$2,542	\$86,921	\$0	\$0
Total		\$2,542	\$86,921	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$2,542	\$86,921	\$0	\$0
296-06048-3498	OTHER FEDERAL GRANTS	\$0	\$85,897	\$0	\$0
Total		\$0	\$85,897	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$0	\$85,897	\$0	\$0



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
296-06049-3498	OTHER FEDERAL GRANTS	\$792	\$319,003	\$0	\$0
Total		\$792	\$319,003	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$792	\$319,003	\$0	\$0
296-06050-3498	OTHER FEDERAL GRANTS	\$855	\$68,200	\$0	\$0
Total		\$855	\$68,200	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$855	\$68,200	\$0	\$0
296-06166-3498	OTHER FEDERAL GRANTS	\$270	\$11,400	\$0	\$0
Total		\$270	\$11,400	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$270	\$11,400	\$0	\$0
296-06193-3463	OTHER STATE GRANTS	\$980,919	\$78,392	\$0	\$0
Total		\$980,919	\$78,392	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$980,919	\$78,392	\$0	\$0
296-06196-3498	OTHER FEDERAL GRANTS	\$113,503	\$42,411	\$0	\$0
Total		\$113,503	\$42,411	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$113,503	\$42,411	\$0	\$0
296-06198-3498	OTHER FEDERAL GRANTS	\$0	\$0	\$0	\$0
Total		\$0	\$0	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$0	\$0	\$0	\$0
296-06574-3463	OTHER STATE GRANTS	\$22,800	\$489,975	\$0	\$0
Total		\$22,800	\$489,975	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$22,800	\$489,975	\$0	\$0



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
296-06579-3463	OTHER STATE GRANTS	\$0	\$180	\$0	\$0
296-06579-3498	OTHER FEDERAL GRANTS	\$0	\$264,256	\$0	\$0
Total		\$0	\$264,436	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$0	\$264,436	\$0	\$0
296-06604-3470	COUNTY GRANTS	\$214,564	\$119,494	\$0	\$0
Total		\$214,564	\$119,494	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$214,564	\$119,494	\$0	\$0
296-06605-3470	COUNTY GRANTS	\$696,686	\$906,856	\$0	\$0
Total		\$696,686	\$906,856	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$696,686	\$906,856	\$0	\$0
296-06606-3470	COUNTY GRANTS	\$127,078	\$43,513	\$0	\$0
Total		\$127,078	\$43,513	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$127,078	\$43,513	\$0	\$0
296-06607-3498	OTHER FEDERAL GRANTS	\$18,754	\$92,070	\$0	\$0
Total		\$18,754	\$92,070	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$18,754	\$92,070	\$0	\$0
296-06610-3470	COUNTY GRANTS	\$191,665	\$8,335	\$0	\$0
Total		\$191,665	\$8,335	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$191,665	\$8,335	\$0	\$0
ENGINEERING DEPT GRANTS Total		\$2,595,200	\$3,437,596	\$0	\$0



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
307-00000-3300	INVESTMENT EARNINGS	\$6,965	\$4,216	\$0	\$0
307-00000-3302	UNREALIZED GAIN/LOSS ON INVESTM	\$322	(\$23,811)	\$0	\$0
307-00000-3466	TRANSACTIONS & USE TAX	\$975,000	\$1,462,500	\$1,784,000	\$1,849,000
Total		\$982,287	\$1,442,905	\$1,784,000	\$1,849,000
ENGINEERING & PUBLIC WORKS Total		\$982,287	\$1,442,905	\$1,784,000	\$1,849,000
PROPOSITION A" FUND Total		\$982,287	\$1,442,905	\$1,784,000	\$1,849,000



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
326-00000-3300	INVESTMENT EARNINGS	\$18,758	\$12,439	\$0	\$0
326-00000-3302	UNREALIZED GAIN/LOSS ON INVESTM	(\$15,557)	(\$36,088)	\$0	\$0
326-00000-3163	TDIF REVENUE - MF RESIDENTIAL	\$97,942	\$189,792	\$0	\$300,000
326-00000-3162	TDIF REVENUE - SF RESIDENTIAL	\$38,710	\$31,134	\$0	\$0
Total		\$139,852	\$197,277	\$0	\$300,000
ENGINEERING & PUBLIC WORKS Total		\$139,852	\$197,277	\$0	\$300,000
TRANSPORTATION IMPACT FEE FUND Total		\$139,852	\$197,277	\$0	\$300,000



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
343-00000-3302	UNREALIZED GAIN/LOSS ON INVESTM	(\$1,320)	(\$2,483)	\$0	\$0
343-00000-3300	INVESTMENT EARNINGS	\$1,484	\$854	\$0	\$0
Total		\$164	(\$1,629)	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$164	(\$1,629)	\$0	\$0
STATE-LOCAL PARTNERSHIP Total		\$164	(\$1,629)	\$0	\$0



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
626-00000-3636	REFUNDS & REIMBURSEMENTS	\$0	\$18,516	\$0	\$0
626-00000-3700	INTERNAL SERVICE CHARGES	\$3,051,503	\$2,778,412	\$3,059,638	\$3,157,492
626-00000-3999	TRANSFERS FROM OTHER FUNDS	\$0	\$0	\$48,000	\$48,000
Total		\$3,051,503	\$2,796,928	\$3,107,638	\$3,205,492
ENGINEERING & PUBLIC WORKS Total		\$3,051,503	\$2,796,928	\$3,107,638	\$3,205,492
FACILITIES MAINT FUND Total		\$3,051,503	\$2,796,928	\$3,107,638	\$3,205,492



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
643-00000-3700	INTERNAL SERVICE CHARGES	\$1,118,352	\$1,185,009	\$1,366,307	\$1,614,404
	Total	\$1,118,352	\$1,185,009	\$1,366,307	\$1,614,404
	ENGINEERING & PUBLIC WORKS Total	\$1,118,352	\$1,185,009	\$1,366,307	\$1,614,404
	MOTOR VEHICLE SVC FUND Total	\$1,118,352	\$1,185,009	\$1,366,307	\$1,614,404



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
644-00000-3700	INTERNAL SERVICE CHARGES	\$928,043	\$1,008,245	\$1,196,079	\$1,256,758
644-00000-3999	TRANSFERS FROM OTHER FUNDS	\$713,752	\$910,829	\$500,000	\$450,000
Total		\$1,641,795	\$1,919,074	\$1,696,079	\$1,706,758
ENGINEERING & PUBLIC WORKS Total		\$1,641,795	\$1,919,074	\$1,696,079	\$1,706,758
644-09752-3700	INTERNAL SERVICE CHARGES	\$209,376	\$275,000	\$322,000	\$401,000
Total		\$209,376	\$275,000	\$322,000	\$401,000
ENGINEERING & PUBLIC WORKS Total		\$209,376	\$275,000	\$322,000	\$401,000
VEHICLE REPLACEMENT RESERVE Total		\$1,851,171	\$2,194,074	\$2,018,079	\$2,107,758



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
001-42000-3634	MISC. REVENUE	\$0	\$11,333	\$0	\$0
	Total	\$0	\$11,333	\$0	\$0
	PARKS Total	\$0	\$11,333	\$0	\$0
	GENERAL FUND Total	\$0	\$11,333	\$0	\$0



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
105-00000-3999	TRANSFERS FROM OTHER FUNDS	\$579,761	\$430,963	\$838,345	\$967,800
105-00000-3420	STATE HOPTR	\$5,754	\$5,619	\$5,754	\$5,145
105-00000-3009	PROPERTY TAXES ALLOCATED	\$1,022,522	\$1,076,260	\$1,125,871	\$1,167,036
Total		\$1,608,037	\$1,512,842	\$1,969,970	\$2,139,981
PARKS Total		\$1,608,037	\$1,512,842	\$1,969,970	\$2,139,981
PARKS MAINTENANCE FUND Total		\$1,608,037	\$1,512,842	\$1,969,970	\$2,139,981



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
115-42000-3585	MISC. USER CHARGES	\$3,420	\$14,840	\$0	\$0
	Total	\$3,420	\$14,840	\$0	\$0
	PARKS Total	\$3,420	\$14,840	\$0	\$0
	PARK & REC CAPITAL OUTLAY FUND Total	\$3,420	\$14,840	\$0	\$0



ENGINEERING & PUBLIC WORKS

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
325-42000-3621	Dev Impact Fees- Parks and Rec	\$65,822	\$161,350	\$0	\$0
Total		\$65,822	\$161,350	\$0	\$0
PARKS Total		\$65,822	\$161,350	\$0	\$0
DEVELOPMENT IMPACT FEES Total		\$65,822	\$161,350	\$0	\$0



ENGINEERING & PUBLIC WORKS

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	ENGINEERING				
Activity No.	001 416 029				
Personnel Services					
101	FULL-TIME SALARIES	\$608,067	\$528,954	\$736,183	\$778,102
102	OVERTIME	\$2,037	\$5,410	\$19,500	\$19,500
110	ALLOWANCES & STIPENDS	\$3,034	\$1,813	\$2,160	\$2,160
120	DIFFERENTIAL PAY	\$8,274	\$6,639	\$7,509	\$7,509
140	WORKERS' COMPENSATION	\$22,879	\$20,671	\$38,252	\$40,173
150	HEALTH INSURANCE	\$84,698	\$68,473	\$110,605	\$100,344
151	LTD INSURANCE	\$531	\$340	\$1,024	\$1,024
160	RETIREMENT PLAN CHARGES	\$203,897	\$195,123	\$223,924	\$177,827
161	MEDICARE	\$9,313	\$8,778	\$10,675	\$11,282
199	PERSONNEL COMPENSATION	\$16,047	\$7,826	\$0	\$0
Personnel Services Total		\$958,777	\$844,027	\$1,149,832	\$1,137,922
Maintenance & Operations					
209	LEGAL SERVICES	\$0	\$0	\$25,000	\$25,000
213	PROFESSIONAL SERVICES	\$69,680	\$37,908	\$60,000	\$60,000
222	MEMBERSHIPS & SUBSCRIPTIONS	\$626	\$403	\$1,200	\$1,200
226	TRAINING, TRAVEL & SUBSISTENCE	\$3,231	\$4,321	\$8,000	\$8,000
299	CONTRACT SERVICES	\$268,914	\$265,976	\$270,000	\$270,000
307	DUPLICATING SUPPLIES	\$0	\$702	\$2,000	\$2,000
318	WEARING APPAREL	\$125	\$1,141	\$3,500	\$3,500
399	MATERIALS & SUPPLIES	\$8,156	\$12,203	\$9,000	\$9,000
Maintenance & Operations Total		\$350,732	\$322,654	\$378,700	\$378,700
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$109,468	\$99,200	\$109,257	\$112,751
750	VEHICLE SERVICES CHARGES	\$42,777	\$34,714	\$52,261	\$61,751
752	VEHICLE LEASE CHARGE	\$29,891	\$28,000	\$33,000	\$61,000
755	INFO. SYSTEMS MAINT. CHARGE	\$78,854	\$77,501	\$86,655	\$99,912
790	INSURANCE CHARGES	\$332,550	\$332,550	\$332,550	\$377,538
Internal Service Charges and Reserves Total		\$593,540	\$571,965	\$613,723	\$712,953
ENGINEERING Total		\$1,903,049	\$1,738,646	\$2,142,255	\$2,229,575



ENGINEERING & PUBLIC WORKS

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	ENVIRONMENTAL COMPLIANCE DIVISION				
Activity No.	001 416 030				
Maintenance & Operations					
299	CONTRACT SERVICES	\$406,134	\$349,429	\$614,000	\$644,000
Maintenance & Operations Total		\$406,134	\$349,429	\$614,000	\$644,000
ENVIRONMENTAL COMPLIANCE DIVISION T		\$406,134	\$349,429	\$614,000	\$644,000
Activity	PUBLIC WORKS - OPERATIONS				
Activity No.	001 416 052				
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$392,448	\$355,636	\$391,693	\$404,220
750	VEHICLE SERVICES CHARGES	\$20,032	\$31,839	\$24,473	\$28,917
755	INFO. SYSTEMS MAINT. CHARGE	\$88,486	\$86,968	\$97,240	\$112,117
790	INSURANCE CHARGES	\$12,509	\$12,509	\$12,509	\$14,201
Internal Service Charges and Reserves Total		\$513,475	\$486,952	\$525,915	\$559,455
PUBLIC WORKS - OPERATIONS Total		\$513,475	\$486,952	\$525,915	\$559,455
Activity	STREETS				
Activity No.	001 416 221				
Personnel Services					
101	FULL-TIME SALARIES	\$0	\$41,111	\$46,169	\$200,121
102	OVERTIME	\$0	\$6,117	\$0	\$0
105	LONGEVITY	\$0	\$0	\$0	\$275
120	DIFFERENTIAL PAY	\$0	\$952	\$975	\$975
140	WORKERS' COMPENSATION	\$0	\$4,363	\$14,645	\$25,721
150	HEALTH INSURANCE	\$0	\$9,256	\$9,296	\$33,387
160	RETIREMENT PLAN CHARGES	\$0	\$13,497	\$14,043	\$45,736
161	MEDICARE	\$0	\$774	\$670	\$2,902
199	PERSONNEL COMPENSATION	\$0	\$448	\$0	\$0
Personnel Services Total		\$0	\$76,518	\$85,798	\$309,116
Maintenance & Operations					
235	STREET LIGHTS & SIGNALS	\$452,438	\$394,326	\$500,000	\$500,000



ENGINEERING & PUBLIC WORKS

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Maintenance & Operations Total		\$452,438	\$394,326	\$500,000	\$500,000
Internal Service Charges and Reserves					
751	VEHICLE REPLACEMENT CHARGE	\$135,096	\$137,762	\$197,064	\$226,733
Internal Service Charges and Reserves Total		\$135,096	\$137,762	\$197,064	\$226,733
STREETS Total		\$587,534	\$608,606	\$782,862	\$1,035,849
Activity PARKS					
Activity No. 001 416 227					
Internal Service Charges and Reserves					
751	VEHICLE REPLACEMENT CHARGE	\$42,430	\$39,550	\$0	\$0
Internal Service Charges and Reserves Total		\$42,430	\$39,550	\$0	\$0
PARKS Total		\$42,430	\$39,550	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$3,452,621	\$3,223,183	\$4,065,032	\$4,468,879
GENERAL FUND Total		\$3,452,621	\$3,223,183	\$4,065,032	\$4,468,879



ENGINEERING & PUBLIC WORKS

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	PARKS				
Activity No.	105 416 227				
Personnel Services					
100	PART-TIME SALARIES	\$15,305	\$9,238	\$19,590	\$20,178
101	FULL-TIME SALARIES	\$669,392	\$560,511	\$730,319	\$782,826
102	OVERTIME	\$22,596	\$30,006	\$29,000	\$29,000
120	DIFFERENTIAL PAY	\$9,299	\$7,955	\$6,893	\$6,893
140	WORKERS' COMPENSATION	\$52,514	\$49,475	\$52,031	\$55,514
150	HEALTH INSURANCE	\$153,554	\$127,584	\$163,137	\$144,480
151	LTD INSURANCE	\$608	\$544	\$731	\$731
160	RETIREMENT PLAN CHARGES	\$226,269	\$210,843	\$222,141	\$199,019
161	MEDICARE	\$10,734	\$9,753	\$10,590	\$11,351
199	PERSONNEL COMPENSATION	\$36,358	\$6,828	\$18,000	\$18,000
Personnel Services Total		\$1,196,630	\$1,012,737	\$1,252,432	\$1,267,992
Maintenance & Operations					
226	TRAINING, TRAVEL & SUBSISTENCE	\$0	\$440	\$1,500	\$1,500
236	WATER	\$78,128	\$50,351	\$275,000	\$275,000
268	RENTALS & LEASES	\$0	\$0	\$500	\$0
299	CONTRACT SERVICES	\$87,985	\$92,005	\$100,000	\$200,000
318	WEARING APPAREL	\$9,719	\$8,664	\$13,000	\$13,000
321	PLANTING MATERIALS	\$9,298	\$6,884	\$14,000	\$14,000
331	HORTICULTURAL ITEMS	\$3,988	\$2,978	\$4,000	\$4,000
337	SMALL TOOLS	\$2,220	\$8,572	\$10,000	\$10,000
348	WATER PIPE VALVES & FITTINGS	\$9,896	\$6,583	\$7,400	\$7,400
399	MATERIALS & SUPPLIES	\$14,640	\$13,528	\$15,000	\$15,000
Maintenance & Operations Total		\$215,874	\$190,005	\$440,400	\$539,900
Internal Service Charges and Reserves					
750	VEHICLE SERVICES CHARGES	\$113,475	\$120,238	\$138,634	\$163,807
751	VEHICLE REPLACEMENT CHARGE	\$0	\$0	\$47,017	\$70,290
752	VEHICLE LEASE CHARGE	\$45,110	\$45,700	\$45,700	\$45,700
755	INFO. SYSTEMS MAINT. CHARGE	\$15,992	\$15,717	\$17,574	\$20,263
790	INSURANCE CHARGES	\$28,213	\$28,213	\$28,213	\$32,030
Internal Service Charges and Reserves Total		\$202,790	\$209,868	\$277,138	\$332,090



ENGINEERING & PUBLIC WORKS

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
	PARKS Total	\$1,615,293	\$1,412,610	\$1,969,970	\$2,139,981
	ENGINEERING & PUBLIC WORKS Total	\$1,615,293	\$1,412,610	\$1,969,970	\$2,139,981
	PARKS MAINTENANCE FUND Total	\$1,615,293	\$1,412,610	\$1,969,970	\$2,139,981



ENGINEERING & PUBLIC WORKS

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	STREETS				
Activity No.	109 416 221				
Refunds, Contributions & Special Paymnts					
698	INDIRECT/OVERHEAD COSTS	\$128,529	\$128,529	\$128,529	\$0
Refunds, Contributions & Special Paymnts Total		\$128,529	\$128,529	\$128,529	\$0
Personnel Services					
101	FULL-TIME SALARIES	\$529,318	\$441,504	\$513,541	\$246,880
102	OVERTIME	\$54,341	\$45,240	\$48,000	\$48,000
105	LONGEVITY	\$1,079	\$580	\$600	\$340
120	DIFFERENTIAL PAY	\$4,410	\$3,141	\$2,925	\$2,925
140	WORKERS' COMPENSATION	\$49,483	\$44,070	\$46,820	\$50,162
150	HEALTH INSURANCE	\$120,829	\$89,299	\$115,654	\$46,130
151	LTD INSURANCE	\$303	\$272	\$366	\$168
160	RETIREMENT PLAN CHARGES	\$149,922	\$147,575	\$156,204	\$56,422
161	MEDICARE	\$8,851	\$8,153	\$7,446	\$3,580
199	PERSONNEL COMPENSATION	\$25,023	\$2,384	\$12,000	\$12,000
Personnel Services Total		\$943,558	\$782,218	\$903,556	\$466,606
Maintenance & Operations					
211	LAUNDRY & CLEANING SERVICES	\$212	\$116	\$0	\$0
236	WATER	\$30	\$0	\$2,000	\$2,000
240	EQUIPMENT RENTAL	\$0	\$0	\$1,000	\$1,000
282	R&M AUTOMOTIVE EQUIPMENT	\$0	\$24,002	\$0	\$0
285	R&M TRAFFIC CONTROL DEVICES	\$225,506	\$440,645	\$300,000	\$400,000
289	R&M NONSTRUCTURAL ITEMS	\$4,570	\$113	\$4,000	\$4,000
318	WEARING APPAREL	\$12,231	\$9,912	\$14,000	\$14,000
337	SMALL TOOLS	\$3,274	\$2,895	\$3,500	\$3,500
340	SHOP SUPPLIES	\$1,501	\$812	\$800	\$800
346	TRAFFIC CONTROL SUPPLY	\$66,765	\$58,203	\$74,000	\$100,000
356	ROCK & SAND	\$2,379	\$1,519	\$4,800	\$4,800
360	SIDEWALK CURB & GUTTER MATER.	\$10,120	\$537	\$5,000	\$10,000
362	ROADWAY MATERIALS	\$7,391	\$14,478	\$15,000	\$20,000
399	MATERIALS & SUPPLIES	\$5,362	\$2,872	\$3,000	\$3,000
Maintenance & Operations Total		\$339,341	\$556,104	\$427,100	\$563,100



ENGINEERING & PUBLIC WORKS

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$19,319	\$17,507	\$19,281	\$19,898
750	VEHICLE SERVICES CHARGES	\$147,612	\$156,410	\$180,340	\$213,087
755	INFO. SYSTEMS MAINT. CHARGE	\$9,100	\$8,944	\$10,000	\$11,530
790	INSURANCE CHARGES	\$34,699	\$34,699	\$34,699	\$39,393
Internal Service Charges and Reserves Total		\$210,730	\$217,560	\$244,320	\$283,907
STREETS Total		\$1,622,158	\$1,684,411	\$1,703,505	\$1,313,614
ENGINEERING & PUBLIC WORKS Total		\$1,622,158	\$1,684,411	\$1,703,505	\$1,313,614
GAS TAXES FUND Total		\$1,622,158	\$1,684,411	\$1,703,505	\$1,313,614



ENGINEERING & PUBLIC WORKS

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	ENGINEERING				
Activity No.	125 416 029				
Personnel Services					
100	PART-TIME SALARIES	\$0	\$0	\$0	\$0
101	FULL-TIME SALARIES	\$188,139	\$201,627	\$307,276	\$325,524
102	OVERTIME	\$509	\$1,353	\$0	\$0
110	ALLOWANCES & STIPENDS	\$1,011	\$1,181	\$1,440	\$1,440
120	DIFFERENTIAL PAY	\$2,385	\$2,918	\$3,415	\$3,415
140	WORKERS' COMPENSATION	\$6,727	\$7,899	\$38,252	\$40,173
150	HEALTH INSURANCE	\$27,704	\$26,126	\$44,147	\$40,416
151	LTD INSURANCE	\$177	\$222	\$439	\$439
160	RETIREMENT PLAN CHARGES	\$73,223	\$76,543	\$93,463	\$74,395
161	MEDICARE	\$2,883	\$3,330	\$4,454	\$4,720
199	PERSONNEL COMPENSATION	\$4,762	\$3,354	\$2,000	\$2,000
Personnel Services Total		\$307,520	\$324,553	\$494,886	\$492,522
Maintenance & Operations					
299	CONTRACT SERVICES	\$20,927	\$30,496	\$75,000	\$85,000
Maintenance & Operations Total		\$20,927	\$30,496	\$75,000	\$85,000
ENGINEERING Total		\$328,447	\$355,049	\$569,886	\$577,522
Activity	STREETS				
Activity No.	125 416 221				
Personnel Services					
101	FULL-TIME SALARIES	\$127,394	\$113,193	\$264,187	\$440,460
102	OVERTIME	\$13,617	\$11,591	\$32,000	\$32,000
105	LONGEVITY	\$469	\$431	\$700	\$985
120	DIFFERENTIAL PAY	\$1,146	\$166	\$0	\$0
140	WORKERS' COMPENSATION	\$11,889	\$11,391	\$27,627	\$38,073
150	HEALTH INSURANCE	\$34,548	\$26,107	\$62,976	\$86,643
151	LTD INSURANCE	\$0	\$0	\$366	\$563
160	RETIREMENT PLAN CHARGES	\$41,900	\$66,868	\$80,358	\$100,663
161	MEDICARE	\$2,080	\$2,107	\$3,831	\$6,387
199	PERSONNEL COMPENSATION	\$7,187	\$4,059	\$3,000	\$3,000



ENGINEERING & PUBLIC WORKS

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Personnel Services Total		\$240,230	\$235,913	\$475,045	\$708,773
Other Financing Uses					
099	TRANSFERS TO OTHER FUNDS	\$0	\$6,250	\$0	\$0
Other Financing Uses Total		\$0	\$6,250	\$0	\$0
STREETS Total		\$240,230	\$242,163	\$475,045	\$708,773
Activity	SEWER SERVICE				
Activity No.	125 416 222				
Refunds, Contributions & Special Paymnts					
698	INDIRECT/OVERHEAD COSTS	\$239,533	\$239,533	\$239,533	\$0
Refunds, Contributions & Special Paymnts Total		\$239,533	\$239,533	\$239,533	\$0
Personnel Services					
101	FULL-TIME SALARIES	\$148,430	\$124,072	\$104,133	\$112,551
102	OVERTIME	\$18,628	\$17,803	\$0	\$0
105	LONGEVITY	\$205	\$185	\$0	\$0
120	DIFFERENTIAL PAY	\$358	\$695	\$0	\$0
140	WORKERS' COMPENSATION	\$14,563	\$12,731	\$8,258	\$8,925
150	HEALTH INSURANCE	\$31,466	\$29,463	\$24,790	\$21,680
151	LTD INSURANCE	\$303	\$272	\$0	\$0
160	RETIREMENT PLAN CHARGES	\$85,751	\$34,843	\$31,674	\$25,722
161	MEDICARE	\$2,647	\$2,228	\$1,510	\$1,632
199	PERSONNEL COMPENSATION	\$8,485	\$3,068	\$8,600	\$8,600
Personnel Services Total		\$310,837	\$225,360	\$178,965	\$179,111
Other Financing Uses					
099	TRANSFERS TO OTHER FUNDS	\$454,000	\$18,750	\$0	\$0
Other Financing Uses Total		\$454,000	\$18,750	\$0	\$0
Maintenance & Operations					
211	LAUNDRY & CLEANING SERVICES	\$9	\$45	\$0	\$0
213	PROFESSIONAL SERVICES	\$60,087	\$36,840	\$100,000	\$100,000
226	TRAINING, TRAVEL & SUBSISTENCE	\$948	\$655	\$2,000	\$7,000
234	ELECTRICITY & GAS	\$3,635	\$4,999	\$6,000	\$6,000
236	WATER	\$1,772	\$2,553	\$3,000	\$3,000



ENGINEERING & PUBLIC WORKS

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
268	RENTALS & LEASES	\$0	\$0	\$500	\$500
272	SEWAGE TRANS. & TREATMENT	6,460,037	\$6,109,203	\$7,000,000	\$8,100,000
291	R & M - AUDIO VISUAL EQUIPT.	\$5,157	\$7,074	\$5,000	\$5,000
299	CONTRACT SERVICES	\$19,676	\$10,001	\$25,000	\$30,000
318	WEARING APPAREL	\$3,767	\$4,396	\$5,000	\$7,000
337	SMALL TOOLS	\$513	\$1,135	\$1,200	\$1,200
346	TRAFFIC CONTROL SUPPLY	\$0	\$0	\$800	\$800
352	SEWER PIPE & MATERIALS	\$279	\$427	\$4,000	\$4,000
354	CHEMICAL PRODUCTS	\$1,080	\$1,618	\$2,200	\$2,200
399	MATERIALS & SUPPLIES	\$2,781	\$2,746	\$4,600	\$4,600
Maintenance & Operations Total		\$6,559,741	\$6,181,692	\$7,159,300	\$8,271,300
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$19,319	\$17,507	\$19,281	\$19,898
750	VEHICLE SERVICES CHARGES	\$51,861	\$54,952	\$63,359	\$74,864
752	VEHICLE LEASE CHARGE	\$23,967	\$21,300	\$21,300	\$21,300
755	INFO. SYSTEMS MAINT. CHARGE	\$13,784	\$13,547	\$15,147	\$17,464
790	INSURANCE CHARGES	\$275,053	\$275,053	\$275,053	\$312,263
Internal Service Charges and Reserves Total		\$383,984	\$382,359	\$394,140	\$445,789
SEWER SERVICE Total		\$7,948,095	\$7,047,694	\$7,971,938	\$8,896,199
ENGINEERING & PUBLIC WORKS Total		\$8,516,771	\$7,644,906	\$9,016,869	\$10,182,495
SEWER SERVICE FUND Total		\$8,516,771	\$7,644,906	\$9,016,869	\$10,182,495



ENGINEERING & PUBLIC WORKS

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	ENGINEERING				
Activity No.	420 416 029				
Maintenance & Operations					
299	CONTRACT SERVICES	\$44,202	\$75,750	\$0	\$0
Maintenance & Operations Total		\$44,202	\$75,750	\$0	\$0
ENGINEERING Total		\$44,202	\$75,750	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$44,202	\$75,750	\$0	\$0
PARKING AUTHORITY Total		\$44,202	\$75,750	\$0	\$0



ENGINEERING & PUBLIC WORKS

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	FACILITIES MAINTENANCE				
Activity No.	626 416 223				
Personnel Services					
101	FULL-TIME SALARIES	\$411,436	\$412,618	\$572,483	\$591,839
102	OVERTIME	\$98,892	\$88,163	\$76,000	\$76,000
120	DIFFERENTIAL PAY	\$1,555	\$1,466	\$1,615	\$1,615
140	WORKERS' COMPENSATION	\$43,061	\$48,286	\$42,572	\$44,262
150	HEALTH INSURANCE	\$93,889	\$82,908	\$150,742	\$133,640
151	LTD INSURANCE	\$608	\$506	\$731	\$731
160	RETIREMENT PLAN CHARGES	\$159,618	\$162,128	\$174,132	\$135,259
161	MEDICARE	\$7,748	\$8,763	\$8,301	\$8,582
199	PERSONNEL COMPENSATION	\$25,207	\$27,585	\$12,000	\$12,000
Personnel Services Total		\$842,013	\$832,423	\$1,038,576	\$1,003,928
Maintenance & Operations					
234	ELECTRICITY & GAS	\$765,898	\$793,614	\$640,000	\$640,000
236	WATER	\$323,166	\$480,641	\$177,500	\$177,500
288	R&M BUILDINGS & STRUCTURES	\$113,774	\$156,785	\$395,000	\$395,000
299	CONTRACT SERVICES	\$460,428	\$539,380	\$600,000	\$740,000
303	JANITORIAL SUPPLIES	\$38,229	\$53,140	\$45,000	\$45,000
318	WEARING APPAREL	\$2,929	\$2,344	\$7,500	\$7,500
337	SMALL TOOLS	\$0	\$0	\$2,500	\$2,500
340	SHOP SUPPLIES	\$0	\$0	\$2,500	\$2,500
354	CHEMICAL PRODUCTS	\$35,618	\$34,364	\$45,000	\$45,000
399	MATERIALS & SUPPLIES	\$0	\$0	\$4,000	\$4,000
Maintenance & Operations Total		\$1,740,042	\$2,060,268	\$1,919,000	\$2,059,000
Internal Service Charges and Reserves					
750	VEHICLE SERVICES CHARGES	\$41,274	\$43,734	\$50,425	\$59,581
751	VEHICLE REPLACEMENT CHARGE	\$33,685	\$35,584	\$35,584	\$28,087
752	VEHICLE LEASE CHARGE	\$34,760	\$36,000	\$36,000	\$36,000
790	INSURANCE CHARGES	\$7,180	\$7,180	\$7,180	\$8,151
Internal Service Charges and Reserves Total		\$116,899	\$122,498	\$129,189	\$131,820
Fixed Charges & Debt Services					
483	LOAN INTEREST PAYMENT	\$33,372	\$28,147	\$20,872	\$20,872



ENGINEERING & PUBLIC WORKS

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Fixed Charges & Debt Services Total		\$33,372	\$28,147	\$20,872	\$20,872
FACILITIES MAINTENANCE Total		\$2,732,326	\$3,043,336	\$3,107,637	\$3,215,619
Activity	COVID-19 Response				
Activity No.	626 416 911				
Maintenance & Operations					
299	CONTRACT SERVICES	\$151,408	\$14,676	\$0	\$0
Maintenance & Operations Total		\$151,408	\$14,676	\$0	\$0
COVID-19 Response Total		\$151,408	\$14,676	\$0	\$0
Activity	GAAP ADJUSTMENT				
Activity No.	626 416 999				
Internal Service Charges and Reserves					
720	DEPRECIATION EXPENSE	\$150,749	\$7,308	\$0	\$0
Internal Service Charges and Reserves Total		\$150,749	\$7,308	\$0	\$0
GAAP ADJUSTMENT Total		\$150,749	\$7,308	\$0	\$0
ENGINEERING & PUBLIC WORKS Total		\$3,034,483	\$3,065,320	\$3,107,637	\$3,215,619
FACILITIES MAINT FUND Total		\$3,034,483	\$3,065,320	\$3,107,637	\$3,215,619



ENGINEERING & PUBLIC WORKS

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	EQUIPMENT MAINTENANCE				
Activity No.	643 416 224				
Personnel Services					
101	FULL-TIME SALARIES	\$202,795	\$166,047	\$309,886	\$341,460
102	OVERTIME	\$11,375	\$7,857	\$9,500	\$9,500
120	DIFFERENTIAL PAY	\$3,140	\$3,448	\$2,476	\$2,476
140	WORKERS' COMPENSATION	\$17,832	\$17,368	\$24,574	\$27,078
150	HEALTH INSURANCE	\$43,046	\$31,462	\$63,979	\$57,760
151	LTD INSURANCE	\$608	\$551	\$731	\$731
160	RETIREMENT PLAN CHARGES	\$88,973	\$91,849	\$94,258	\$78,037
161	MEDICARE	\$3,184	\$3,203	\$4,493	\$4,951
199	PERSONNEL COMPENSATION	\$12,037	\$16,767	\$12,000	\$12,000
Personnel Services Total		\$382,989	\$338,552	\$521,897	\$533,994
Maintenance & Operations					
240	EQUIPMENT RENTAL	\$0	\$0	\$2,300	\$2,300
282	R&M AUTOMOTIVE EQUIPMENT	\$121,721	\$166,980	\$120,000	\$200,000
299	CONTRACT SERVICES	\$0	\$0	\$0	\$100,000
314	GAS, OIL & LUBRICANTS	\$389,320	\$544,295	\$560,000	\$616,000
318	WEARING APPAREL	\$4,138	\$4,052	\$5,000	\$5,000
334	AUTOMOTIVE PARTS	\$159,662	\$143,464	\$150,000	\$150,000
337	SMALL TOOLS	\$0	\$1,357	\$0	\$0
340	SHOP SUPPLIES	\$5,507	\$6,781	\$3,500	\$3,500
399	MATERIALS & SUPPLIES	\$0	\$154	\$400	\$400
Maintenance & Operations Total		\$680,348	\$867,083	\$841,200	\$1,077,200
Internal Service Charges and Reserves					
790	INSURANCE CHARGES	\$3,210	\$3,210	\$3,210	\$3,644
Internal Service Charges and Reserves Total		\$3,210	\$3,210	\$3,210	\$3,644
EQUIPMENT MAINTENANCE Total		\$1,066,547	\$1,208,845	\$1,366,307	\$1,614,838
ENGINEERING & PUBLIC WORKS Total		\$1,066,547	\$1,208,845	\$1,366,307	\$1,614,838
MOTOR VEHICLE SVC FUND Total		\$1,066,547	\$1,208,845	\$1,366,307	\$1,614,838



ENGINEERING & PUBLIC WORKS

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	STREETS				
Activity No.	644 416 221				
Capital Outlay					
511	AUTOMOTIVE EQUIPMENT	\$60,997	\$1,369	\$625,000	\$775,000
Capital Outlay Total		\$60,997	\$1,369	\$625,000	\$775,000
STREETS Total		\$60,997	\$1,369	\$625,000	\$775,000
Activity	SEWER SERVICE				
Activity No.	644 416 222				
Capital Outlay					
511	AUTOMOTIVE EQUIPMENT	\$0	\$1,369	\$0	\$0
Capital Outlay Total		\$0	\$1,369	\$0	\$0
SEWER SERVICE Total		\$0	\$1,369	\$0	\$0
Activity	FACILITIES MAINTENANCE				
Activity No.	644 416 223				
Capital Outlay					
511	AUTOMOTIVE EQUIPMENT	\$0	\$21,646	\$0	\$0
Capital Outlay Total		\$0	\$21,646	\$0	\$0
FACILITIES MAINTENANCE Total		\$0	\$21,646	\$0	\$0
Activity	PARKS				
Activity No.	644 416 227				
Capital Outlay					
511	AUTOMOTIVE EQUIPMENT	\$14,118	\$0	\$45,000	\$50,000
Capital Outlay Total		\$14,118	\$0	\$45,000	\$50,000
PARKS Total		\$14,118	\$0	\$45,000	\$50,000
Activity	GAAP ADJUSTMENT				
Activity No.	644 416 999				
Internal Service Charges and Reserves					



ENGINEERING & PUBLIC WORKS

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
720	DEPRECIATION EXPENSE	\$668,381	\$734,027	\$0	\$0
	Internal Service Charges and Reserves Total	\$668,381	\$734,027	\$0	\$0
	GAAP ADJUSTMENT Total	\$668,381	\$734,027	\$0	\$0
	ENGINEERING & PUBLIC WORKS Total	\$743,496	\$758,411	\$670,000	\$825,000
	VEHICLE REPLACEMENT RESERVE Total	\$743,496	\$758,411	\$670,000	\$825,000



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Preliminary Budget
Fiscal Year 2024

Fire





DEPARTMENT DESCRIPTION

The Mission of the National City Fire Department is to provide fire control, emergency medical services, rescue, and fire prevention and education. The department is committed to providing excellent customer service to our community utilizing the core values of communication, collaboration and courtesy while respecting the culture of our citizens, visitors and business owners.

The Fire Department services approximately 63,000 residents of the City of National City in a roughly nine square mile geographic area. The Fire Department also services, under contract, the Lower Sweetwater Fire Protection District and areas of the Port of San Diego. Moreover, the Fire Department provides automatic aid to the surrounding cities of San Diego, Chula Vista, Bonita, Coronado, and Imperial Beach. Lastly, the Fire Department generates revenue to the city by providing resources to large scale incidents throughout the State of California when participating within the California State Master Mutual Aid system.

The Fire Department is organized into three fundamental Divisions; Fire Administration, Community Risk Reduction, and Fire Operations. These three Divisions work collaboratively to provide economic security to the City of National City by limiting the occurrence of fires and the extent of fire damage when they do occur.

The Fire Department is at the forefront of community health care programs occurring in the City of National City. While working with regional partners like Point Loma Nazarene University, American Medical Response and the County of San Diego, the Fire Department provided COVID-19 vaccinations and boosters to National City residents and city employees. Furthermore, the Fire Department has continued to offer seasonal flu vaccines, fall prevention classes to seniors, COVID-19 testing and CPR training to the community and employees alike.

The Fire Department is a Class 2 Fire Department, as rated by the Insurance Services Organization (ISO).

FIRE ADMINISTRATION

The Fire Administration Division, under the supervision of the Fire Chief, consists of one (1) Management Analyst III and one (1) Executive Secretary. The Fire Chief oversees the operation of the Fire Department as well as multiple programs including, but not limited to, Dial 911 and 211, Alert San Diego, Community Emergency Response Team (CERT), Trauma Intervention Program Services (TIPS), LISTOS Spanish language disaster preparedness classes, family disaster preparedness classes, city disease infection control officer program and labor management partnerships. Furthermore, this Division manages community disaster preparedness, the training of City Staff in regards to Emergency Operations Center (EOC) operations and the procurement of grants to improve the economic wellbeing of the city. Lastly, this Division administers contracts with American Medical Response, The Lower Sweetwater Fire Protection District, the County of San Diego, The City of San Diego and various other cooperators in our region.

COMMUNITY RISK REDUCTION

The Community Risk Reduction Division, under the supervision of the Fire Marshal, consists of one (1) Deputy Fire Marshal, two (2) fire inspectors and one (1) Senior Office

Assistant. This Division reduces the occurrence of fires in the City of National City through enforcement of the Uniform Fire Codes, conducting building design plan reviews and fire prevention inspections. To provide a safer community through risk reduction, this Division manages weed abatement, brush management and public nuisance removal services through local contracted businesses. In addition, this Division collaborates with the San Diego County's Department of Health and Human Services in the regulation of hazardous materials and communicates that information to the citizens and business owners of National City. The Community Risk Reduction Division also manages programs like the Juvenile Fire Setter Program, Infectious Disease Control Officer program, the Temporary Use Permit program, Public Education program and the False Alarm Reimbursement program. Furthermore, this Division ensures all National City schools are inspected annually and coordinates all school fire and disaster drills per the California Education Code. When fires do occur, the Community Risk Reduction Division provides Fire Investigations to determine the cause and origin of said fires and acts in the city's interest in the prosecution of arson related incidents. Lastly, through contracted agreement, the National City Fire Marshal also acts as the Fire Marshal for unincorporated Lincoln Acres.

FIRE OPERATIONS

The Fire Operations Division, under the supervision of the on-duty Battalion Chief, consists of 39 full time employees (FTE's) who respond to all types of fires, emergency medical calls, rescues, hazardous materials incidents, mass casualty incidents and various other calls for service from three fire stations staffed 24 hours a day, 7 days a week. This Division works closely with our current ambulance provider, American Medical Response (AMR), to provide basic and advanced life support services to the residents, visitors, and businesses in National City. The Operations Division ensures there is a Fire Department Paramedic responding on each suppression apparatus i.e. Engine 34, Truck 34, Engine 31 and Squad 33 in order to provide Advanced Life Support measures in a timely manner. The Operations Division also manages department training, procurement of firefighting and EMS equipment, fire station tours, firefighter recruitment, community outreach, a ride-along program, the city automatic external defibrillator (AED) program, Fire Department health and safety, educational outreach to schools and the coordination of National City Fire Department resources responding to large scale incidents throughout the State of California. Lastly, the Fire Operations Division collaborates and communicates with other city departments in regards to fire apparatus maintenance and repairs, facility maintenance and repairs, promotional testing, firefighter hiring and employee related issues.

GOALS & OBJECTIVES

1. Hire and train all personnel

- a. Promote based on active certified promotional lists.
- b. Train new Firefighter/Paramedics to fill vacancies.
- c. Hire one (1) part time Fire Inspector.

- d. Continue with Paramedic School Sponsorship program.
- e. Develop and implement a comprehensive pre-fire planning program.
- f. Hire one (1) part-time administrative assistant for the Fire Operations Division.

2. Evaluate current and future emergency service delivery

- a. Retain reserve apparatus consisting of a fire engine, ladder truck, squad and command vehicle.
- b. Place into service one new fire engine and fire command vehicle.
- c. Enhance operational staffing in alignment with the recommendations of the CSPM report.
- d. Finalize the Fire Station 33 architectural design process and identify funding sources.
- e. Finalize contract negotiations with our current ambulance transport provider or seek an RFP for a new ambulance provider.
- f. Attain an ISO Class -1 rating for the National City Fire Department.

3. Enhance Emergency Operations Center staff development

- a. Conduct Quarterly trainings for city staff for their respective responsibilities.
- b. Conduct an annual exercise with city staff simulating a local, county wide or state wide disaster.
- c. Pursue and conduct EOC Section specific training for Section Leads.

4. Enhance the Fire Department ability to provide a comprehensive public education program.

- a. Hire one (1) part time Public Education coordinator.
- b. Establish educational opportunities with all school sites in National City.
- c. Provide education to Senior Living sites in National City.
- d. Collaborate with the San Diego Burn Institute in the Juvenile Fire Setter Program.
- e. Provide educational outreach to local community groups and service organizations.



PRODUCTIVITY & WORKLOAD STATISTICS

	FY 21 Actual	FY 22 Actual	FY 23 Estimated	FY 24 Projected
Fire:				
Responses	8,181	10,767	11,844	13,028
Emergency medical responses	4,956	8,252	9,077	9,984
Structure fires	30	1,365	1,421	1,509
Property loss from Structure fires	\$1,884,252	\$9,127,623	2,700,000	3,200,000

San Diego Fire-Rescue Department

National City Fire Incidents and Responses

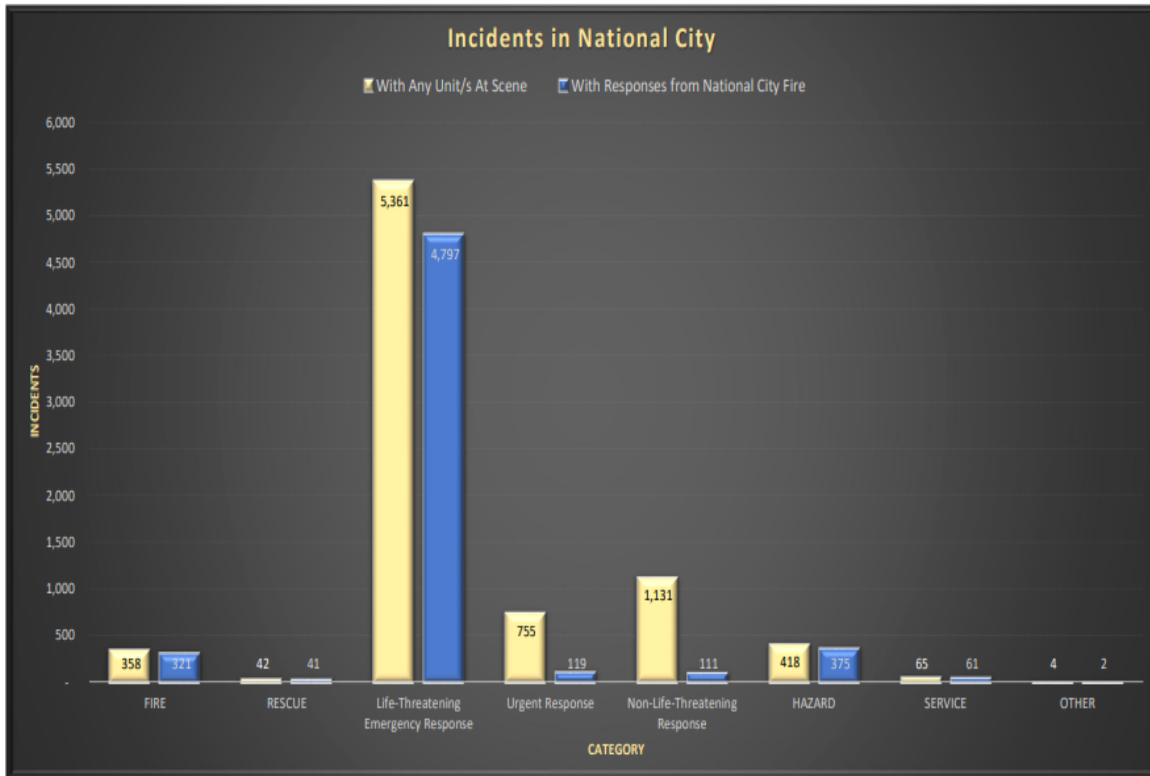
July 2021 thru June 2022

National City Fire Incidents

Incident Responses are at least one National City Fire first responder units at scene. Exclude ambulances.

Call Category	Incidents in National City			With Responses from National City Fire			Aid Received, In National City Responses by other agencies
	With Any Unit/s At Scene	Cancelled, No unit at scene	Total	In National City	Aid Given, Out of National City	Total	
FIRE	358	22	380	321	275	596	143
RESCUE	42	1	43	41	37	78	19
Life-Threatening Emergency Response	5,361	256	5,617	4,797	1,277	6,074	447
Urgent Response	755	27	782	119	70	189	9
Non-Life-Threatening Response	1,131	86	1,217	111	33	144	7
HAZARD	418	75	493	375	114	489	63
SERVICE	65	7	72	61	15	76	2
OTHER	4		4	2	10	12	
Total	8,134	474	8,608	5,827	1,831	7,658	690

Aid Given/Received above are Incident-based. Response-based Aid Given/Received is on a separate report.

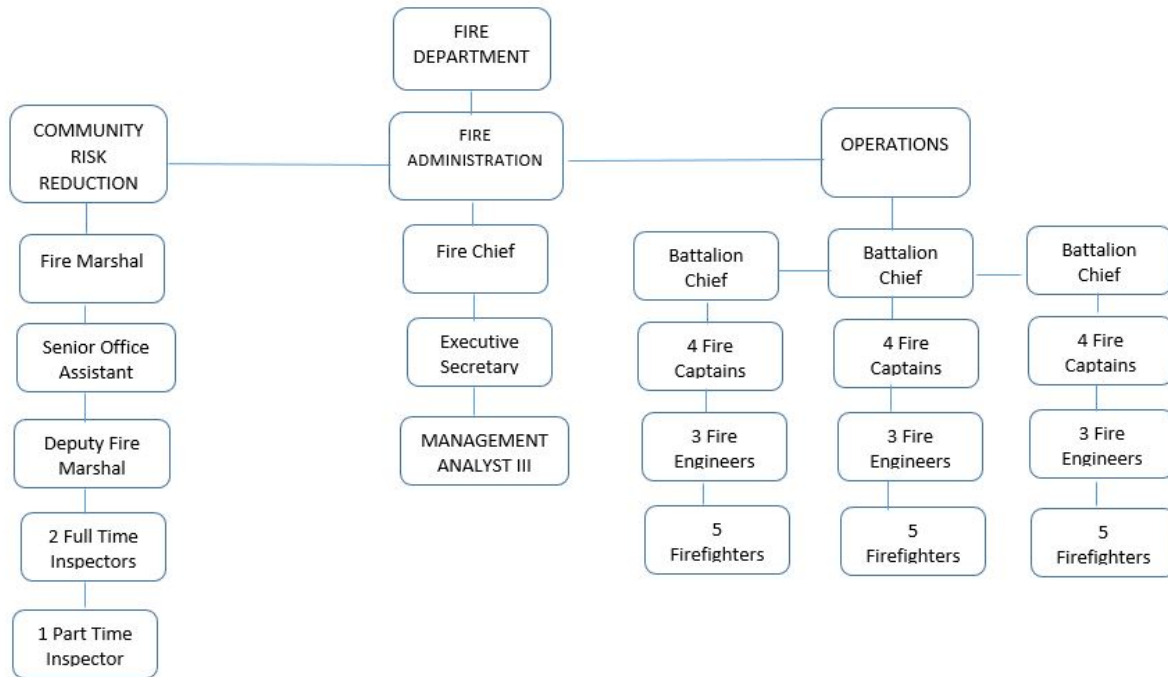


National City Fire Responses

Count of responses are all In/out of National City responses including dispatched & cancelled responses.

UnitName	FIRE	RESCUE	Life-Threatening Emergency Response	Urgent Response	Non-Life-Threatening Response	HAZARD	SERVICE	OTHER	Total
5704				1					1
5705	11	1	1			1			14
5706	9								9
AM417	4	3	368	88	80	2	2		547
B257	1								1
B57	369	50	13		1	41	2	4	480
NCE234			2						2
NCE31	345	36	2,072	82	97	254	30	4	2,920
NCE34	404	43	2,779	98	116	252	43	7	3,742
NCSQ33	109	16	1,735	49	45	106	16		2,076
NCT34	204	79	660	23	19	131	13	2	1,131
NCWT34	3								3
O373								3	3
TIPNC			71				1		72
Total	1,459	228	7,701	341	358	787	107	20	11,001

DEPARTMENT ORGANIZATIONAL CHART



SIGNIFICANT CHANGES

- The Fire Department experienced several significant changes over the past year. Director of Emergency Services Director Frank Parra was promoted to Assistant City Manager resulting in the promotion of Battalion Chief Sergio Mora to Fire Chief of the National City Fire Department. Chief Mora is a 27 year member of the Fire Department and his experience will lend to the seamless transition of leadership to the 136 year-old organization. Additionally, Lilibeth Aguelo was re-classified/promoted to the Executive Secretary to the Fire Chief. Lilibeth has been with the Fire Department for 17 years and has proven to be an instrumental member of the administrative staff and is very deserving of her promotion.
- The Fire Department, in conjunction with Human Resources, conducted the Fire Department’s first multi-jurisdictional promotional testing process with the City of Coronado and Southwestern College. These partnerships will allow our department to strengthen local affiliations and have a greater reach in recruiting future members of the Fire Department. In addition, the Fire Department created a Recruitment Coordinator as an adjunct duty of one of our operational Firefighters. The goal of this position is to increase recruitment through an aggressive social media campaign and provide outreach programs to local community colleges, Fire Academies and paramedic programs.

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- The Fire Department has hired five (5) new firefighters, filling existing vacancies, trained them through a ten (10) week Firefighter I Academy instructed by National City Fire Department personnel. Additionally, as a Fire Department first, a non-paid open enrollee position was added to the Firefighter I Academy, allowing a community member interested in the fire service to receive the same training as our new firefighter recruits. After careful screening by department staff, this year's open enrollee position was filled by a lifelong resident of National City who now has the knowledge, skills and abilities to pursue a career in the Fire Service.
 - In partnership with American Medical Response, the department added a 3rd paramedic ambulance in the northeast section of the city. This 12-hour ambulance responds out of fire station 33 and has successfully reduced the response time of an ambulance not only to this section of the city, but also city wide.
 - The Fire Department also developed and conducted the first all-Spanish CERT Academy with 33 graduating members that can be added to the National City CERT roster. The CERT program continues to be an ongoing program offered to the residents of National City.



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
001-12000-3469	OVERTIME REIMBURSEMENTS	\$934,641	\$838,356	\$723,490	\$723,490
Total		\$934,641	\$838,356	\$723,490	\$723,490
FIRE Total		\$934,641	\$838,356	\$723,490	\$723,490
001-12124-3122	STORAGE TANK PERMITS	\$3,635	\$2,500	\$879	\$879
001-12124-3541	PLAN REVIEW FIRE SYSTEMS	\$75,061	\$62,149	\$57,000	\$57,000
001-12124-3553	FIRE PERMIT REVIEW FEE	\$13,581	\$14,477	\$14,000	\$14,000
001-12124-3561	WEED ABATEMENT	\$20,779	\$11,942	\$0	\$0
Total		\$113,056	\$91,068	\$71,879	\$71,879
FIRE Total		\$113,056	\$91,068	\$71,879	\$71,879
001-12125-3566	FIRE/LIFE SAFETY ANNUAL INSPECTI	\$388,916	\$379,473	\$463,300	\$463,300
001-12125-3202	FALSE ALARM FINES	\$30,474	\$54,492	\$55,000	\$55,000
001-12125-3322	AMR LEASE - FIRE STATION	\$89,721	\$132,142	\$98,399	\$113,936
001-12125-3544	MISC. FIRE SERVICES	\$13,784	\$13,207	\$40,000	\$40,000
001-12125-3556	POLICE & FIRE SVCS - PORT OF SAN	\$559,750	\$576,543	\$578,790	\$611,654
001-12125-3636	REFUNDS & REIMBURSEMENTS	\$2,035	\$3,665	\$25,000	\$25,000
001-12125-3555	FIRE PROT SVCS-LOWER SWEETWAT	\$314,590	\$338,792	\$235,530	\$235,530
Total		\$1,399,271	\$1,498,314	\$1,496,019	\$1,544,420
FIRE Total		\$1,399,271	\$1,498,314	\$1,496,019	\$1,544,420
GENERAL FUND Total		\$2,446,969	\$2,427,738	\$2,291,388	\$2,339,789



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
130-12000-3034	FRANCHISE-AMR	\$344,525	\$318,023	\$334,124	\$334,124
Total		\$344,525	\$318,023	\$334,124	\$334,124
FIRE Total		\$344,525	\$318,023	\$334,124	\$334,124
EMT-D REVOLVING FUND Total		\$344,525	\$318,023	\$334,124	\$334,124



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
282-00000-3470	COUNTY GRANTS	\$5,000	\$4,969	\$0	\$0
Total		\$5,000	\$4,969	\$0	\$0
FIRE Total		\$5,000	\$4,969	\$0	\$0
282-12912-3498	OTHER FEDERAL GRANTS	\$2,500	\$0	\$2,500	\$2,500
Total		\$2,500	\$0	\$2,500	\$2,500
FIRE Total		\$2,500	\$0	\$2,500	\$2,500
282-12952-3498	OTHER FEDERAL GRANTS	\$700	\$21,523	\$0	\$0
Total		\$700	\$21,523	\$0	\$0
FIRE Total		\$700	\$21,523	\$0	\$0
282-12954-3498	OTHER FEDERAL GRANTS	\$135,933	\$491,531	\$590,185	\$590,185
Total		\$135,933	\$491,531	\$590,185	\$590,185
FIRE Total		\$135,933	\$491,531	\$590,185	\$590,185
282-12957-3498	OTHER FEDERAL GRANTS	\$0	\$0	\$0	\$0
Total		\$0	\$0	\$0	\$0
FIRE Total		\$0	\$0	\$0	\$0
282-41341-3470	COUNTY GRANTS	\$50,000	\$0	\$0	\$0
Total		\$50,000	\$0	\$0	\$0
FIRE Total		\$50,000	\$0	\$0	\$0
REIMBURSABLE GRANTS CITYWIDE Total		\$194,133	\$518,023	\$592,685	\$592,685



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
325-12125-3623	Dev Impact Fees- Fire/EMS	\$14,628	\$32,467	\$10,000	\$10,000
	Total	\$14,628	\$32,467	\$10,000	\$10,000
	FIRE Total	\$14,628	\$32,467	\$10,000	\$10,000
	DEVELOPMENT IMPACT FEES Total	\$14,628	\$32,467	\$10,000	\$10,000



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	BUILDING				
Activity No.	001 412 028				
Personnel Services					
101	FULL-TIME SALARIES	\$10,427	\$2,964	\$0	\$0
120	DIFFERENTIAL PAY	\$308	\$44	\$0	\$0
140	WORKERS' COMPENSATION	\$290	\$30	\$0	\$0
150	HEALTH INSURANCE	\$2,914	\$809	\$0	\$0
160	RETIREMENT PLAN CHARGES	\$1,588	\$372	\$0	\$0
161	MEDICARE	\$190	\$42	\$0	\$0
Personnel Services Total		\$15,716	\$4,261	\$0	\$0
BUILDING Total		\$15,716	\$4,261	\$0	\$0
Activity	FIRE - OPERATIONS				
Activity No.	001 412 125				
Personnel Services					
101	FULL-TIME SALARIES	3,850,743	\$4,152,004	\$4,653,751	\$4,923,670
102	OVERTIME	2,907,829	\$2,034,296	\$800,000	\$800,000
103	REIMBURSABLE OVERTIME	\$0	\$0	\$723,490	\$723,490
110	ALLOWANCES & STIPENDS	\$29,729	\$11,966	\$0	\$40,000
120	DIFFERENTIAL PAY	\$221,176	\$217,567	\$221,316	\$221,316
140	WORKERS' COMPENSATION	\$601,661	\$524,098	\$369,876	\$387,737
150	HEALTH INSURANCE	\$471,286	\$419,517	\$639,366	\$607,800
151	LTD INSURANCE	\$14,189	\$15,129	\$17,414	\$17,414
160	RETIREMENT PLAN CHARGES	2,521,194	\$2,614,870	\$2,578,587	\$2,222,962
161	MEDICARE	\$106,371	\$92,675	\$89,570	\$71,393
199	PERSONNEL COMPENSATION	\$219,473	\$84,692	\$0	\$0
Personnel Services Total		\$10,943,650	\$10,166,814	\$10,093,370	\$10,015,782
Maintenance & Operations					
205	MEDICAL SERVICES	\$66,573	\$72,185	\$79,600	\$79,600
213	PROFESSIONAL SERVICES	\$24,767	\$17,125	\$70,000	\$75,000
222	MEMBERSHIPS & SUBSCRIPTIONS	\$3,349	\$2,040	\$3,165	\$3,555
226	TRAINING, TRAVEL & SUBSISTENCE	\$22,904	\$45,439	\$87,902	\$43,325
227	REIMBURSABLE TRAVEL EXPENSES	\$0	\$0	\$25,000	\$25,000



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
230	PRINTING & BINDING	\$501	\$785	\$950	\$1,500
283	R & M - FIRE EQUIPMENT	\$18,656	\$21,076	\$20,500	\$21,500
299	CONTRACT SERVICES	\$543,765	\$482,376	\$569,194	\$578,547
301	OFFICE SUPPLIES	\$2,673	\$3,133	\$3,000	\$3,000
303	JANITORIAL SUPPLIES	\$9,336	\$8,146	\$8,600	\$9,600
304	BOOKS	\$4,157	\$650	\$1,800	\$2,300
305	MEDICAL SUPPLIES	\$1,403	\$3,407	\$2,300	\$17,800
307	DUPLICATING SUPPLIES	\$0	\$0	\$1,000	\$1,000
318	WEARING APPAREL	\$91,399	\$103,239	\$104,450	\$117,702
319	UNIFORM ACCESSORIES	\$387	\$771	\$800	\$1,000
342	COMMUNICATION MATERIALS	\$45,060	\$38,964	\$45,500	\$45,500
355	MINOR EQUIPMENT- LESS THAN \$5,000.00	\$414,450	\$50,849	\$50,000	\$50,000
399	MATERIALS & SUPPLIES	\$18,143	\$19,670	\$21,400	\$23,400
Maintenance & Operations Total		\$1,267,523	\$869,855	\$1,095,161	\$1,099,329
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$321,529	\$291,370	\$320,910	\$331,173
750	VEHICLE SERVICES CHARGES	\$202,307	\$214,365	\$247,162	\$292,042
751	VEHICLE REPLACEMENT CHARGE	\$281,262	\$349,862	\$456,768	\$456,768
752	VEHICLE LEASE CHARGE	\$8,034	\$11,000	\$18,000	\$26,000
755	INFO. SYSTEMS MAINT. CHARGE	\$154,662	\$152,008	\$169,962	\$195,965
790	INSURANCE CHARGES	\$58,237	\$58,237	\$58,237	\$66,115
Internal Service Charges and Reserves Total		\$1,026,031	\$1,076,842	\$1,271,039	\$1,368,064
Fixed Charges & Debt Services					
470	BOND PRINCIPAL REDEMPTION	\$28,737	\$29,539	\$30,364	\$30,364
480	BOND INTEREST REDEMPTION	\$5,159	\$4,356	\$3,533	\$3,533
Fixed Charges & Debt Services Total		\$33,896	\$33,895	\$33,897	\$33,897
FIRE - OPERATIONS Total		\$13,271,100	\$12,147,406	\$12,493,467	\$12,517,071
Activity	FIRE - OPERATIONS				
Activity No.	001 412 125-				
Maintenance & Operations					
287	R & M - COMMUNICATIONS EQUIPT.	\$7,639	\$13,651	\$9,000	\$9,000
Maintenance & Operations Total		\$7,639	\$13,651	\$9,000	\$9,000



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
FIRE - OPERATIONS Total		\$7,639	\$13,651	\$9,000	\$9,000
Activity	COVID-19 Response				
Activity No.	001 412 911				
Maintenance & Operations					
399	MATERIALS & SUPPLIES	\$4,048	\$2,950	\$0	\$0
Maintenance & Operations Total		\$4,048	\$2,950	\$0	\$0
COVID-19 Response Total		\$4,048	\$2,950	\$0	\$0
FIRE Total		\$13,298,503	\$12,168,268	\$12,502,467	\$12,526,071
GENERAL FUND Total		\$13,298,503	\$12,168,268	\$12,502,467	\$12,526,071



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	FIRE - OPERATIONS				
Activity No.	130 412 125				
Refunds, Contributions & Special Paymnts					
698	INDIRECT/OVERHEAD COSTS	\$16,964	\$16,964	\$16,964	\$0
Refunds, Contributions & Special Paymnts Total		\$16,964	\$16,964	\$16,964	\$0
Personnel Services					
102	OVERTIME	\$13,468	\$22,261	\$0	\$0
120	DIFFERENTIAL PAY	\$290,992	\$271,884	\$325,380	\$325,380
Personnel Services Total		\$304,460	\$294,145	\$325,380	\$325,380
FIRE - OPERATIONS Total		\$321,424	\$311,109	\$342,344	\$325,380
FIRE Total		\$321,424	\$311,109	\$342,344	\$325,380
EMT-D REVOLVING FUND Total		\$321,424	\$311,109	\$342,344	\$325,380



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	CRI - MASS PROPHYLAXIS PROGRAM				
Activity No.	282 412 912				
Maintenance & Operations					
355	MINOR EQUIPMENT- LESS THAN \$5,000.00	\$4,518	\$2,668	\$0	\$0
Maintenance & Operations Total		\$4,518	\$2,668	\$0	\$0
CRI - MASS PROPHYLAXIS PROGRAM Total		\$4,518	\$2,668	\$0	\$0
Activity	SAFER Grant				
Activity No.	282 412 954				
Personnel Services					
101	FULL-TIME SALARIES	\$93,071	\$244,476	\$360,959	\$371,789
102	OVERTIME	\$0	\$111,885	\$0	\$0
120	DIFFERENTIAL PAY	\$6,275	\$21,304	\$0	\$0
140	WORKERS' COMPENSATION	\$6,984	\$31,372	\$30,176	\$31,082
150	HEALTH INSURANCE	\$7,961	\$23,431	\$68,413	\$64,000
151	LTD INSURANCE	\$3,073	\$1,232	\$2,035	\$2,035
160	RETIREMENT PLAN CHARGES	\$15,458	\$52,472	\$210,999	\$178,994
161	MEDICARE	\$2,073	\$5,360	\$5,234	\$5,391
199	PERSONNEL COMPENSATION	\$1,038	\$0	\$500	\$500
Personnel Services Total		\$135,933	\$491,532	\$678,316	\$653,791
SAFER Grant Total		\$135,933	\$491,532	\$678,316	\$653,791
Activity	FY20 STATE HOMELAND SECURITY GRANT				
Activity No.	282 412 957				
Capital Outlay					
518	PUBLIC SAFETY EQUIPMENT	\$0	\$27,097	\$0	\$0
Capital Outlay Total		\$0	\$27,097	\$0	\$0
FY20 STATE HOMELAND SECURITY GRANT		\$0	\$27,097	\$0	\$0
Activity	FY21 ASSISTANCE TO FIREFIGHTERS				
Activity No.	282 412 961				



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Capital Outlay					
518	PUBLIC SAFETY EQUIPMENT	\$0	\$0	\$0	\$0
Capital Outlay Total		\$0	\$0	\$0	\$0
FY21 ASSISTANCE TO FIREFIGHTERS Total		\$0	\$0	\$0	\$0
FIRE Total		\$140,451	\$521,297	\$678,316	\$653,791
REIMBURSABLE GRANTS CITYWIDE Total		\$140,451	\$521,297	\$678,316	\$653,791



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	FIRE - OPERATIONS				
Activity No.	301 412 125				
Fixed Charges & Debt Services					
470	BOND PRINCIPAL REDEMPTION	\$485,000	\$535,391	\$565,000	\$565,000
480	BOND INTEREST REDEMPTION	\$47,804	\$21,501	\$23,861	\$23,861
Fixed Charges & Debt Services Total		\$532,804	\$556,892	\$588,861	\$588,861
FIRE - OPERATIONS Total		\$532,804	\$556,892	\$588,861	\$588,861
FIRE Total		\$532,804	\$556,892	\$588,861	\$588,861
GRANT-C.D.B.G. Total		\$532,804	\$556,892	\$588,861	\$588,861



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	FIRE - OPERATIONS				
Activity No.	644 412 125				
Capital Outlay					
511	AUTOMOTIVE EQUIPMENT	\$0	\$246,620	\$0	\$0
Capital Outlay Total		\$0	\$246,620	\$0	\$0
FIRE - OPERATIONS Total		\$0	\$246,620	\$0	\$0
FIRE Total		\$0	\$246,620	\$0	\$0
VEHICLE REPLACEMENT RESERVE Total		\$0	\$246,620	\$0	\$0



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Preliminary Budget Fiscal Year 2024

Finance



DEPARTMENT DESCRIPTION

The Finance Department is dedicated to the long-term financial stability of the City, as well as improving public trust through an open and transparent government.

This Department is responsible for the management and supervision of ethical financial practices for all City departments, as well as maintaining the City's financial records. It is comprised of three divisions: Accounting & Reporting, Budgeting, and Purchasing.

ACCOUNTING & REPORTING

The Accounting & Reporting Division is responsible for maintenance of the City's general financial account, which includes journal entries, annual report preparation, bank account reconciliation, accounts payable, accounts receivable, cashiering, and payroll.

Within that Division, the Revenue Services team (accounts receivable/cashiering) manages the collection of all City revenues, including those received from the Federal, State and County governments. In addition, they manage grants and local revenues from fees, taxes, licenses, and permits such as transient occupancy, business license, residential rentals, pet licensing, garage sales, building and parking citations.

The Finance Department is required to maintain certain financial records and prepare annual reports in accordance with generally accepted accounting principles (GAAP), the Government Accounting Standards Board (GASB), and City policies.

BUDGETING

The Budget Division prepares the citywide budget, provides financial assistance to departments, monitors and reports on expenditures and revenue collections, and submits reports for federal and state grants.

PURCHASING

The Purchasing Division serves all City departments and is responsible for acquiring goods such as supplies, equipment and certain services, as well as disposal of surplus City property and unclaimed personal property.

GOALS & OBJECTIVES

1. Implement new Enterprise Resource System and transition all financial operations to the new software by July 1, 2024.
2. Post revenues and expenditure transactions in a timely manner and maintain the general ledger in a manner which ensures accountability and provision of up-to-date and accurate financial information.
3. Provide quarterly financial reports, analyzing revenues and expenditures in comparison to budget.
4. Uphold high accounting standards and internal controls to ensure continued "clean" audit opinions.
5. Issue the City's Annual Comprehensive Financial Report (ACFR) for the fiscal year ended June 30, 2023 by the end of January 2024.

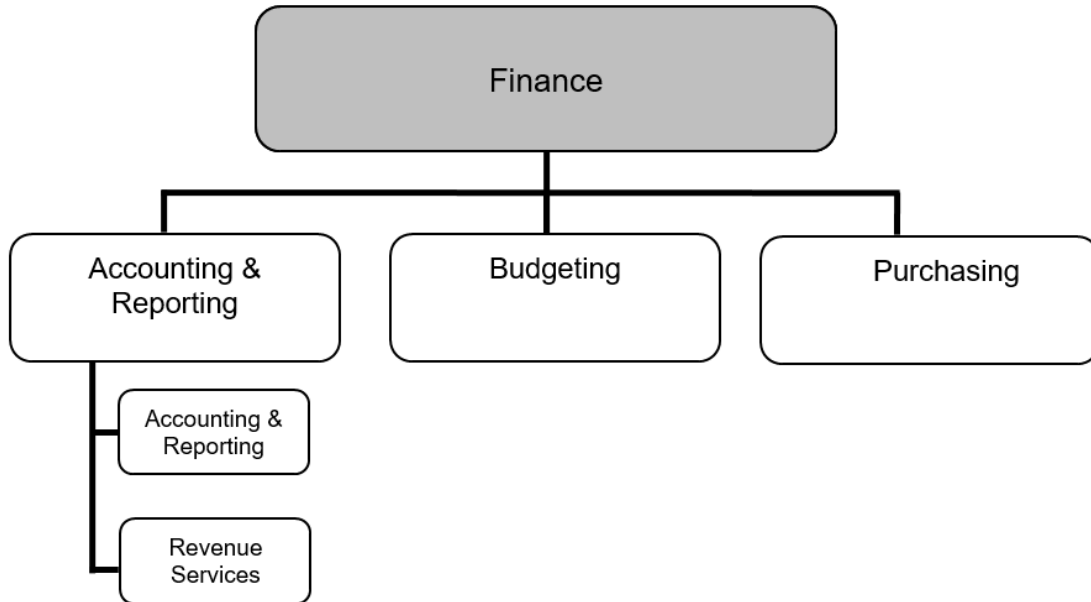


6. Earn the Government Finance Officers Association's (GFOA's) Certificate of Achievement for Excellence in Financial Reporting and Distinguished Budget Award.
7. Review and/or update financial policies and procedures, to ensure effectiveness and efficiency of operations.

PRODUCTIVITY/WORKLOAD STATISTICS

	FY 21 Actual	FY 22 Actual	FY 23 Estimated	FY 24 Projected
Finance:				
Accounts payable invoices processed	11,655	10,111	11,000	11,000
Accounts payable checks processed	5,530	5,439	5,500	5,500
Accounts payable wire payments	142	155	160	160
Accounts payable electronic (HCVP) payments processed	6,720	6,781	6,800	6,800
Business licenses renewed	3,255	3316	3400	3450
Business licenses issued (New)	644	638	640	650
Pet licenses renewed	219	249	360	480
Pet licenses issued	108	75	80	104
Payroll direct deposits processed	8,550	12,207	12,500	12,500
Payroll checks processed	82	120	150	150
Purchasing:				
Purchase orders processed	868	804	820	825
(Purchase order) change orders	435	725	720	720
Requests for bids/quotes generated	3/205	5/200	3/200	3/200

DEPARTMENT ORGANIZATIONAL CHART



SIGNIFICANT CHANGES

No significant changes anticipated.



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
001-04045-3589	RETURNED CHECK CHARGES	\$323	\$233	\$300	\$250
001-04045-3585	MISC. USER CHARGES	\$0	\$0	\$200	\$0
001-04045-3560	CANNABIS BUSINESS FEES	\$0	\$130,608	\$0	\$0
001-04045-3141	GARAGE SALE PERMITS	\$287	\$1,239	\$1,000	\$1,200
001-04045-3101	ADMINISTRATIVE FEES	\$6,294	\$6,604	\$6,500	\$6,500
Total		\$6,904	\$138,684	\$8,000	\$7,950
FINANCE Total		\$6,904	\$138,684	\$8,000	\$7,950
001-04046-3631	CASH OVER/SHORT	\$3	\$75	\$0	\$0
Total		\$3	\$75	\$0	\$0
FINANCE Total		\$3	\$75	\$0	\$0
GENERAL FUND Total		\$6,906	\$138,759	\$8,000	\$7,950



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	ACCOUNTING				
Activity No.	001 404 045				
Personnel Services					
100	PART-TIME SALARIES	\$114,891	\$98,126	\$145,000	\$229,350
101	FULL-TIME SALARIES	\$778,409	\$775,337	\$947,792	\$1,111,419
102	OVERTIME	\$9,072	\$4,535	\$8,000	\$8,000
110	ALLOWANCES & STIPENDS	\$1,508	\$1,797	\$1,800	\$1,800
120	DIFFERENTIAL PAY	\$10,717	\$6,993	\$6,500	\$6,500
140	WORKERS' COMPENSATION	\$9,454	\$9,351	\$9,288	\$11,766
150	HEALTH INSURANCE	\$103,106	\$99,746	\$165,083	\$172,186
151	LTD INSURANCE	\$2,080	\$2,073	\$2,194	\$2,924
160	RETIREMENT PLAN CHARGES	\$290,223	\$279,652	\$288,290	\$254,004
161	MEDICARE	\$13,916	\$13,847	\$13,743	\$16,115
199	PERSONNEL COMPENSATION	\$66,210	\$24,552	\$0	\$0
Personnel Services Total		\$1,399,586	\$1,316,009	\$1,587,690	\$1,814,064
Maintenance & Operations					
201	AUDITING SERVICES	\$63,464	\$67,732	\$66,028	\$77,028
213	PROFESSIONAL SERVICES	\$239,945	\$256,439	\$268,876	\$260,360
222	MEMBERSHIPS & SUBSCRIPTIONS	\$2,065	\$2,891	\$2,760	\$2,555
226	TRAINING, TRAVEL & SUBSISTENCE	\$135	\$5,807	\$7,465	\$10,810
230	PRINTING & BINDING	\$3,940	\$2,708	\$3,460	\$3,460
250	POSTAGE	\$93	\$4	\$150	\$150
281	R & M - OFFICE EQUIPMENT	\$0	\$0	\$130	\$130
299	CONTRACT SERVICES	\$24,566	\$47,979	\$8,984	\$8,984
399	MATERIALS & SUPPLIES	\$3,179	\$4,397	\$4,000	\$4,000
Maintenance & Operations Total		\$337,387	\$387,957	\$361,853	\$367,477
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$123,152	\$111,600	\$122,915	\$126,846
755	INFO. SYSTEMS MAINT. CHARGE	\$102,003	\$100,253	\$112,094	\$129,243
790	INSURANCE CHARGES	\$11,093	\$11,093	\$11,093	\$12,594
Internal Service Charges and Reserves Total		\$236,248	\$222,946	\$246,102	\$268,683
ACCOUNTING Total		\$1,973,221	\$1,926,912	\$2,195,645	\$2,450,224



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	PURCHASING				
Activity No.	001 404 047				
Personnel Services					
101	FULL-TIME SALARIES	\$54,882	\$54,409	\$65,140	\$73,100
102	OVERTIME	\$0	\$0	\$300	\$300
120	DIFFERENTIAL PAY	\$1,542	\$1,415	\$1,300	\$1,300
140	WORKERS' COMPENSATION	\$583	\$589	\$638	\$716
150	HEALTH INSURANCE	\$8,009	\$7,140	\$12,395	\$10,840
160	RETIREMENT PLAN CHARGES	\$18,590	\$17,700	\$19,814	\$16,706
161	MEDICARE	\$890	\$910	\$945	\$1,060
199	PERSONNEL COMPENSATION	\$4,104	\$2,946	\$0	\$0
Personnel Services Total		\$88,600	\$85,109	\$100,532	\$104,023
Maintenance & Operations					
222	MEMBERSHIPS & SUBSCRIPTIONS	\$130	\$130	\$130	\$130
226	TRAINING, TRAVEL & SUBSISTENCE	\$588	\$1,523	\$2,703	\$0
260	ADVERTISING	\$494	\$954	\$500	\$500
307	DUPLICATING SUPPLIES	\$968	\$490	\$1,200	\$1,200
Maintenance & Operations Total		\$2,180	\$3,097	\$4,533	\$1,830
Capital Outlay					
503	FURNITURE & FURNISHINGS	\$16,862	\$43,299	\$0	\$0
Capital Outlay Total		\$16,862	\$43,299	\$0	\$0
PURCHASING Total		\$107,642	\$131,505	\$105,065	\$105,853
FINANCE Total		\$2,080,863	\$2,058,417	\$2,300,710	\$2,556,077
GENERAL FUND Total		\$2,080,863	\$2,058,417	\$2,300,710	\$2,556,077



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	PURCHASING				
Activity No.	630 404 047				
Capital Outlay					
503	FURNITURE & FURNISHINGS	\$0	\$0	\$32,000	\$32,000
Capital Outlay Total		\$0	\$0	\$32,000	\$32,000
PURCHASING Total		\$0	\$0	\$32,000	\$32,000
FINANCE Total		\$0	\$0	\$32,000	\$32,000
OFFICE EQUIPMENT DEPRECIATION Total		\$0	\$0	\$32,000	\$32,000



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Preliminary Budget
Fiscal Year 2024

Housing Authority





HOUSING AUTHORITY

DESCRIPTION

The goal of the National City Housing Authority is to be a leader in housing programs and in the preservation, revitalization, and development of affordable housing projects in National City's neighborhoods. To accomplish this goal, the Housing Authority focuses on four main areas of service. They include: (1) increasing the availability of Safe, quality affordable housing and improving neighborhood infrastructure; (2) administering programs that expand economic prosperity and self-sufficiency such as the Section 8 Housing Choice Voucher Program; (3) aggressively pursuing grants and supporting programs that and improve the quality of life for residents and sustain neighborhoods and healthy families and; (4) use real estate assets to create additional housing and economic development opportunities.

AFFORDABLE HOUSING DEVELOPMENT

The Housing Authority partners with non-profit and for profit developers to increase housing opportunities at all income levels. The Housing Authority is also collaborating with the Community Development and Engineering Department in FY2023 to complete a focused General Plan update that will help the City plan for additional housing units and transportation infrastructure.

SECTION 8 HOUSING CHOICE VOUCHER PROGRAM

This Housing Authority administers 1,131 Housing Choice Vouchers and 32 Emergency Housing Vouchers for eligible low-income families, the elderly and the disabled that either live or work in National City to afford decent, safe, and sanitary housing in the private market. It is a federally funded program under the U.S. Department of Housing and Urban Development (HUD) which enables participants to find their own housing, including single-family homes, townhouses and apartment units.

HOUSING PROGRAMS AND GRANTS

This Housing Authority also manages the HOME Investment Partnerships Program (HOME), Community Development Block Grant Program (CDBG), Coronavirus Aid, Relief, and Economic Security (CARES) Act CDBG-CV, and American Rescue Plan (ARP) Act funds. Other federal, state, and local funds are also leveraged to further develop and preserve affordable housing and provide services to low and moderate income residents while improving infrastructure and services in the City.

REAL ESTATE ASSET MANAGEMENT

This Housing Authority is responsible for the tracking and management of all City-owned real estate assets including acquisition, disposition, and leasing. Some of the assets that are vacant or underutilized can be used to provide housing at all income levels and to promote economic development in the City.

SUPPORT INITIATIVES THAT REDUCE HOMELESSNESS

The Housing Authority supports initiatives to reduce homelessness by participating in the Live Well San Diego South Region Community Leadership Team meetings and the National City Homeless Task Force. The Department has secured funding to assist the homeless and housing insecure population to get them on a path towards housing stability and manages contracts for case management services for persons experiencing homelessness.



HOUSING AUTHORITY

GOALS & OBJECTIVES

1. Complete a focused General Plan update which includes a traffic analysis, draft Elements, draft FAR Bonus Program, and Climate Action Plan.
2. Continue to deliver high performing housing programs such as the Section 8 Housing Choice Voucher Program, Project Based Voucher Program and Emergency Housing Voucher Program.
3. Leverage the Low and Moderate Income Fund, Community Development Block Grant (CDBG), CARES Act CDBG-CV, HOME Investment Partnership (HOME) Program, HOME-ARP, Permanent Local Housing Assistance (PLHA), SANDAG's Housing Acceleration Grant Program (HAP), and Smart Growth Incentive Program (SGIP) funds to develop projects and programs that increase housing opportunities, divert and prevent homelessness, and improve the lives of all residents in National City.
4. Continue to implement the Long-term Property Management Plan for the Successor Agency to the Community Development Commission as the National City Redevelopment Agency and manage the acquisition and disposition of City and Housing Authority properties to promote housing development and prioritize the economic development of National City.
5. Continue to support homeless initiatives by participating on committees, securing funding, and working with City staff and nonprofits to develop programs to assist the housing insecure population and those experiencing homelessness find a pathway towards housing stability.



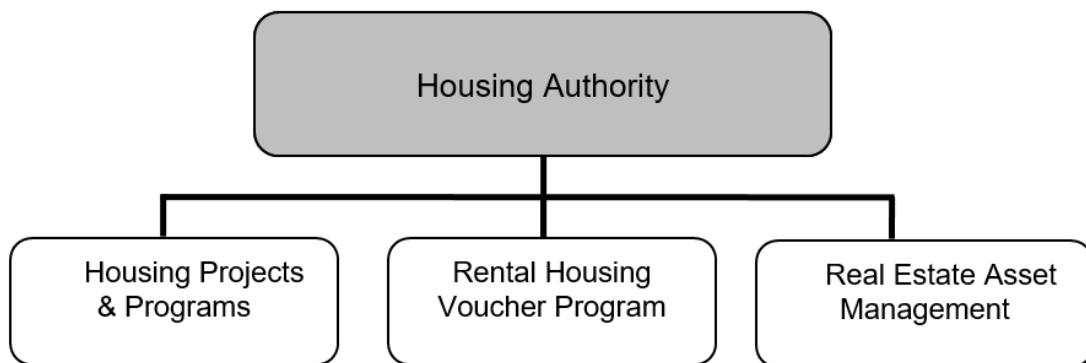
HOUSING AUTHORITY

PRODUCTIVITY/WORKLOAD STATISTICS

	FY 21 Actual	FY 22 Actual	FY 23 Estimated	FY 24 Projected
HUD CDBG and HOME Programs	10	8	4	5
Special Programs in response to COVID-19	3	5	5	1
Housing:				
Tenant based rental assistance (TBRA) through HOME for homeless/homeless prevention/victims of domestic violence*	11	0	81	0
Housing Choice Voucher Program:	1123	1123	1123	1123
Applications taken	99	494	650	650
Applications processed for initial eligibility	1076	775	280	300
New admissions	992	65	68	75
Families assisted	11	1056	1095	1110
Housing Quality Standard inspections		1098		1250
Incoming portability processed	10	11	5	5
Outgoing portability processed	3	33	3	3
Emergency Housing Voucher - assisted	N/A	N/A	15	32

*Numbers have been edited to reflect beneficiaries reported to HUD's Integrated Disbursement and Information System (IDIS). IDIS is a nationwide database that provides HUD with information regarding the program activities. Beneficiaries served are reported and based on HUD's HOME Investment Partnership rules and regulations.

DEPARTMENT ORGANIZATIONAL CHART



SIGNIFICANT CHANGES

No significant change anticipated.



HOUSING AUTHORITY

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
001-43326-3463	OTHER STATE GRANTS	\$0	\$271,929	\$0	\$0
	Total	\$0	\$271,929	\$0	\$0
	HOUSING Total	\$0	\$271,929	\$0	\$0
001-45462-3634	MISC. REVENUE	\$0	\$0	\$0	\$150,690
001-45462-3636	REFUNDS & REIMBURSEMENTS	\$0	\$7	\$0	\$0
	Total	\$0	\$7	\$0	\$150,690
	HOUSING Total	\$0	\$7	\$0	\$150,690
	GENERAL FUND Total	\$0	\$271,936	\$0	\$150,690



HOUSING AUTHORITY

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
301-00000-3498	OTHER FEDERAL GRANTS	\$964,772	\$1,116,902	\$710,043	\$710,000
301-00000-3636	REFUNDS & REIMBURSEMENTS	\$0	\$3,320	\$0	\$0
301-00000-3999	TRANSFERS FROM OTHER FUNDS	\$5,707	\$12,143	\$0	\$0
Total		\$970,479	\$1,132,365	\$710,043	\$710,000
HOUSING Total		\$970,479	\$1,132,365	\$710,043	\$710,000
GRANT-C.D.B.G. Total		\$970,479	\$1,132,365	\$710,043	\$710,000



HOUSING AUTHORITY

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
501-00000-3302	UNREALIZED GAIN/LOSS ON INVESTM	(\$257,426)	(\$343,983)	\$0	\$0
501-00000-3998	SPECIAL ITEMS	\$0	\$450,000	\$0	\$0
501-00000-3320	INTEREST INCOME-LOANS	\$1,256,770	\$1,018,465	\$545,073	\$0
501-00000-3300	INVESTMENT EARNINGS	\$294,097	\$141,627	\$150,000	\$0
501-00000-3634	MISC. REVENUE	\$60,988	\$344	\$0	\$0
Total		\$1,354,430	\$1,266,453	\$695,073	\$0
HOUSING Total		\$1,354,430	\$1,266,453	\$695,073	\$0
501-45462-3300	INVESTMENT EARNINGS	\$300	\$0	\$0	\$100,000
501-45462-3312	RENT AND LEASES	\$75,000	\$75,000	\$75,000	\$111,000
501-45462-3634	MISC. REVENUE	\$87,368	\$0	\$86,000	\$86,430
501-45462-3636	REFUNDS & REIMBURSEMENTS	\$0	\$70,000	\$0	\$0
Total		\$162,668	\$145,000	\$161,000	\$297,430
HOUSING Total		\$162,668	\$145,000	\$161,000	\$297,430
HOUSING AUTHORITY Total		\$1,517,098	\$1,411,453	\$856,073	\$297,430



HOUSING AUTHORITY

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
502-45462-3614	HUD REVENUE-HOUSING ASSISTANC	\$12,426,945	\$12,676,906	\$13,332,000	\$13,775,000
502-45462-3615	HUD REVENUE-AMINISTRATIVE FEES	\$1,238,109	\$1,310,564	\$1,339,000	\$1,458,578
502-45462-3616	FRAUD RECOVERY-HAP	\$30,295	\$14,374	\$15,000	\$15,000
502-45462-3617	FRAUD RECOVERY--ADMINISTRATIVE	\$30,295	\$14,374	\$15,000	\$15,000
502-45462-3618	OTHER REVENUE-PORTABILITY ADMI	\$113,168	\$86,402	\$90,000	\$60,000
502-45462-3600	OTHER REVENUE - PORTABILITY 80%	\$8,075	\$7,185	\$15,000	\$15,000
502-45462-3300	INVESTMENT EARNINGS	\$237	\$363	\$150	\$0
Total		\$13,847,125	\$14,110,168	\$14,806,150	\$15,338,578
HOUSING Total		\$13,847,125	\$14,110,168	\$14,806,150	\$15,338,578
502-45956-3615	HUD REVENUE-ADMINISTRATIVE FEE	\$0	\$15,264	\$45,492	\$45,000
502-45956-3614	HUD REVENUE-HOUSING ASSISTANC	\$68,800	\$159,035	\$200,000	\$200,000
Total		\$68,800	\$174,299	\$245,492	\$245,000
HOUSING Total		\$68,800	\$174,299	\$245,492	\$245,000
SECTION 8 FUND Total		\$13,915,925	\$14,284,467	\$15,051,642	\$15,583,578



HOUSING AUTHORITY

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
505-00000-3498	OTHER FEDERAL GRANTS	\$320,919	\$260,593	\$400,681	\$400,681
505-00000-3321	INTEREST	\$39,082	\$23,357	\$0	\$0
505-00000-3300	INVESTMENT EARNINGS	\$7,628	\$4,480	\$0	\$0
505-00000-3302	UNREALIZED GAIN/LOSS ON INVESTM	(\$8,291)	(\$14,935)	\$0	\$0
Total		\$359,338	\$273,495	\$400,681	\$400,681
HOUSING Total		\$359,338	\$273,495	\$400,681	\$400,681
HOME FUND Total		\$359,338	\$273,495	\$400,681	\$400,681



HOUSING AUTHORITY

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
532-00000-3636	REFUNDS & REIMBURSEMENTS	\$0	\$3,982	\$0	\$0
532-00000-3300	INVESTMENT EARNINGS	\$6,097	\$3,200	\$0	\$0
532-00000-3302	UNREALIZED GAIN/LOSS ON INVESTM	(\$4,675)	(\$8,969)	\$0	\$0
532-00000-3320	HILP PAYMENETS - PRINCIPAL	\$0	\$0	\$0	\$0
532-00000-3321	INTEREST	\$218,571	\$276,071	\$125,000	\$125,000
Total		\$219,993	\$274,284	\$125,000	\$125,000
HOUSING Total		\$219,993	\$274,284	\$125,000	\$125,000
LOW&MOD INCOME HOUSING ASSET FUND Tota		\$219,993	\$274,284	\$125,000	\$125,000



HOUSING AUTHORITY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	HOUSING				
Activity No.	001 419 462				
Personnel Services					
101	FULL-TIME SALARIES	\$116	\$6,072	\$0	\$21,823
120	DIFFERENTIAL PAY	\$2,652	\$325	\$0	\$0
140	WORKERS' COMPENSATION	\$67	\$67	\$0	\$642
150	HEALTH INSURANCE	\$1,619	\$1,008	\$0	\$3,600
151	LTD INSURANCE	\$321	\$11	\$0	\$183
160	RETIREMENT PLAN CHARGES	\$7,694	\$741	\$0	\$4,988
161	MEDICARE	\$142	\$98	\$0	\$316
Personnel Services Total		\$12,611	\$8,322	\$0	\$31,552
Maintenance & Operations					
307	DUPLICATING SUPPLIES	\$0	\$0	\$400	\$400
Maintenance & Operations Total		\$0	\$0	\$400	\$400
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$49,261	\$44,640	\$49,165	\$50,737
750	VEHICLE SERVICES CHARGES	\$10,028	\$10,626	\$12,251	\$14,476
755	INFO. SYSTEMS MAINT. CHARGE	\$44,528	\$43,763	\$48,933	\$56,419
790	INSURANCE CHARGES	\$4,392	\$4,392	\$4,392	\$4,986
Internal Service Charges and Reserves Total		\$108,209	\$103,421	\$114,741	\$126,618
Fixed Charges & Debt Services					
445	LEGAL SETTLEMENTS	\$1,488	\$424	\$3,000	\$3,000
Fixed Charges & Debt Services Total		\$1,488	\$424	\$3,000	\$3,000
HOUSING Total		\$122,308	\$112,167	\$118,141	\$161,570
Activity	ASSET MANAGEMENT				
Activity No.	001 419 475				
Personnel Services					
101	FULL-TIME SALARIES	\$39,186	\$37,161	\$241,112	\$42,714
140	WORKERS' COMPENSATION	\$1,817	\$1,818	\$11,587	\$2,838
150	HEALTH INSURANCE	\$8,758	\$7,825	\$34,997	\$5,420
160	RETIREMENT PLAN CHARGES	\$4,896	\$12,207	\$73,339	\$9,762



HOUSING AUTHORITY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
161	MEDICARE	\$550	\$562	\$3,496	\$619
199	PERSONNEL COMPENSATION	\$1,000	\$736	\$0	\$0
Personnel Services Total		\$56,207	\$60,309	\$364,531	\$61,353
Maintenance & Operations					
209	LEGAL SERVICES	\$0	\$0	\$10,000	\$10,000
213	PROFESSIONAL SERVICES	\$3,388	\$3,950	\$10,000	\$10,000
213	PROFESSIONAL SVC'S - SA SALE OF PROPERTY	\$300	\$300	\$35,000	\$35,000
226	TRAINING, TRAVEL & SUBSISTENCE	\$0	\$0	\$1,500	\$1,500
299	CONTRACT SERVICES	\$4,953	\$5,296	\$7,000	\$7,000
399	MATERIALS & SUPPLIES	\$402	\$0	\$1,000	\$1,000
Maintenance & Operations Total		\$9,042	\$9,546	\$64,500	\$64,500
ASSET MANAGEMENT Total		\$65,249	\$69,855	\$429,031	\$125,853
HOUSING Total		\$187,557	\$182,022	\$547,172	\$287,423
GENERAL FUND Total		\$187,557	\$182,022	\$547,172	\$287,423



HOUSING AUTHORITY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	NUTRITION CENTER				
Activity No.	166 419 429				
Personnel Services					
100	PART-TIME SALARIES	\$2,591	\$34,350	\$0	\$0
101	FULL-TIME SALARIES	\$23,988	\$15,511	\$0	\$0
120	DIFFERENTIAL PAY	\$327	\$117	\$0	\$0
140	WORKERS' COMPENSATION	\$996	\$2,391	\$0	\$0
150	HEALTH INSURANCE	\$5,629	\$1,788	\$0	\$0
151	LTD INSURANCE	\$57	\$19	\$0	\$0
160	RETIREMENT PLAN CHARGES	\$3,383	\$1,585	\$0	\$0
161	MEDICARE	\$419	\$814	\$0	\$0
Personnel Services Total		\$37,390	\$56,575	\$0	\$0
NUTRITION CENTER Total		\$37,390	\$56,575	\$0	\$0
HOUSING Total		\$37,390	\$56,575	\$0	\$0
NUTRITION Total		\$37,390	\$56,575	\$0	\$0



HOUSING AUTHORITY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	HOUSING				
Activity No.	301 419 462				
Personnel Services					
101	FULL-TIME SALARIES	\$62,870	\$70,455	\$85,337	\$56,044
110	ALLOWANCES & STIPENDS	\$0	\$163	\$0	\$0
120	DIFFERENTIAL PAY	\$925	\$808	\$1,170	\$1,170
140	WORKERS' COMPENSATION	\$671	\$790	\$4,039	\$4,209
150	HEALTH INSURANCE	\$8,148	\$9,286	\$14,029	\$8,300
151	LTD INSURANCE	\$256	\$236	\$256	\$146
160	RETIREMENT PLAN CHARGES	\$44,127	\$21,752	\$25,957	\$12,808
161	MEDICARE	\$1,058	\$1,167	\$1,237	\$813
199	PERSONNEL COMPENSATION	\$5,621	\$0	\$2,500	\$2,500
Personnel Services Total		\$123,674	\$104,657	\$134,525	\$85,990
Maintenance & Operations					
201	AUDITING SERVICES	\$0	\$0	\$2,000	\$0
213	PROFESSIONAL SERVICES	\$0	\$99	\$0	\$0
222	MEMBERSHIPS & SUBSCRIPTIONS	\$0	\$120	\$120	\$120
226	TRAINING, TRAVEL & SUBSISTENCE	\$190	\$0	\$3,000	\$3,000
250	POSTAGE	\$21	\$0	\$200	\$0
260	ADVERTISING	\$36	\$1,589	\$3,600	\$3,600
299	CONTRACT SERVICES	\$0	\$0	\$30,000	\$30,000
301	OFFICE SUPPLIES	\$4	\$0	\$1,064	\$1,000
399	MATERIALS & SUPPLIES	\$1,742	\$0	\$1,324	\$1,500
Maintenance & Operations Total		\$1,994	\$1,808	\$41,308	\$39,220
HOUSING Total		\$125,668	\$106,465	\$175,833	\$125,210
Activity	Housing & Grants - CARES Act.				
Activity No.	301 419 922				
Personnel Services					
101	FULL-TIME SALARIES	\$56,258	\$53,672	\$88,068	\$0
110	ALLOWANCES & STIPENDS	\$0	\$438	\$360	\$0
120	DIFFERENTIAL PAY	\$453	\$564	\$975	\$975
140	WORKERS' COMPENSATION	\$593	\$644	\$5,097	\$0



HOUSING AUTHORITY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
150	HEALTH INSURANCE	\$5,779	\$7,674	\$13,532	\$0
151	LTD INSURANCE	\$0	\$270	\$256	\$0
160	RETIREMENT PLAN CHARGES	\$5,545	\$26,319	\$26,788	\$0
161	MEDICARE	\$926	\$952	\$1,277	\$0
199	PERSONNEL COMPENSATION	\$0	\$0	\$0	\$0
Personnel Services Total		\$69,554	\$90,533	\$136,353	\$975
Maintenance & Operations					
250	POSTAGE	\$16	\$0	\$100	\$0
260	ADVERTISING	\$4,901	\$874	\$1,000	\$0
399	MATERIALS & SUPPLIES	\$0	\$0	\$500	\$0
Maintenance & Operations Total		\$4,917	\$874	\$1,600	\$0
Housing & Grants - CARES Act. Total		\$74,471	\$91,407	\$137,953	\$975
HOUSING Total		\$200,139	\$197,872	\$313,786	\$126,185
GRANT-C.D.B.G. Total		\$200,139	\$197,872	\$313,786	\$126,185



HOUSING AUTHORITY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	HOUSING				
Activity No.	501 419 462				
Refunds, Contributions & Special Paymnts					
650	KIMBALL HIGHLAND MASTER PLAN	\$0	\$10,482,000	\$0	\$0
Refunds, Contributions & Special Paymnts Total		\$0	\$10,482,000	\$0	\$0
Personnel Services					
101	FULL-TIME SALARIES	\$133,097	\$124,896	\$32,698	\$184,442
110	ALLOWANCES & STIPENDS	\$0	\$756	\$360	\$1,800
120	DIFFERENTIAL PAY	\$0	\$2,398	\$1,625	\$1,625
140	WORKERS' COMPENSATION	\$1,451	\$3,599	\$1,510	\$5,564
150	HEALTH INSURANCE	\$14,630	\$14,488	\$4,930	\$26,867
151	LTD INSURANCE	\$0	\$149	\$0	\$439
160	RETIREMENT PLAN CHARGES	\$43,572	\$55,908	\$9,946	\$42,152
161	MEDICARE	\$2,313	\$2,088	\$474	\$2,674
Personnel Services Total		\$195,062	\$204,282	\$51,543	\$265,564
Other Financing Uses					
099	TRANSFERS TO OTHER FUNDS	\$508,832	\$526,641	\$545,073	\$545,000
Other Financing Uses Total		\$508,832	\$526,641	\$545,073	\$545,000
Maintenance & Operations					
209	LEGAL SERVICES	\$0	\$25,000	\$25,000	\$25,000
213	PROFESSIONAL SERVICES	\$386,973	\$652,952	\$825,000	\$675,000
226	TRAINING, TRAVEL & SUBSISTENCE	\$0	\$0	\$0	\$0
230	PRINTING & BINDING	\$5,521	\$0	\$8,000	\$1,500
250	POSTAGE	\$6,923	\$0	\$2,000	\$1,000
299	CONTRACT SERVICES	\$0	\$0	\$0	\$0
399	MATERIALS & SUPPLIES	\$1,133	\$0	\$4,000	\$4,000
Maintenance & Operations Total		\$400,551	\$677,952	\$864,000	\$706,500
HOUSING Total		\$1,104,445	\$11,890,875	\$1,460,616	\$1,517,064

Activity PERMANENT LOCAL HOUSING ALLOCATION

Activity No. 501 419 477

Refunds, Contributions & Special Paymnts



HOUSING AUTHORITY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
650	ALPHA PROJECT	\$0	\$58,982	\$0	\$0
650	McAlister Inc.	\$0	\$198,560	\$217,950	\$0
Refunds, Contributions & Special Paymnts Total		\$0	\$257,542	\$217,950	\$0
Personnel Services					
101	FULL-TIME SALARIES	\$0	\$15,713	\$0	\$0
120	DIFFERENTIAL PAY	\$0	\$305	\$0	\$0
140	WORKERS' COMPENSATION	\$0	\$178	\$0	\$0
150	HEALTH INSURANCE	\$0	\$1,840	\$0	\$0
160	RETIREMENT PLAN CHARGES	\$0	\$1,659	\$0	\$0
161	MEDICARE	\$0	\$263	\$0	\$0
Personnel Services Total		\$0	\$19,958	\$0	\$0
PERMANENT LOCAL HOUSING ALLOCATIO		\$0	\$277,500	\$217,950	\$0
Activity HOUSING ACCELERATION GRANT PROG-CYCLE 1					
Activity No. 501 419 478					
Personnel Services					
101	FULL-TIME SALARIES	\$0	\$116,100	\$0	\$0
110	ALLOWANCES & STIPENDS	\$0	\$630	\$0	\$0
120	DIFFERENTIAL PAY	\$0	\$836	\$0	\$0
140	WORKERS' COMPENSATION	\$0	\$3,394	\$0	\$0
150	HEALTH INSURANCE	\$0	\$6,316	\$0	\$0
151	LTD INSURANCE	\$0	\$1,215	\$0	\$0
160	RETIREMENT PLAN CHARGES	\$0	\$8,516	\$0	\$0
161	MEDICARE	\$0	\$1,063	\$0	\$0
Personnel Services Total		\$0	\$138,070	\$0	\$0
Maintenance & Operations					
213	PROFESSIONAL SERVICES	\$0	\$0	\$0	\$0
Maintenance & Operations Total		\$0	\$0	\$0	\$0
HOUSING ACCELERATION GRANT PROG-C		\$0	\$138,070	\$0	\$0
Activity COVID-19 Response					
Activity No. 501 419 911					



HOUSING AUTHORITY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Maintenance & Operations					
399	MATERIALS & SUPPLIES	\$0	\$0	\$2,000	\$2,000
Maintenance & Operations Total		\$0	\$0	\$2,000	\$2,000
COVID-19 Response Total		\$0	\$0	\$2,000	\$2,000
HOUSING Total		\$1,104,445	\$12,306,445	\$1,680,566	\$1,519,064
HOUSING AUTHORITY Total		\$1,104,445	\$12,306,445	\$1,680,566	\$1,519,064



HOUSING AUTHORITY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	HOUSING				
Activity No.	502 419 462				
Refunds, Contributions & Special Paymnts					
602	HOUSING ASSISTANCE PAYMENTS	2,411,041	\$12,566,648	\$13,200,000	\$13,775,000
603	OTHER GENERAL EXPENSES	\$5,790	\$30,764	\$10,000	\$40,000
606	HAP PORTABILITY-IN	\$113,168	\$86,402	\$90,000	\$60,000
698	INDIRECT/OVERHEAD COSTS	\$168,569	\$168,569	\$170,000	\$170,000
Refunds, Contributions & Special Paymnts Total		\$12,698,568	\$12,852,383	\$13,470,000	\$14,045,000
Personnel Services					
100	PART-TIME SALARIES	\$32,196	\$31,169	\$0	\$0
101	FULL-TIME SALARIES	\$484,315	\$528,033	\$653,878	\$778,679
105	LONGEVITY	\$434	\$395	\$400	\$500
110	ALLOWANCES & STIPENDS	\$363	\$329	\$360	\$360
120	DIFFERENTIAL PAY	\$10,861	\$9,360	\$8,849	\$8,849
140	WORKERS' COMPENSATION	\$5,478	\$6,047	\$7,334	\$9,296
150	HEALTH INSURANCE	\$93,048	\$89,020	\$114,998	\$112,123
151	LTD INSURANCE	\$71	\$62	\$731	\$1,097
160	RETIREMENT PLAN CHARGES	\$169,419	\$184,904	\$198,890	\$177,959
161	MEDICARE	\$8,049	\$8,791	\$9,481	\$11,291
199	PERSONNEL COMPENSATION	\$36,208	\$11,450	\$15,000	\$15,000
Personnel Services Total		\$840,442	\$869,560	\$1,009,921	\$1,115,154
Maintenance & Operations					
201	AUDITING SERVICES	\$0	\$0	\$4,000	\$4,000
213	PROFESSIONAL SERVICES	\$6,180	\$2,944	\$5,000	\$5,000
222	MEMBERSHIPS & SUBSCRIPTIONS	\$1,759	\$739	\$3,000	\$3,000
226	TRAINING, TRAVEL & SUBSISTENCE	\$6,280	\$2,814	\$8,000	\$8,000
250	POSTAGE	\$8,409	\$6,032	\$10,000	\$10,000
260	ADVERTISING	\$149	\$0	\$600	\$700
299	CONTRACT SERVICES	\$37,264	\$81,170	\$56,000	\$75,000
399	MATERIALS & SUPPLIES	\$20,442	\$6,096	\$14,000	\$14,000
Maintenance & Operations Total		\$80,482	\$99,795	\$100,600	\$119,700
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$28,979	\$26,261	\$28,923	\$29,848



HOUSING AUTHORITY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
750	VEHICLE SERVICES CHARGES	\$1,927	\$2,042	\$2,354	\$2,781
752	VEHICLE LEASE CHARGE	\$3,897	\$4,000	\$9,000	\$9,000
755	INFO. SYSTEMS MAINT. CHARGE	\$74,171	\$72,898	\$81,508	\$93,978
790	INSURANCE CHARGES	\$7,535	\$7,535	\$7,535	\$8,554
Internal Service Charges and Reserves Total		\$116,509	\$112,736	\$129,320	\$144,162
Capital Outlay					
502	COMPUTER EQUIPMENT	\$8,451	\$0	\$5,000	\$5,000
503	FURNITURE & FURNISHINGS	\$0	\$8,998	\$0	\$0
Capital Outlay Total		\$8,451	\$8,998	\$5,000	\$5,000
HOUSING Total		\$13,744,452	\$13,943,472	\$14,714,841	\$15,429,016
HOUSING Total		\$13,744,452	\$13,943,472	\$14,714,841	\$15,429,016
SECTION 8 FUND Total		\$13,744,452	\$13,943,472	\$14,714,841	\$15,429,016



HOUSING AUTHORITY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	HOUSING				
Activity No.	505 419 462				
Personnel Services					
101	FULL-TIME SALARIES	\$18,700	\$73,840	\$136,665	\$116,434
110	ALLOWANCES & STIPENDS	\$0	\$841	\$1,800	\$720
120	DIFFERENTIAL PAY	\$0	\$750	\$1,622	\$1,622
140	WORKERS' COMPENSATION	\$200	\$1,126	\$7,814	\$8,737
150	HEALTH INSURANCE	\$3,054	\$10,296	\$17,952	\$16,253
151	LTD INSURANCE	\$132	\$340	\$219	\$146
160	RETIREMENT PLAN CHARGES	\$2,296	\$13,662	\$41,569	\$26,610
161	MEDICARE	\$327	\$1,190	\$1,982	\$1,688
199	PERSONNEL COMPENSATION	\$2,608	\$0	\$800	\$800
Personnel Services Total		\$27,317	\$102,045	\$210,423	\$173,011
Maintenance & Operations					
209	LEGAL SERVICES	\$0	\$0	\$5,000	\$5,000
213	PROFESSIONAL SERVICES	\$0	\$0	\$28,000	\$20,000
222	MEMBERSHIPS & SUBSCRIPTIONS	\$550	\$550	\$700	\$600
226	TRAINING, TRAVEL & SUBSISTENCE	\$979	\$349	\$4,000	\$4,000
250	POSTAGE	\$0	\$0	\$150	\$0
299	CONTRACT SERVICES	\$0	\$0	\$15,000	\$23,150
399	MATERIALS & SUPPLIES	\$1,208	\$509	\$1,000	\$1,000
Maintenance & Operations Total		\$2,737	\$1,408	\$53,850	\$53,750
HOUSING Total		\$30,054	\$103,453	\$264,273	\$226,761
HOUSING Total		\$30,054	\$103,453	\$264,273	\$226,761
HOME FUND Total		\$30,054	\$103,453	\$264,273	\$226,761



HOUSING AUTHORITY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	HOUSING				
Activity No.	532 419 462				
Personnel Services					
100	PART-TIME SALARIES	\$1,442	\$133	\$0	\$0
101	FULL-TIME SALARIES	\$49,520	\$34,681	\$66,633	\$72,348
110	ALLOWANCES & STIPENDS	\$1,451	\$681	\$720	\$720
120	DIFFERENTIAL PAY	\$714	\$623	\$865	\$865
140	WORKERS' COMPENSATION	\$574	\$389	\$4,226	\$4,623
150	HEALTH INSURANCE	\$7,447	\$3,925	\$9,469	\$9,190
151	LTD INSURANCE	\$526	\$138	\$0	\$183
160	RETIREMENT PLAN CHARGES	\$39,216	\$9,181	\$20,268	\$16,534
161	MEDICARE	\$949	\$576	\$966	\$1,049
199	PERSONNEL COMPENSATION	\$11,754	\$0	\$3,000	\$3,000
Personnel Services Total		\$113,592	\$50,327	\$106,147	\$108,512
Maintenance & Operations					
209	LEGAL SERVICES	\$19,319	\$20,586	\$25,000	\$0
213	PROFESSIONAL SERVICES	\$0	\$0	\$50,000	\$50,000
250	POSTAGE	\$73	\$159	\$0	\$0
299	CONTRACT SERVICES	\$0	\$15,657	\$0	\$0
399	MATERIALS & SUPPLIES	\$367	\$4,426	\$1,000	\$1,000
Maintenance & Operations Total		\$19,759	\$40,828	\$76,000	\$51,000
Internal Service Charges and Reserves					
755	INFO. SYSTEMS MAINT. CHARGE	\$2,344	\$2,304	\$2,575	\$2,969
Internal Service Charges and Reserves Total		\$2,344	\$2,304	\$2,575	\$2,969
HOUSING Total		\$135,695	\$93,459	\$184,722	\$162,481
Activity	ASSET MANAGEMENT				
Activity No.	532 419 475				
Personnel Services					
101	FULL-TIME SALARIES	\$39,186	\$28,053	\$0	\$0
140	WORKERS' COMPENSATION	\$1,817	\$1,414	\$0	\$0
150	HEALTH INSURANCE	\$8,759	\$5,816	\$0	\$0



HOUSING AUTHORITY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
160	RETIREMENT PLAN CHARGES	\$4,896	\$11,540	\$0	\$0
161	MEDICARE	\$550	\$441	\$0	\$0
199	PERSONNEL COMPENSATION	\$1,000	\$736	\$500	\$500
Personnel Services Total		\$56,207	\$48,000	\$500	\$500
ASSET MANAGEMENT Total		\$56,207	\$48,000	\$500	\$500
HOUSING Total		\$191,902	\$141,459	\$185,222	\$162,981
LOW&MOD INCOME HOUSING ASSET FUND Total		\$191,902	\$141,459	\$185,222	\$162,981

Preliminary Budget
Fiscal Year 2024

Human Resources





DEPARTMENT DESCRIPTION

The Human Resources Department serves all City departments with a staff of approximately 400 full and part-time employees. This Department is responsible for providing a wide range of services including recruiting and selecting job applicants, training and development, employee benefit and equal opportunity programs, policy development and labor relations, among other projects.

It also manages employee benefit programs and investigates potential disciplinary actions. While working closely with the Civil Service Commission, the Human Resources Department provides technical assistance to other departments regarding staffing, discipline, organizational structure, and the interpretation of Civil Service Rules and State and Federal personnel laws and regulations.

It is the goal of the Human Resources Department to create a supportive working environment that fosters excellence in the workplace in order to provide National City residents and visitors with the utmost commitment, courtesy, collaboration, communication and customer service.

RISK MANAGEMENT– WORKERS' COMPENSATION

The Risk Management Division of the Human Resources Department manages the City's self-insured workers' compensation program, including oversight of employee injury claims and the City's light duty and return to work programs.

GOALS & OBJECTIVES

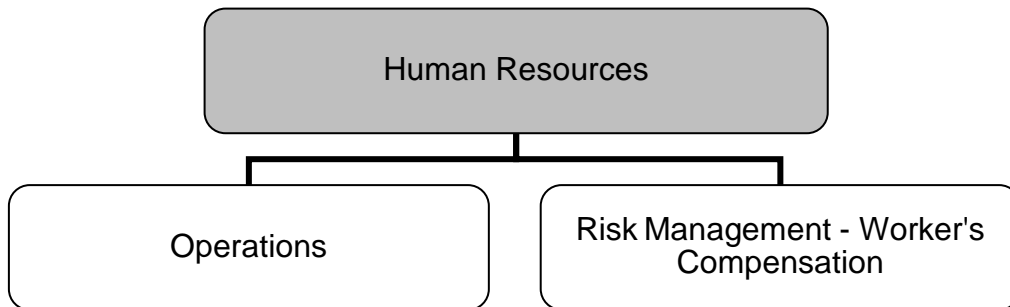
1. Work closely with the City Manager and department directors in identifying critical staffing needs and in creating succession plans that encourages and supports operational efficiencies.
2. Continue to update existing and develop needed policy documents.
3. Develop and execute training programs to reduce the likelihood of accidents and injuries and improve customer service.
4. Continue to provide assistance and response to departmental needs in a timely manner with quality employee replacements and sound personnel advice on discipline, grievances, complaints and the law.
5. Conduct job studies and surveys, staying abreast of current industry standards and trends.
6. Strengthen organizational development through such methods as the development of targeted employee and supervisor training; succession planning; career planning; and an enhanced performance evaluation system.



PRODUCTIVITY/WORKLOAD STATISTICS

	FY 21 Actual	FY 22 Actual	FY 23 Estimated	FY 24 Projected
Human Resources:				
Recruitments conducted	33	65	44	55
Permanent positions filled	24	36	37	45
Temporary (part-time, hourly) positions filled	8	22	18	28
Medical exams conducted (i.e. pre-employment, DMV)	43	56	55	60
New and/or promotional employees passing probation	55	Information not available	Information not available	Information not available
Risk Management:				
Workers' Compensation claims processed	57	48	48	53

DEPARTMENT ORGANIZATIONAL CHART



SIGNIFICANT CHANGES

No significant changes anticipated.



HUMAN RESOURCES

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
627-00000-3700	INTERNAL SERVICE CHARGES	\$1,723,420	\$1,729,101	\$1,729,101	\$1,963,019
Total		\$1,723,420	\$1,729,101	\$1,729,101	\$1,963,019
HUMAN RESOURCES Total		\$1,723,420	\$1,729,101	\$1,729,101	\$1,963,019
627-14000-3700	INTERNAL SERVICE CHARGES	\$2,126,891	\$2,155,784	\$1,930,915	\$2,036,981
627-14000-3643	INSURANCE SETTLEMENTS	\$0	\$540,165	\$219,067	\$0
627-14000-3636	REFUNDS & REIMBURSEMENTS	\$0	\$1,650	\$0	\$0
627-14000-3632	COMP INSURANCE REIMBURSEMENT	\$10,379	\$9,665	\$0	\$0
Total		\$2,137,270	\$2,707,264	\$2,149,982	\$2,036,981
HUMAN RESOURCES Total		\$2,137,270	\$2,707,264	\$2,149,982	\$2,036,981
LIABILITY INS. FUND Total		\$3,860,690	\$4,436,365	\$3,879,083	\$4,000,000



HUMAN RESOURCES

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	HUMAN RESOURCES				
Activity No.	001 407 083				
Personnel Services					
100	PART-TIME SALARIES	\$0	\$31,036	\$91,800	\$139,554
101	FULL-TIME SALARIES	\$362,962	\$438,482	\$386,691	\$411,314
102	OVERTIME	\$0	\$0	\$500	\$500
110	ALLOWANCES & STIPENDS	\$3,646	\$5,060	\$1,800	\$1,800
120	DIFFERENTIAL PAY	\$3,389	\$3,248	\$3,202	\$3,202
140	WORKERS' COMPENSATION	\$3,917	\$5,287	\$3,790	\$4,031
150	HEALTH INSURANCE	\$62,649	\$61,183	\$57,160	\$58,953
151	LTD INSURANCE	\$1,781	\$2,002	\$1,829	\$1,828
160	RETIREMENT PLAN CHARGES	\$116,503	\$113,817	\$120,808	\$94,002
161	MEDICARE	\$5,809	\$8,166	\$5,607	\$5,964
199	PERSONNEL COMPENSATION	\$15,148	\$68,150	\$0	\$0
Personnel Services Total		\$575,803	\$736,431	\$673,187	\$721,148
Maintenance & Operations					
205	MEDICAL SERVICES	\$15,599	\$18,679	\$14,000	\$25,000
207	TECHNICAL PERSONNEL SERVICES	\$188	\$386	\$500	\$700
212	GOVERNMENTAL PURPOSES	\$6,132	\$4,417	\$9,600	\$10,000
213	PROFESSIONAL SERVICES	\$71,406	\$118,963	\$200,000	\$200,000
217	INVESTIGATIVE SERVICES	\$1,237	\$2,887	\$3,000	\$3,000
222	MEMBERSHIPS & SUBSCRIPTIONS	\$1,728	\$1,837	\$2,036	\$1,609
225	RECRUITMENT	\$0	\$0	\$25,000	\$20,000
226	TRAINING, TRAVEL & SUBSISTENCE	\$2,462	\$8,201	\$8,576	\$8,420
230	PRINTING & BINDING	\$198	\$126	\$300	\$300
249	CITYWIDE TRAINING	\$0	\$0	\$20,000	\$30,000
260	ADVERTISING	\$884	\$775	\$1,000	\$500
264	PROMOTIONAL ACTIVITIES	\$16,345	\$0	\$0	\$10,000
281	R & M - OFFICE EQUIPMENT	\$0	\$0	\$200	\$0
299	CONTRACT SERVICES	\$0	\$37,346	\$0	\$0
307	DUPLICATING SUPPLIES	\$745	\$958	\$1,300	\$1,000
399	MATERIALS & SUPPLIES	\$1,593	\$2,029	\$1,500	\$2,000
Maintenance & Operations Total		\$118,519	\$196,604	\$287,012	\$312,529



HUMAN RESOURCES

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$104,325	\$94,539	\$104,124	\$107,454
755	INFO. SYSTEMS MAINT. CHARGE	\$45,767	\$44,981	\$50,294	\$57,989
790	INSURANCE CHARGES	\$6,117	\$6,117	\$6,117	\$6,945
Internal Service Charges and Reserves Total		\$156,209	\$145,637	\$160,535	\$172,387
HUMAN RESOURCES Total		\$850,531	\$1,078,672	\$1,120,734	\$1,206,064
Activity	COVID-19 Response				
Activity No.	001 407 911				
Maintenance & Operations					
205	MEDICAL SERVICES	\$1,647	\$15,502	\$0	\$0
Maintenance & Operations Total		\$1,647	\$15,502	\$0	\$0
COVID-19 Response Total		\$1,647	\$15,502	\$0	\$0
HUMAN RESOURCES Total		\$852,178	\$1,094,174	\$1,120,734	\$1,206,064
GENERAL FUND Total		\$852,178	\$1,094,174	\$1,120,734	\$1,206,064



HUMAN RESOURCES

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	RISK MANAGEMENT				
Activity No.	627 407 081				
Personnel Services					
101	FULL-TIME SALARIES	\$43,447	\$43,260	\$48,063	\$52,518
120	DIFFERENTIAL PAY	\$1,309	\$1,198	\$1,300	\$1,300
140	WORKERS' COMPENSATION	\$467	\$496	\$471	\$515
150	HEALTH INSURANCE	\$8,170	\$7,298	\$12,395	\$10,840
160	RETIREMENT PLAN CHARGES	\$5,544	\$13,661	\$14,619	\$12,003
161	MEDICARE	\$714	\$767	\$697	\$762
199	PERSONNEL COMPENSATION	\$3,617	\$2,264	\$2,500	\$2,500
Personnel Services Total		\$63,267	\$68,944	\$80,045	\$80,437
Maintenance & Operations					
213	PROFESSIONAL SERVICES	\$63	\$63	\$0	\$0
222	MEMBERSHIPS & SUBSCRIPTIONS	\$150	\$0	\$450	\$300
226	TRAINING, TRAVEL & SUBSISTENCE	\$746	\$2,328	\$3,900	\$3,900
399	MATERIALS & SUPPLIES	\$382	\$390	\$400	\$400
Maintenance & Operations Total		\$1,341	\$2,781	\$4,750	\$4,600
Fixed Charges & Debt Services					
433	WC CLAIM COSTS	1,615,426	\$1,039,029	\$1,600,000	\$2,024,000
440	EXCESS WC INSURANCE	\$244,147	\$263,336	\$221,000	\$271,000
Fixed Charges & Debt Services Total		\$1,859,573	\$1,302,365	\$1,821,000	\$2,295,000
RISK MANAGEMENT Total		\$1,924,181	\$1,374,090	\$1,905,795	\$2,380,037
HUMAN RESOURCES Total		\$1,924,181	\$1,374,090	\$1,905,795	\$2,380,037
LIABILITY INS. FUND Total		\$1,924,181	\$1,374,090	\$1,905,795	\$2,380,037

Preliminary Budget
Fiscal Year 2024

Library & Community Services





LIBRARY & COMMUNITY SERVICES

DEPARTMENT DESCRIPTION

The Library & Community Services Department provides services for all community members for their lifelong learning and growth. The Department encompasses the National City Public Library and Community Services which includes Recreation Services and the Senior Nutrition Program. The Library & Community Services Department provides information, resources, programs, and community engagement for all residents.

The Library & Community Services Department also provides staff assistance and oversight to the Board of Library Trustees, the Public Art Committee, and the Park Recreation and Senior Citizens' Advisory Committee. As part of these responsibilities, staff works closely with A Reason to Survive (ARTS) to facilitate the public art approval process and installation. They also monitor the agreement between ARTS and the City of National City for its operation of the ARTS Center.

The Department also oversees the agreements with a variety of organizations to maintain and operate facilities and programs throughout the City. Library & Community Services manages the following leases and operating agreements: EXOS to operate Las Palmas Pool, Olivewood Gardens to operate Paradise Creek Educational Park Community Garden, American Golf Corporation to operate the National City Golf Course, and the Boys and Girls Club lease. The Department also maintains a contract with San Diego County for reimbursement for the Senior Nutrition Program.

Library & Community Services also oversees the leases and agreements with non-profit organizations to operate the Stein Family Farm, the Kimball House Museum, and the National City Depot Museum and is also responsible for special events such as the Miss National City Scholarship Program and the Community Breakfasts.

NATIONAL CITY PUBLIC LIBRARY

The National City Public Library recognizes the cultural, linguistic and economic diversity in the community and seeks to inform, educate and socialize the youth and adults within the city. It supports lifelong learning, personal enrichment, and empowerment by ensuring the community has free access to a variety of materials and current technology while enjoying a positive environment that honors and celebrates the rich traditions of National City.

The National City Public Library is a 55,000 square-foot, state-of-the-art facility. Built in 2005, it houses more than 200,000 book volumes, 25,000 audio-visual materials, 122 publication subscriptions, and 35 electronic databases that support educational, vocational, and informational activities. The Library also houses 100 computers, a 16-seat computer lab, three study rooms, a local history room, and a bookstore operated by the Friends of the Library.

The National City Public Library is a transformative place where people can expand their knowledge, explore their potential, improve their workforce skills, express their talents, engage in community service, and experience quiet, reflective time.



GOALS & OBJECTIVES

❖ Fiscal Year 2023 In Review

FY2023 continued to reflect the hard work and dedication of library staff and volunteers, the support of the Friends of the Library, and the leadership of the Board of Library Trustees and City Council. After closures and modified hours, the Library fully welcomed the public back to the Library with enhanced hours, collections, and services. The new State-funded ESL program has created opportunities for learning for our residents and enhanced the Library's successful adult literacy program. The Library still offered electronic books and magazines, streaming platforms, and Zoom for tutoring and engaging programs.

Highlights of 2023

- The Library enhanced its operating hours to accommodate greater patron use and convenience. The Library is now open Monday – Thursday from 10 a.m. to 8 p.m., Friday from 10 a.m. to 6 p.m., and Saturday from 10 a.m. to 5 p.m.
- The Library has enhanced its technology during the past year. A new Discovery Layer on the Library electronic catalog was added to facilitate ease of search functionality for patrons. The old self-checkout kiosks for patrons were replaced, eliminating problems with the old equipment. New automatic renewals and patron text notifications for courtesy and overdue notices were added for patron convenience. Mobile printing was added that enables patrons to print documents from their mobile devices. The Library's electronic records are now updated and sourced through OCLC metadata, the sole source for electronic records in North America.
- The Library has worked with materials vendors to establish shelf-ready titles that allow patrons to access library materials even faster, both in print and digitally.
- The Parks Pass grant program created opportunities for our patrons to explore Tijuana Estuary, Old Town, and Torrey Pines State Parks. A Memory Lab grant created a way for patrons to access family memories locked in older technology. The Memory Lab allows patrons to transfer data from outdated technology to new digital files.
- A new State-funded English as a Second Language (ESL) program enhanced the Adult Literacy and Digital Literacy programs already in place. Within a few short months, classes were fully booked. In addition, the latest round of Parks Pass funding mentioned previously will be utilized to enhance lessons for ESL and Digital Literacy students. In addition to new State funding, the AmeriCorps partnership has allowed the Library to harness those same State funds to pay for additional AmeriCorps member services in our literacy program.
- On-the-ground programs returned with Summer Reading, Hispanic Heritage celebration, and Halloween Booktacular. Patrons were glad to be back in the Library for exciting programs and events.
- The Library continued to leverage partnerships with schools and other stakeholders to create, promote, and offer materials and resources for engaging programs.
 - Partnered with State Library, school districts, FLEET Science Center, Stephen Birch Aquarium, and many other co-partners of the National City STEAM Collab to create and provide the NC 16 Weeks of STEAM programming. These programs create outreach opportunities for the Library and enrich students' out-of-school learning.



LIBRARY & COMMUNITY SERVICES

- The Friends of the Library have also generously funded our Summer Reading Program expenses. The Summer Reading Program was developed to prevent “summer slide” and keep students engaged in learning while away from a structured school curriculum. All Summer Reading programs were conducted in person, and our youngest patrons benefited from the reading, activities, and performers.

❖ **Insight into Fiscal Year 2024**

National City Public Library will continue to welcome our residents with a full complement of hours and an emphasis on its critical community role of offering free Wi-Fi, resources, services, and programs in an environment where physical materials coexist with digital collections and online platforms. At its core, patrons are given choices and options and can choose the ones that work for them without missing out on anything. Expanded streaming options allow for greater flexibility and patron use. With the addition of the new Link+ capability, cardholders will also be able to access physical materials outside of the library walls. In addition, each traditional resource or service will likely have a virtual counterpart for patrons to use in or out of the library as they so desire.

Looking ahead, Library services will be a more powerful and inclusive prototype with the following plans for implementation:

- A new State-funded Family Literacy Program to support youth and parents as their literacy learning progresses. More than a regular literacy program, this is an educational outreach program on early literacy, seeking out those families who are most at-risk and who may not visit public libraries.
- In addition to the AmeriCorps partnership, the Literacy program will also harness partnerships with local educational institutions such as Southwestern College and Pima Medical Institute to create opportunities for their work-study students.
- Following this year's success, the latest round of Parks Pass funding mentioned previously will be utilized to enhance lessons for ESL and Digital Literacy students through the end of the year.
- The Memory Lab in the Local History Room will enable our patrons to transfer data from outdated technology to new digital files. This program will also bring more attention to the Local History Room and its purpose within the library as a place to gather local historical knowledge.
- The Library will be joining other libraries in our consortium in the use of Link+, a free service that allows cardholders to borrow books not available at the National City Public Library. LINK+ is a cooperative effort among many California public and academic libraries.
- The Library will continue to partner with the State Library, school districts, the FLEET Science Center, Stephen Birch Aquarium, and many other co-partners of the National City STEAM Collab to create and provide the NC 16 Weeks of STEAM programming.
- The Library continuously seeks to capture funding from traditional and non-traditional sources to create robust opportunities for our patrons' learning and enjoyment.

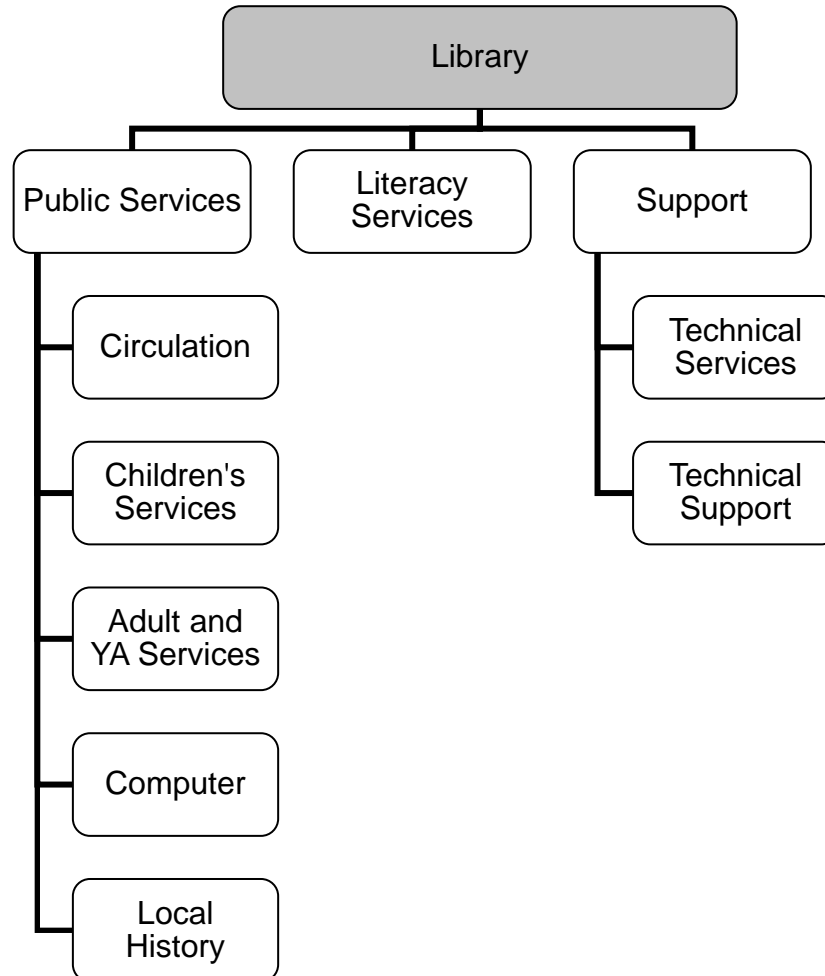


LIBRARY & COMMUNITY SERVICES

PRODUCTIVITY/WORKLOAD STATISTICS

	FY 21 Actual	FY 22 Actual	FY 23 Estimated	FY 24 Projected
Visits to the Library	18,624	50,385	80,000	100,000
Virtual (Website) Visits	51,340	30,179	35,000	40,000
Computer and Wi-Fi Sessions	10,644	17,530	30,000	40,000
Program Attendance:				
In-person	0	2281	4500	5000
Remote (Distance Programming)	1,015	58	0	0
Online	9,211	0	0	0
Reference Questions Answered	10,744	12,067	13,000	14,000
Items Borrowed	16,203	41,202	50,000	65,000
Resources:				
Books	160,309	164,505	182,000	190,000
Audio-visual materials	19,678	20,170	25,000	26,000
Magazines	1,371	1,550	1,800	2,000
eBooks (Consortium Library Shared Collection)	778,998	113000	115,000	120,000
eMagazines	72	4,600	4,600	4,600
eAudiobooks and eMusic and eVideos	451,705	6,500	6,800	7,000

DEPARTMENT ORGANIZATIONAL CHART



SIGNIFICANT CHANGES

No significant changes anticipated



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
104-00000-3420	STATE HOPTR	\$4,197	\$4,822	\$4,197	\$4,410
104-00000-3634	MISC. REVENUE	\$0	\$0	\$0	\$0
104-00000-3636	REFUNDS & REIMBURSEMENTS	\$0	\$0	\$0	\$0
104-00000-3999	TRANSFERS FROM OTHER FUNDS	\$1,204,103	\$903,737	\$1,184,150	\$1,256,616
104-00000-3009	PROPERTY TAXES ALLOCATED	\$877,510	\$923,627	\$959,075	\$1,002,176
Total		\$2,085,810	\$1,832,186	\$2,147,422	\$2,263,202
LIBRARY Total		\$2,085,810	\$1,832,186	\$2,147,422	\$2,263,202
LIBRARY FUND Total		\$2,085,810	\$1,832,186	\$2,147,422	\$2,263,202



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
108-00000-3050	REAL PROPERTY TRANSFER TAX	\$174,143	\$307,039	\$150,000	\$170,000
	Total	\$174,143	\$307,039	\$150,000	\$170,000
	LIBRARY Total	\$174,143	\$307,039	\$150,000	\$170,000
108-31310-3565	BOOK FINES	\$2,586	\$11,531	\$10,000	\$10,000
	Total	\$2,586	\$11,531	\$10,000	\$10,000
	LIBRARY Total	\$2,586	\$11,531	\$10,000	\$10,000
	LIBRARY CAPITAL OUTLAY Total	\$176,729	\$318,570	\$160,000	\$180,000



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
259-00000-3302	UNREALIZED GAIN/LOSS ON INVESTM	\$0	(\$14,223)	\$0	\$0
259-00000-3300	INVESTMENT EARNINGS	\$0	\$2,376	\$0	\$0
259-00000-3008	SPECIAL ASSESSMENT-GO BONDS	\$345,768	\$340,080	\$393,815	\$0
Total		\$345,768	\$328,233	\$393,815	\$0
LIBRARY Total		\$345,768	\$328,233	\$393,815	\$0
LIBRARY BONDS DEBT SERVICE FUND Total		\$345,768	\$328,233	\$393,815	\$0



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
277-31000-3637	DONATIONS	\$200	\$350	\$1,500	\$400
	Total	\$200	\$350	\$1,500	\$400
	LIBRARY Total	\$200	\$350	\$1,500	\$400
	NC PUBLIC LIBRARY DONATIONS FUND Total	\$200	\$350	\$1,500	\$400



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
320-31000-3636	REFUNDS & REIMBURSEMENTS	\$0	\$0	\$0	\$0
Total		\$0	\$0	\$0	\$0
LIBRARY Total		\$0	\$0	\$0	\$0
320-31330-3463	OTHER STATE GRANTS	\$0	\$16,421	\$0	\$0
Total		\$0	\$16,421	\$0	\$0
LIBRARY Total		\$0	\$16,421	\$0	\$0
320-31331-3463	OTHER STATE GRANTS	\$0	\$9,750	\$0	\$0
Total		\$0	\$9,750	\$0	\$0
LIBRARY Total		\$0	\$9,750	\$0	\$0
320-31333-3463	OTHER STATE GRANTS	\$0	\$0	\$0	\$0
Total		\$0	\$0	\$0	\$0
LIBRARY Total		\$0	\$0	\$0	\$0
320-31335-3463	OTHER STATE GRANTS	\$0	\$54,000	\$0	\$0
Total		\$0	\$54,000	\$0	\$0
LIBRARY Total		\$0	\$54,000	\$0	\$0
320-31339-3463	OTHER STATE GRANTS	\$0	\$43,490	\$0	\$0
Total		\$0	\$43,490	\$0	\$0
LIBRARY Total		\$0	\$43,490	\$0	\$0
LIBRARY GRANTS Total		\$0	\$123,661	\$0	\$0



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
325-31000-3622	Dev Impact Fees- Library	\$13,217	\$32,407	\$0	\$0
	Total	\$13,217	\$32,407	\$0	\$0
	LIBRARY Total	\$13,217	\$32,407	\$0	\$0
	DEVELOPMENT IMPACT FEES Total	\$13,217	\$32,407	\$0	\$0



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	LIBRARY				
Activity No.	104 431 056				
Personnel Services					
100	PART-TIME SALARIES	\$64,643	\$289,645	\$328,000	\$356,840
101	FULL-TIME SALARIES	\$408,238	\$385,464	\$571,090	\$638,179
105	LONGEVITY	\$486	\$450	\$500	\$600
110	ALLOWANCES & STIPENDS	\$3,627	\$1,178	\$1,800	\$1,800
120	DIFFERENTIAL PAY	\$1,754	\$1,948	\$1,300	\$1,300
140	WORKERS' COMPENSATION	\$4,796	\$7,183	\$5,597	\$6,254
150	HEALTH INSURANCE	\$62,928	\$59,908	\$103,169	\$93,840
151	LTD INSURANCE	\$1,193	\$1,059	\$1,097	\$1,097
160	RETIREMENT PLAN CHARGES	\$115,050	\$143,911	\$173,709	\$145,849
161	MEDICARE	\$7,034	\$10,595	\$8,281	\$9,254
199	PERSONNEL COMPENSATION	\$12,637	\$68,081	\$27,000	\$27,000
Personnel Services Total		\$682,386	\$969,422	\$1,221,543	\$1,282,013
Maintenance & Operations					
222	MEMBERSHIPS & SUBSCRIPTIONS	\$400	\$400	\$940	\$940
226	TRAINING, TRAVEL & SUBSISTENCE	\$34	\$15	\$2,500	\$2,500
230	PRINTING & BINDING	\$0	\$0	\$200	\$200
250	POSTAGE	\$50	\$0	\$800	\$200
299	CONTRACT SERVICES	\$23,896	\$45,315	\$66,000	\$66,000
302	PERIODICALS & NEWSPAPERS	\$0	\$5,603	\$6,000	\$6,000
304	BOOKS	\$21,955	\$17,533	\$45,000	\$45,000
307	DUPLICATING SUPPLIES	\$0	\$0	\$1,300	\$1,300
399	MATERIALS & SUPPLIES	\$6,344	\$10,351	\$8,000	\$8,000
Maintenance & Operations Total		\$52,679	\$79,217	\$130,740	\$130,140
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$540,942	\$490,202	\$539,901	\$557,168
750	VEHICLE SERVICES CHARGES	\$15,341	\$16,255	\$18,742	\$22,145
755	INFO. SYSTEMS MAINT. CHARGE	\$166,768	\$163,907	\$183,266	\$211,304
790	INSURANCE CHARGES	\$53,230	\$53,230	\$53,230	\$60,431
Internal Service Charges and Reserves Total		\$776,281	\$723,594	\$795,139	\$851,049



LIBRARY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
	LIBRARY Total	\$1,511,346	\$1,772,233	\$2,147,422	\$2,263,202
	LIBRARY Total	\$1,511,346	\$1,772,233	\$2,147,422	\$2,263,202
	LIBRARY FUND Total	\$1,511,346	\$1,772,233	\$2,147,422	\$2,263,202



LIBRARY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	LIBRARY				
Activity No.	108 431 056				
Maintenance & Operations					
299	CONTRACT SERVICES	\$10,877	\$11,094	\$12,000	\$12,000
302	PERIODICALS & NEWSPAPERS	\$22,114	\$22,271	\$23,000	\$23,400
304	BOOKS	\$4,423	\$1,759	\$10,000	\$10,000
399	MATERIALS & SUPPLIES	\$12	\$3,709	\$2,900	\$3,500
Maintenance & Operations Total		\$37,426	\$38,833	\$47,900	\$48,900
Capital Outlay					
502	COMPUTER EQUIPMENT	\$0	\$2,022	\$2,000	\$2,500
506	AUDIO-VISUAL EQUIPMENT	\$0	\$93	\$2,000	\$2,500
Capital Outlay Total		\$0	\$2,115	\$4,000	\$5,000
LIBRARY Total		\$37,426	\$40,948	\$51,900	\$53,900
LIBRARY Total		\$37,426	\$40,948	\$51,900	\$53,900
LIBRARY CAPITAL OUTLAY Total		\$37,426	\$40,948	\$51,900	\$53,900



LIBRARY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	259 431 000				
Maintenance & Operations					
213	PROFESSIONAL SERVICES	\$1,500	\$2,000	\$1,500	\$0
Maintenance & Operations Total		\$1,500	\$2,000	\$1,500	\$0
OPERATIONS Total		\$1,500	\$2,000	\$1,500	\$0
Activity	LIBRARY				
Activity No.	259 431 056				
Maintenance & Operations					
299	CONTRACT SERVICES	\$1,165	\$1,130	\$0	\$0
Maintenance & Operations Total		\$1,165	\$1,130	\$0	\$0
Fixed Charges & Debt Services					
470	BOND PRINCIPAL REDEMPTION	\$290,000	\$300,000	\$315,000	\$315,000
480	BOND INTEREST REDEMPTION	\$94,225	\$85,375	\$76,150	\$76,150
Fixed Charges & Debt Services Total		\$384,225	\$385,375	\$391,150	\$391,150
LIBRARY Total		\$385,390	\$386,505	\$391,150	\$391,150
LIBRARY Total		\$386,890	\$388,505	\$392,650	\$391,150
LIBRARY BONDS DEBT SERVICE FUND Total		\$386,890	\$388,505	\$392,650	\$391,150



LIBRARY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	LIBRARY				
Activity No.	277 431 056				
Maintenance & Operations					
304	BOOKS	\$0	\$0	\$1,000	\$0
399	MATERIALS & SUPPLIES	\$0	\$0	\$500	\$0
Maintenance & Operations Total		\$0	\$0	\$1,500	\$0
LIBRARY Total		\$0	\$0	\$1,500	\$0
LIBRARY Total		\$0	\$0	\$1,500	\$0
NC PUBLIC LIBRARY DONATIONS FUND Total		\$0	\$0	\$1,500	\$0



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	LIBRARY PROJECT READ				
Activity No.	301 431 128				
Personnel Services					
101	FULL-TIME SALARIES	\$33,613	\$31,270	\$0	\$0
140	WORKERS' COMPENSATION	\$905	\$360	\$0	\$0
150	HEALTH INSURANCE	\$11,188	\$3,732	\$0	\$0
160	RETIREMENT PLAN CHARGES	\$16,911	\$10,738	\$0	\$0
161	MEDICARE	(\$6,066)	\$531	\$0	\$0
Personnel Services Total		\$56,552	\$46,631	\$0	\$0
LIBRARY PROJECT READ Total		\$56,552	\$46,631	\$0	\$0
Activity	Housing & Grants - CARES Act.				
Activity No.	301 431 922				
Maintenance & Operations					
399	MATERIALS & SUPPLIES	\$45,630	\$5,870	\$0	\$0
Maintenance & Operations Total		\$45,630	\$5,870	\$0	\$0
Housing & Grants - CARES Act. Total		\$45,630	\$5,870	\$0	\$0
LIBRARY Total		\$102,182	\$52,501	\$0	\$0
GRANT-C.D.B.G. Total		\$102,182	\$52,501	\$0	\$0



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	LIBRARY				
Activity No.	320 431 056				
Maintenance & Operations					
399	MATERIALS & SUPPLIES	\$0	\$63	\$0	\$0
Maintenance & Operations Total		\$0	\$63	\$0	\$0
LIBRARY Total		\$0	\$63	\$0	\$0
Activity	LSTA FY22 Library Access ontheGo Project				
Activity No.	320 431 330				
Maintenance & Operations					
299	CONTRACT SERVICES	\$0	\$7,048	\$0	\$0
Maintenance & Operations Total		\$0	\$7,048	\$0	\$0
LSTA FY22 Library Access ontheGo Project		\$0	\$7,048	\$0	\$0
Activity	LITERACY SERVICES - ESL PROGRAM				
Activity No.	320 431 331				
Maintenance & Operations					
399	MATERIALS & SUPPLIES	\$0	\$6,992	\$0	\$0
Maintenance & Operations Total		\$0	\$6,992	\$0	\$0
LITERACY SERVICES - ESL PROGRAM Total		\$0	\$6,992	\$0	\$0
Activity	PARKS PASS 2022 PROGRAMS				
Activity No.	320 431 333				
Maintenance & Operations					
399	MATERIALS & SUPPLIES	\$0	\$0	\$0	\$0
Maintenance & Operations Total		\$0	\$0	\$0	\$0
PARKS PASS 2022 PROGRAMS Total		\$0	\$0	\$0	\$0
Activity	National City Connects!: NC Public Lib.				
Activity No.	320 431 335				
Personnel Services					



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
100	PART-TIME SALARIES	\$0	\$11,476	\$0	\$0
101	FULL-TIME SALARIES	\$0	\$39,422	\$0	\$0
Personnel Services Total		\$0	\$50,898	\$0	\$0
Maintenance & Operations					
399	MATERIALS & SUPPLIES	\$0	\$4,123	\$0	\$0
Maintenance & Operations Total		\$0	\$4,123	\$0	\$0
National City Connects!: NC Public Lib. Total		\$0	\$55,021	\$0	\$0
Activity	LITERACY SRVCS FY2012/2013				
Activity No.	320 431 337				
Maintenance & Operations					
222	MEMBERSHIPS & SUBSCRIPTIONS	\$2,143	\$150	\$0	\$0
399	MATERIALS & SUPPLIES	\$10,461	\$1,262	\$0	\$0
Maintenance & Operations Total		\$12,604	\$1,412	\$0	\$0
LITERACY SRVCS FY2012/2013 Total		\$12,604	\$1,412	\$0	\$0
Activity	LITERACY SERVICES GRANT				
Activity No.	320 431 339				
Personnel Services					
100	PART-TIME SALARIES	\$14,142	\$13,938	\$0	\$0
140	WORKERS' COMPENSATION	\$145	\$161	\$0	\$0
160	RETIREMENT PLAN CHARGES	\$191	(\$442)	\$0	\$0
161	MEDICARE	\$214	\$238	\$0	\$0
Personnel Services Total		\$14,692	\$13,895	\$0	\$0
Maintenance & Operations					
222	MEMBERSHIPS & SUBSCRIPTIONS	\$7,381	\$12,154	\$0	\$0
299	CONTRACT SERVICES	\$995	\$0	\$0	\$0
304	BOOKS	\$496	\$3,941	\$0	\$0
399	MATERIALS & SUPPLIES	\$5,303	\$3,459	\$0	\$0
Maintenance & Operations Total		\$14,175	\$19,554	\$0	\$0
LITERACY SERVICES GRANT Total		\$28,867	\$33,449	\$0	\$0



LIBRARY

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
	LIBRARY Total	\$41,472	\$103,985	\$0	\$0
	LIBRARY GRANTS Total	\$41,472	\$103,985	\$0	\$0



COMMUNITY SERVICES

The Community Services Division engages the community and improves the health and wellness of residents through safe and affordable services, programs, and special events.

Community Services provides a variety of cost-effective programs and services for youth, adults, and seniors at the Kimball Senior Center, George H. Waters Senior Nutrition Center, El Toyon Recreation Center, Manuel Portillo Casa De Salud Youth Center, Camacho Recreation Center, and Las Palmas Pool. The Department also collaborates with local community organizations in an effort to enhance and expand services and programs for residents.

At the George H. Waters Senior Nutrition Center, seniors are educated in proper nutrition, and the Center's dining room helps combat isolation by serving as a social hub. Home-delivered meals provide welfare checks and meals to homebound seniors. The Nutrition Center is funded by the Housing Authority, grants, and program donations.

GOALS & OBJECTIVES

❖ Fiscal Year 2023 In Review

Community Services expanded on its core services during fiscal year 2023. Camacho Recreation Center reopened its doors to the public in January 2023, offering an opportunity for the community to engage in the fitness room, open gym sports, and contracted youth sports. Casa de Salud Youth Center has remained a hub for youth and teen programming in National City. This year marks the one-year anniversary of the ESports program. Youth can participate in various activities including crafts, sports, gaming field trips, and out-of-school time programming.

Highlights of 2023

The Community Services division continued to expand programming for seniors and youth at our facilities and parks. Camacho Gym was reopened to the public in January 2023. Youth basketball classes started in mid-January for ages 4 - 17. The basketball classes are taught by a contracted instructor and are offered Monday through Thursday. City staff instructors are leading the Futsal classes held every Friday; this is a low-cost class for youth to practice and develop soccer and futsal skills. Additionally, open gym hours are offered for residents to enjoy open play basketball, volleyball, and futsal. Arts and Crafts classes will start in May 2023, taught by City staff.

Zumba starts back up at El Toyon, with a new contractual instructor every Monday. Participants are eager to dance and engage in physical fitness in a group setting. Ballet Folklorico has continued to be a successful program offered through an independent contractor at El Toyon Recreation Center. In addition, a new program was implemented at Casa de Salud – Cultural Dance Class; this is a volunteer-led program and free for ages five and older. Casa de Salud continues to offer the popular ESports for teens and incorporates 3D printing, computer building for gaming, and bitcoin tutoring.

In order to keep our senior community members active, we partnered with The San Diego Foundation through their Age-Friendly Communities grant program to offer four Senior Dances



LIBRARY & COMMUNITY SERVICES

and eight Senior Saturdays at Kimball Park. The Senior Dances are offered quarterly, and the Senior Saturdays are offered every second Saturday of the month.

During the year, we continued to recruit for the Contract instructor program and have brought new opportunities to Camacho and El Toyon Recreation Center for youth, adults, and seniors. Special Events included a successful A Kimball Holiday, Summer Movies in the Park, Miss National City, and Community Service Day.

❖ **Insight into Fiscal Year 2024**

Community Services will reopen two of its renovated facilities with an emphasis on creating spaces for community members to engage in recreational activities, contract classes, and facility use permits. Although construction closed these facilities, their renovation will lead to even greater popularity among our community members.

- Las Palmas Pool was scheduled to be closed from May 2022 to June 2023 for emergency repairs and widening. The municipal pool will reopen in Summer 2023 and we are anticipating even greater participation than before. City Council had also appropriated funds to build a new pool building and this project will continue through FY24.
- The MLK North Room and Kitchen is currently receiving a facelift through CDBG funding and completion is set for June 2023. Staff is working to activate the space for summer by offering health and wellness classes and Senior Socials.
- The Kimball Senior Center construction is ongoing and part of the Kimball Highland Master Plan. This facility is scheduled to reopen to the public in FY25.

Looking ahead, Community Services will offer the following programs and opportunities for our residents:

- Continue to build summer programming with Summer Day Camp programs. Offering local field trips, free lunch programs, and safe out-of-school time enrichment activities for youth.
- Create a city-wide volunteer program that harnesses the dedication of local volunteer clubs
- Present a Cultural Arts Plan to City Council for approval in order to create a functional Public Arts Program that increases the amount of public art in the city and also delineates the procedures for public art installation
- Support our cultural assets to better maintain and support our local history resources and assist in educating the public
- Present an After-School Recreation Program Plan to City Council for approval to create a youth sports program.
- Create senior programming for nutrition education and wellness
- Continue Senior Dances, with more offerings throughout the year
- Develop a Senior Excursion Program
- Contract with additional instructors to engage our community members and offer new and exciting classes for their lifelong learning and enjoyment
- Increase sponsorship levels for Special Events and programs to help offset costs



LIBRARY & COMMUNITY SERVICES

- Continue improving marketing strategies to increase attendance at special events and the overall department's visibility within the community
- Create a more comprehensive facility permit rental process to include developing a refund policy
- Organize family-friendly special events including: Community Service Day, NC Gets Active, Summer Movies in the Park, Miss National City Educational Pageant, Volunteer Appreciation Dinner, Family Tennis Day, and A Kimball Holiday. Continue to partner with other City departments to assist with various events, such as National Night Out.

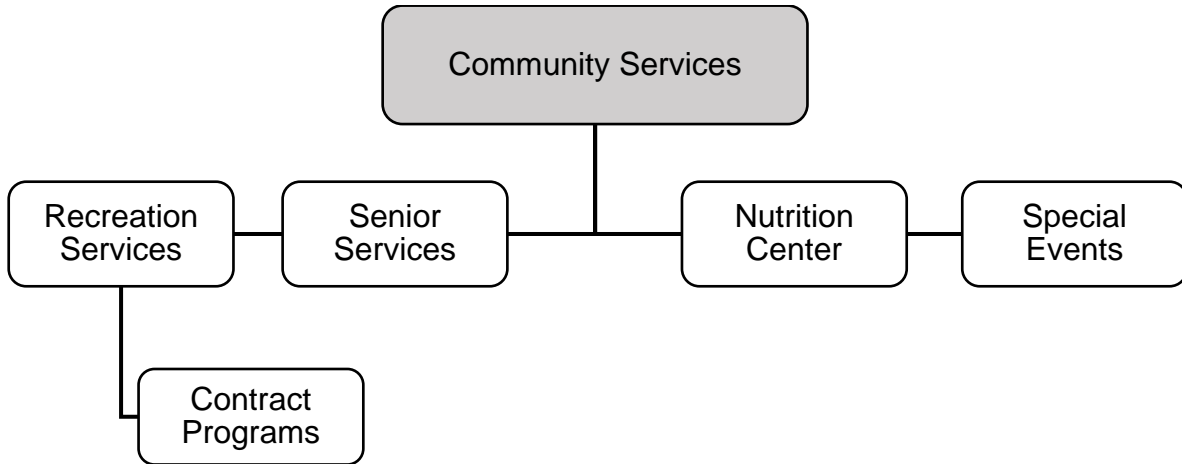
PRODUCTIVITY/WORKLOAD STATISTICS

	FY 21 Actual	FY 22 Actual	FY 23 Estimated	FY 24 Projected
Kimball Senior Center Attendance	0	0	0	0
Manuel Portillo Casa De Salud Youth Center Attendance	1,373	1,438	1500	1800
Camacho Recreation Center Attendance	53	0	2000	2500
El Toyon Recreation Center Attendance	633	980	1300	1500
Martin Luther King Community Center Attendance	0	120	500	1000
Las Palmas Pool Attendance	33,825	19,000	3,000	40,000
Special event attendance ¹	1,177	2300	2500	2700
Facility Rentals	0	500	700	700
Youth Meals Served	105,877	105,877	107,000	109,000
Senior Meals Served at Nutrition Center	28,100	35,731	39,000	39,000
Senior Home Delivered Meals	17,676	20,295	21,000	21,000

¹ Special events include Community Service Day, NC Gets Active, Summer Movies in the Park Series, Miss National City Educational Pageant, Volunteer Appreciation Dinner, Family Tennis Day, and A Kimball Holiday.



COMMUNITY SERVICES DIVISION ORGANIZATIONAL CHART



SIGNIFICANT CHANGES

No significant changes anticipated



COMMUNITY SERVICES

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
001-41000-3650	CASA YOUTH FUNDRAISING	\$0	\$149	\$2,000	\$2,000
001-41000-3637	SPONSORSHIPS AND DONATIONS	\$9,697	\$6,265	\$8,000	\$8,000
001-41000-3598	CONTRACT CLASS RECREATION	\$6,696	\$19,729	\$33,000	\$20,000
001-41000-3574	SWIMMING POOL REVENUE	\$339,139	\$160,589	\$85,000	\$340,000
001-41000-3572	RECREATION PROGRAM REVENUE	\$907	\$4,169	\$2,300	\$2,300
001-41000-3317	RENTAL-LAS PALMAS GOLF COURSE	\$36,000	\$225,388	\$98,000	\$98,000
001-41000-3312	RENT AND LEASES	\$6,215	\$1,984	\$3,000	\$5,000
Total		\$398,654	\$418,273	\$231,300	\$475,300
RECREATION Total		\$398,654	\$418,273	\$231,300	\$475,300
GENERAL FUND Total		\$398,654	\$418,273	\$231,300	\$475,300



COMMUNITY SERVICES

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	COMMUNITY SERVICES				
Activity No.	001 441 058				
Refunds, Contributions & Special Paymnts					
650	AGENCY CONTRIBUTIONS	\$0	\$0	\$10,000	\$10,000
650	CASA YOUTH FUNDRAISING	\$0	\$743	\$2,000	\$2,000
650	SPONSORSHIPS AND DONATIONS	\$5,090	\$7,270	\$8,000	\$8,000
Refunds, Contributions & Special Paymnts Total		\$5,090	\$8,013	\$20,000	\$20,000
Personnel Services					
100	PART-TIME SALARIES	\$96,193	\$142,108	\$278,000	\$286,340
101	FULL-TIME SALARIES	\$246,728	\$258,282	\$393,622	\$430,841
102	OVERTIME	\$13,010	\$33,760	\$30,000	\$30,000
110	ALLOWANCES & STIPENDS	\$0	\$1,066	\$1,800	\$1,800
120	DIFFERENTIAL PAY	\$8,845	\$10,376	\$3,575	\$3,575
140	WORKERS' COMPENSATION	\$10,024	\$10,405	\$13,436	\$14,829
150	HEALTH INSURANCE	\$40,517	\$31,296	\$62,886	\$58,610
151	LTD INSURANCE	\$680	\$508	\$1,097	\$1,097
160	RETIREMENT PLAN CHARGES	\$83,786	\$97,205	\$119,727	\$98,465
161	MEDICARE	\$5,511	\$6,983	\$5,708	\$6,247
199	PERSONNEL COMPENSATION	\$10,019	\$6,666	\$0	\$0
Personnel Services Total		\$515,312	\$598,655	\$909,851	\$931,804
Maintenance & Operations					
222	MEMBERSHIPS & SUBSCRIPTIONS	\$3,457	\$3,133	\$3,310	\$3,540
226	TRAINING, TRAVEL & SUBSISTENCE	\$1,595	(\$200)	\$5,000	\$5,500
264	PROMOTIONAL ACTIVITIES	\$92,120	\$68,163	\$105,050	\$95,050
299	CONTRACT SERVICES	\$305,018	\$355,387	\$201,000	\$441,000
301	OFFICE SUPPLIES	\$2,719	\$4,320	\$4,500	\$5,200
305	MEDICAL SUPPLIES	\$35	\$1,705	\$800	\$1,600
307	DUPLICATING SUPPLIES	\$677	\$693	\$700	\$700
311	RECREATIONAL SUPPLIES	\$4,603	\$8,465	\$31,000	\$31,500
318	WEARING APPAREL	\$1,178	\$1,484	\$1,500	\$3,000
Maintenance & Operations Total		\$411,403	\$443,150	\$352,860	\$587,090
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$554,344	\$502,347	\$553,277	\$570,972



COMMUNITY SERVICES

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
750	VEHICLE SERVICES CHARGES	\$17,550	\$18,596	\$21,441	\$25,334
752	VEHICLE LEASE CHARGE	\$6,332	\$5,920	\$5,920	\$5,920
755	INFO. SYSTEMS MAINT. CHARGE	\$76,645	\$75,330	\$84,227	\$97,113
790	INSURANCE CHARGES	\$29,520	\$29,520	\$29,520	\$33,514
Internal Service Charges and Reserves Total		\$684,391	\$631,713	\$694,385	\$732,853
Fixed Charges & Debt Services					
455	LEASE PAYMENT	\$2,000	\$2,000	\$2,000	\$2,000
Fixed Charges & Debt Services Total		\$2,000	\$2,000	\$2,000	\$2,000
COMMUNITY SERVICES Total		\$1,618,195	\$1,683,531	\$1,979,096	\$2,273,747
Activity TINY TOTS					
Activity No. 001 441 412					
Personnel Services					
100	PART-TIME SALARIES	\$277	\$17,641	\$0	\$0
140	WORKERS' COMPENSATION	\$12	\$647	\$0	\$0
160	RETIREMENT PLAN CHARGES	\$4	\$642	\$0	\$0
161	MEDICARE	\$4	\$258	\$0	\$0
Personnel Services Total		\$297	\$19,188	\$0	\$0
TINY TOTS Total		\$297	\$19,188	\$0	\$0
Activity SUPREME TEEN PROGRAM					
Activity No. 001 441 419					
Maintenance & Operations					
399	MATERIALS & SUPPLIES	\$0	(\$1,082)	\$0	\$0
Maintenance & Operations Total		\$0	(\$1,082)	\$0	\$0
SUPREME TEEN PROGRAM Total		\$0	(\$1,082)	\$0	\$0
COMMUNITY SERVICES Total		\$1,618,492	\$1,701,637	\$1,979,096	\$2,273,747
GENERAL FUND Total		\$1,618,492	\$1,701,637	\$1,979,096	\$2,273,747



COMMUNITY SERVICES

REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
166-00000-3999	TRANSFERS FROM OTHER FUNDS	\$508,832	\$526,641	\$703,035	\$772,900
166-00000-3636	REFUNDS & REIMBURSEMENTS	\$0	\$0	\$0	\$0
Total		\$508,832	\$526,641	\$703,035	\$772,900
NUTRITION CENTER Total		\$508,832	\$526,641	\$703,035	\$772,900
166-41429-3636	REFUNDS & REIMBURSEMENTS	\$0	\$446	\$0	\$0
166-41429-3517	NUTRITION INCOME - DELIVERED ME	\$8,695	\$9,157	\$9,000	\$9,000
166-41429-3516	NCNP - NON-MEALS DONATIONS	\$1,055	\$60	\$0	\$0
166-41429-3515	NUTRITION - PROGRAM INCOME	\$56,689	\$54,970	\$60,000	\$60,000
166-41429-3514	NUTRITION INCOME - CATERED MEAL	\$230	\$0	\$3,600	\$3,600
166-41429-3470	COUNTY GRANTS	\$354,540	\$333,159	\$341,000	\$341,000
Total		\$421,208	\$397,792	\$413,600	\$413,600
NUTRITION CENTER Total		\$421,208	\$397,792	\$413,600	\$413,600
NUTRITION Total		\$930,040	\$924,433	\$1,116,635	\$1,186,500



COMMUNITY SERVICES

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	NUTRITION CENTER				
Activity No.	166 441 429				
Personnel Services					
100	PART-TIME SALARIES	\$46,366	\$328	\$64,000	\$65,920
101	FULL-TIME SALARIES	\$305,009	\$246,234	\$335,664	\$389,016
102	OVERTIME	\$632	\$11,159	\$0	\$0
120	DIFFERENTIAL PAY	\$3,978	\$5,678	\$4,888	\$4,888
140	WORKERS' COMPENSATION	\$12,185	\$12,838	\$10,509	\$12,184
150	HEALTH INSURANCE	\$60,135	\$40,480	\$91,867	\$87,570
151	LTD INSURANCE	\$584	\$331	\$731	\$731
160	RETIREMENT PLAN CHARGES	\$95,169	\$99,149	\$102,099	\$88,906
161	MEDICARE	\$5,270	\$5,408	\$4,867	\$5,641
199	PERSONNEL COMPENSATION	\$28,292	\$52,576	\$15,700	\$15,700
Personnel Services Total		\$557,619	\$474,181	\$630,325	\$670,555
Other Financing Uses					
099	TRANSFERS TO OTHER FUNDS	\$0	\$0	\$48,000	\$48,000
Other Financing Uses Total		\$0	\$0	\$48,000	\$48,000
Maintenance & Operations					
211	LAUNDRY & CLEANING SERVICES	\$4,082	\$7,025	\$5,000	\$6,000
234	ELECTRICITY & GAS	\$29,576	\$36,571	\$30,000	\$50,000
236	WATER	\$0	\$2,224	\$4,500	\$4,500
270	PERMITS & LICENSES	\$446	\$510	\$600	\$600
292	R&M KITCHEN EQUIPMENT	\$0	\$2,661	\$10,000	\$10,000
299	CONTRACT SERVICES	\$50,009	\$33,002	\$66,350	\$26,550
301	OFFICE SUPPLIES	\$1,783	\$3,639	\$2,200	\$2,500
312	CONSUMABLE SUPPLIES	\$23,413	\$57,190	\$55,000	\$60,000
313	FOOD SUPPLIES	\$218,241	\$271,282	\$237,000	\$275,000
318	WEARING APPAREL	\$0	\$0	\$0	\$4,900
Maintenance & Operations Total		\$327,549	\$414,104	\$410,650	\$440,050
Internal Service Charges and Reserves					
750	VEHICLE SERVICES CHARGES	\$14,275	\$15,126	\$17,440	\$20,607
790	INSURANCE CHARGES	\$6,420	\$6,420	\$6,420	\$7,289



COMMUNITY SERVICES

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
	Internal Service Charges and Reserves Total	\$20,695	\$21,546	\$23,860	\$27,895
	NUTRITION CENTER Total	\$905,863	\$909,831	\$1,112,835	\$1,186,500
	COMMUNITY SERVICES Total	\$905,863	\$909,831	\$1,112,835	\$1,186,500
	NUTRITION Total	\$905,863	\$909,831	\$1,112,835	\$1,186,500



COMMUNITY SERVICES

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	County of San Diego Community Grant				
Activity No.	282 441 340				
Maintenance & Operations					
264	PROMOTIONAL ACTIVITIES	\$4,969	\$5,000	\$0	\$0
Maintenance & Operations Total		\$4,969	\$5,000	\$0	\$0
County of San Diego Community Grant Total		\$4,969	\$5,000	\$0	\$0
Activity	The San Diego FOUNDATION Grant				
Activity No.	282 441 341				
Maintenance & Operations					
264	PROMOTIONAL ACTIVITIES	\$0	\$38,079	\$0	\$0
Maintenance & Operations Total		\$0	\$38,079	\$0	\$0
The San Diego FOUNDATION Grant Total		\$0	\$38,079	\$0	\$0
Activity	Community Enhancement Grant				
Activity No.	282 441 342				
Maintenance & Operations					
299	CONTRACT SERVICES	\$0	\$0	\$0	\$0
Maintenance & Operations Total		\$0	\$0	\$0	\$0
Community Enhancement Grant Total		\$0	\$0	\$0	\$0
COMMUNITY SERVICES Total		\$4,969	\$43,079	\$0	\$0
REIMBURSABLE GRANTS CITYWIDE Total		\$4,969	\$43,079	\$0	\$0



COMMUNITY SERVICES

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	TINY TOTS				
Activity No.	301 441 412				
Personnel Services					
100	PART-TIME SALARIES	\$0	\$0	\$0	\$0
140	WORKERS' COMPENSATION	\$0	\$0	\$0	\$0
160	RETIREMENT PLAN CHARGES	\$0	\$0	\$0	\$0
161	MEDICARE	\$0	\$0	\$0	\$0
Personnel Services Total		\$0	\$0	\$0	\$0
TINY TOTS Total		\$0	\$0	\$0	\$0
Activity	SUPREME TEEN PROGRAM				
Activity No.	301 441 419				
Personnel Services					
100	PART-TIME SALARIES	\$36,042	\$4,530	\$0	\$0
140	WORKERS' COMPENSATION	\$945	\$289	\$0	\$0
160	RETIREMENT PLAN CHARGES	\$448	\$59	\$0	\$0
161	MEDICARE	\$503	\$98	\$0	\$0
Personnel Services Total		\$37,938	\$4,976	\$0	\$0
Maintenance & Operations					
399	MATERIALS & SUPPLIES	\$12,694	\$19,974	\$0	\$0
Maintenance & Operations Total		\$12,694	\$19,974	\$0	\$0
SUPREME TEEN PROGRAM Total		\$50,633	\$24,950	\$0	\$0
COMMUNITY SERVICES Total		\$50,633	\$24,950	\$0	\$0
GRANT-C.D.B.G. Total		\$50,633	\$24,950	\$0	\$0

Preliminary Budget
Fiscal Year 2024

Police





DEPARTMENT DESCRIPTION

It is the purpose of the National City Police Department to protect the diverse community we serve with duty, honor and integrity in order to provide the highest level of public service possible to residents and visitors. Providing this level of service means improving public safety by working to prevent and reduce crime, while respecting the rights and dignity of others.

The Police Department is comprised of 88 sworn officers, 40 professional staff members and numerous volunteers who serve approximately 63,000 residents within nine square miles.

Through Crime Prevention tactics, the Police Department works to recognize potential crimes, then takes action to address them. We are dedicated to public education on crime prevention techniques so that residents, visitors and business owners are less likely to be victimized.

Our Department-wide goals are accomplished through intentions set by annual staffing recommendations, evaluation of the Department's organizational structure and continued improvement of the services we offer.

The National City Police Department practices continuous improvement of our community-based policing philosophy by increasing outreach; reform and expansion of detective-based duties and making ourselves more accessible to the public.

This Department has four divisions including, Investigations, Operations, Patrol and Volunteer Programs.

PATROL DIVISION: NEIGHBORHOOD POLICING TEAM I, TEAM II, and TEAM III

The Patrol Division is the largest division in the Police Department, providing the community with first responders 24 hours a day, 7 days a week.

Homeless Outreach Mobile Engagement (HOME)

The Homeless Outreach Mobile Engagement (HOME) is a specialized group who work in conjunction with PERT (Psychiatric Emergency Response Team), Alpha Project, McAlister Institute, and Code Enforcement to provide wraparound services for the homeless. The team is relationship focused and works to find individual solutions to the problems that have people living on the streets.

Mobile Field Force (MFF)

These officers are specially trained to respond to public shows of civil disobedience, such as riots, and use organized tactics to disburse crowds to regain control of the situations.



Active Shooter Response Deployment

All sworn officers are trained to respond to active shooter situations in a school, workplace or public gathering.

Traffic Unit

Traffic enforcement continues to be a Department priority. The overall goal of the Traffic Unit is to provide safe and congestion-free streets for all motorists, bicyclists and pedestrians.

As part of the grants provided by the Office of Traffic Safety, the Traffic Unit conducts various operations throughout the year to include: DUI Checkpoints, DUI roving patrols, Primary Collision Factor and distracted driving enforcement. Additionally, the Traffic Unit conducts enforcement activities to ensure pedestrian and motorcycle safety.

Canine Unit (K-9)

Officers assigned to the Canine Unit work with police service dogs within the Patrol Division. They are responsible for building and area searches, tracking suspects and objects, and provide officer assistance during felony calls and tactical operations. During critical incidents, K-9 units provide essential support that minimizes the risk and danger to officers and citizens. This unit routinely works cases involving felony vehicle and pedestrian stops, search warrants, and fleeing suspects.

Special Weapons and Tactics (SWAT) and Crisis Negotiations Team (CNT)

Officers are selected from the Patrol and Investigations Divisions. These officers train on a monthly basis to maintain the ability to support division operations. Both teams are involved in high-risk search warrants, barricaded suspect and hostage situations, and active shooter incidents.

Animal Control Unit

The Police Department's Animal Control Unit is responsible for enforcing state and local animal welfare laws who also function as Humane Officers within the scope of their authority. This Unit oversees and enforces California State Laws regarding Sentry dogs, assistance dogs, vicious dogs and guide dogs and performs pet store, circus, and petting zoo inspections.

The duties include following leash and confinement laws, as well as securing animal bite quarantines in order to limit human exposure from domestic and wild animals that may carry rabies.

Animal Regulations officers work with the public to resolve animal issues and protect them from aggressive or poisonous animals by tracking and transporting stray and/or unwanted animals.

In addition, Animal Regulations Officers hold animal education seminars, coordinate public dog rabies vaccination and licensing clinics, and act as the liaison between the City, contract veterinarians and the animal shelter.



COMMUNITY SERVICES UNIT

The Community Services Unit coordinates the efforts of School Resource Officers (SROs). These officers are assigned to 10 primary schools, two secondary schools and one high school with the goal of improving trust, communication, relationships and understanding between youth and police officers. This Unit has several youth outreach programs including Adopt-A-School, Stranger Awareness for Emergencies (SAFE), and Sports Training Academics and Recreation/Police Athletics (STAR/PALS).

The Community Services Unit also facilitates other valuable juvenile and community services, such as Community Assessment Team, Department Diversion Program, Psychological Emergency Response Team (PERT), Domestic Violence Response Team, and District Attorney's Victim Assistance Program, . The Unit also provides the opportunity for community members and law enforcement candidates to get a first-hand look at the services officers provide to our community through the Department's Ride-Along program.

Business Liaison Program

The City along with the National City Police Department has created the Business Liaison Program with the goal of improving the partnership between city government and the business community. Specifically, the program exists to resolve conflict and chronic quality of life issues such as illegal dumping, graffiti, loitering, prostitution and homelessness, affecting the business community in National City.

Officers assigned to the Business Liaison Program also make recommendations for security improvements in and around businesses.

Youth Advisory Group

Students from Sweetwater High School participate as members of the Chief's Youth Advisory Group, which meets quarterly to discuss youth, community, and law-related topics that concern the youth. Members of the Advisory Group also participate in community events.

Cadet Program

The National City Police Department Cadet program was established in the mid '60s. It is a component of the Cadet Explorer Scouts, part of the Scouts of America and Learning for Life. Participating students must be at least 14 years old and in the ninth grade, with a minimum 2.0 GPA. They must also pass a background investigation and oral interview.

Cadets attend bi-weekly meetings and receive training to help patrol officers during various events in the City such as crowd control, traffic direction and provide other assistance at community events.

After becoming a Cadet, candidates are required to attend either a Beta Academy or live-in academy during the first year of membership. In these academies, Cadets learn defensive tactics, handcuffing techniques, traffic stops, physical training, firearms, arrest and control and criminal law. The Cadets also host one fundraiser to help offset costs of member events such as the end



of year trip to Knott's Berry Farm and Padres Games. Cadets are encouraged to get involved in related social events such as field and camping trips as well as Cadet Scouting sponsored events throughout San Diego County.

Senior Volunteer Program (SVP)

The Senior Volunteer Program is made up of civilian volunteers who patrol the streets as an extra set of eyes and ears for the Police Department. In addition to patrolling their community, SVP members help alleviate police use by working community events. Members of the Senior Volunteer Patrol must pass a background check, have medical clearance, possess a valid driver's license, be at least 50 years old, and live within the County of San Diego.

Shop with a Cop

As part of a regional law enforcement tradition, the National City Police Department has participated in the Shop with a Cop event. This community-based event pairs officers with children from their community during the holiday season for a day at Seaworld and Target. This event is made possible with contributions made to the STARPAL group and the hosting agency. This year, the National City Police Department is the host agency and will carry the majority of the fundraising events for this worthwhile cause.

INVESTIGATIONS DIVISION

Investigations Division detectives respond to homicides, crimes against children and other serious crime incidents. The Investigation Division manages complex and proactive crime scene investigations using emerging technology, as well as continuing to investigate "Homicide Cold Case" reviews.

Gang Enforcement Team (GET)

Members of the Gang Enforcement Team (GET) focus on gang crime and coordinate with detectives regarding gang-related investigations for proactive enforcement to prevent gang crime. These officers work in a uniform capacity by performing nightly street patrols, conduct presentations on gang awareness for various groups and prevent "at risk" youth from joining gangs through a campaign of education, intervention and awareness. Gang Enforcement officers work with the San Diego District Attorney's Office to investigate complex gang cases and identify some of the most violent offenders.

Property and Evidence Unit

The Property & Evidence Unit is staffed by civilian personnel. The Unit's primary duty is to receive and safeguard impounded evidence and seized property from officers as well as maintain the integrity of the chain of custody. The Unit also processes evidence collected during National City Police Department investigations, which includes fingerprints, DNA, video, photographs and evidence work requests from the District Attorney's Office.



Crime Analysis Unit

The Crime Analysis Unit is the clearinghouse for Law Enforcement intelligence information and crime data for the Police Department. The Department's civilian Crime Analyst reviews all crime related reports and performs data mining and analysis to produce statistical reports on crime trends and series to assist in solving crimes. The Analyst tracks crime patterns and forecasts when and where future criminal activity is likely to occur, which often leads to arrests. The crime data and statistical reports from the Crime Analyst allow police administrators to use department resources in a more efficient manner. Crime information is also provided to officers and other agencies through the use of the Automated Regional Justice Information System (ARJIS).

Major responsibilities of the Crime Analyst include producing monthly and annual reports as well as tracking the Registered Sex Offender Program.

SUPPORT UNITS

Records Division

The Records Division processes all crime/incident reports, arrests and accidents, as well as prepares and reviews reports for the District Attorney's Office and Probation and Parole departments for completeness and accuracy. Records employees respond to requests for reports from the public, media, other law enforcement agencies, and insurance companies. They also process background check requests, court subpoenas and copies of criminal records.

Records Division staff is also responsible for the data entry of crime reports, field interviews, citations and traffic collisions for crime reporting by the Crime Analysis Unit, Department of Justice, FBI, and San Diego association of Governments (SANDAG).

In addition to performing critical records functions, Records Division staff provide fingerprinting services and update databases as required by law for registering sex, arson and narcotic offenders. The Unit is also responsible for sealing criminal records when ordered by the court and purging records.

Megan's Law

On the Megan's Law Website the public can view sex offender lists that include their name, address, picture, aliases, tattoos, offenses and other information. A map of where sex offenders live can be accessed at: www.arjis.net or www.caag.state.ca.us

Communications Center

The Department is a member of the County's Regional Communication System (RCS). As part of the regional network, the Communications Center is able to contact other agencies directly, dispatch an all point bulletins (APB) countywide or regionally, work mutual-aid incidents, and communicate with other City departments. The System also enables individual officers to communicate directly with other agencies directly during emergencies via their hand held and vehicle police radios.



Communications Center personnel monitor public safety and security cameras. The Department and City are currently working to increase community safety by adding and upgrading these cameras throughout the City.

Training Unit

The Training Unit monitors continuing education so that all employees remain up-to-date on the latest trends and requirements in law enforcement. This Unit also assigns and coordinates POST Training as well as training within and outside of the county as needed.

In-house training includes: Canine, SWAT, qualification shoots, active shooter, vehicle pursuit and legal updates, among others. The Training Unit also coordinates other Federal, State and agency-mandated training.

SPECIAL UNITS

Homeland Security Unit

The Homeland Security Unit has had Department representatives practice and incorporate the Incident Command System (ICS), evacuation plans, critical incident management, and Homeland Security drills and exercises into their Department. These representatives attend regularly scheduled FBI's Joint Terrorism Task Force meetings and regional disaster / critical incidents table top exercises.

This Unit facilitates and supervises the Department's Terrorism Liaison Officers (TLO) using one officer from each squad or unit to brief fellow officers on intelligence information sent by the Homeland Security Unit. These TLOs acts as field resources for Homeland Security matters for proper inter-agency notification.

GOALS & OBJECTIVES

COMMUNITY ENGAGEMENT –

- Address Community Issues That Affect Crime and Quality of Life
 - Homelessness / Mental Illness
 - Crime Trends (Crime Analysis)
 - Police Regulated Businesses
- Community Partnerships
 - New Partnerships / Dialogue / Responsive
- Community Engagement Priorities
 - Residents / Schools / Service Organizations / Businesses
 - Quality, Not Quantity
 - Department Member Involvement

OPERATIONAL READINESS

- Recruitment and Retention
 - Continue the Hiring of Quality Team Members
 - Retain Our Quality Team members
 - Re-Fill Understaffed Specialty Units
 - Emphasis on the Dispatch Unit – Fully Staff
- Operational Readiness
 - Critical Incident Training
 - Equipment
 - Shotgun Replacement for all Vehicles (less lethal)
 - New Vehicles
- Community Resilience
 - Emergency Planning
 - Active Shooter

EMPLOYEE DEVELOPMENT

- Succession Planning- Completed and being implemented with recommendations
 - Promotional Workshops
 - Mentoring Program
 - Fine-Tune On-Boarding of New Officers
 - DISC Assessment / Emotional Intelligence
 - Recent Hires / FTO Program
 - “Create an environment conducive to learning”
- Team Building Workshops
 - Sworn & Professional
 - Officer Wellness

TECHNOLOGY

- Technology Committee
 - Strategic approach
 - Identify Needs / Revenue Sources /Grants
 - Project Research / Recommendations
 - Mall Antenna Installation (March-April)



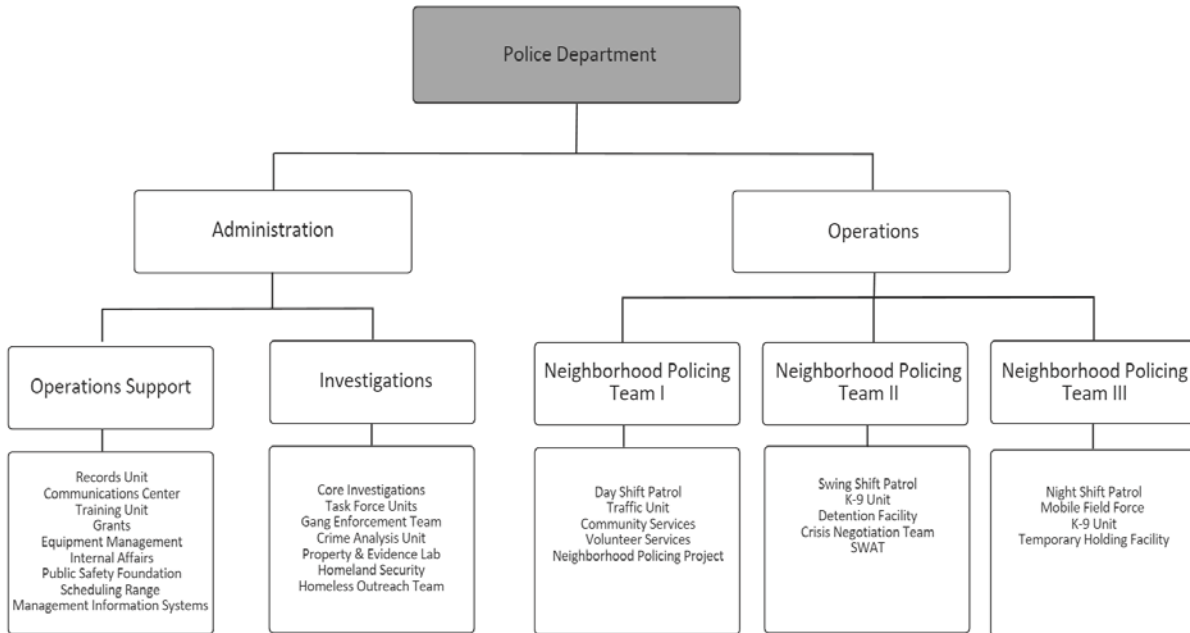
CIP AND PERSONNEL PENDING PROJECTS

- Research Remodel for Investigations Division
- Upgrade the generator system to be operational during a power outage
- Shooting Range
- Branding – Wall Plaques
- DOJ Independent OIS Teams / Regional Team
- Ongoing Training (Department and State Mandated)
- Furniture and Technology Upgrade - Community Room
 - Utilize Community Room to Host Training Classes
 - In-house Training Room

PRODUCTIVITY/WORKLOAD STATISTICS

	FY 2020 Actual	FY 2021 Actual	FY 2022 Actual
Crime Statistics:			
Total crime incidents	1,511	1,650	1,575
Violent crime incidents	351	368	322
Property crime incidents	1,160	1,282	1,253
Domestic Violence incidents	681	673	615
Value of stolen property	\$6,878,369	\$5,007,895	\$7,184,038
Value of recovered property	\$4,432,320	\$2,549,203	\$3,886,236
Total Calls for Service	59,420	59,672	58,765
Percentage of stolen property recovered	64%	51%	54%

DEPARTMENT ORGANIZATIONAL CHART





SIGNIFICANT CHANGES

The National City Police Department has some significant changes and notable accomplishments over the last year that will extend into the new Fiscal year. These significant changes since July 1, 2021 include:

- Staffing new police officers, to bring the Police Department to a total of 88 sworn Police Officers.
- Police CAD upgrade in the Police Department Communication Center. Computer-aided dispatch (CAD) systems are utilized by dispatchers, call-takers, and 911 operators to prioritize and record incident calls, identify the status and location of responders in the field, and effectively dispatch responder personnel to better serve the community.
- Upgraded Department Operations Center (DOC). A DOC is a physical facility or location similar to the City/County Emergency Operations Center (EOC). However, the purpose of a DOC is to manage and coordinate events specific to that department, which in this case would be the Police Department.
- Collection of RIPA data. RIPA, known as the Racial and Identity Profiling Act (RIPA), the bill requires all law enforcement agencies in the state to “collect perceived demographic and other detailed data regarding pedestrian and traffic stops”.



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
001-11000-3550	VEHICLE IMPOUND FEES	\$4,321	\$3,389	\$4,000	\$4,000
001-11000-3636	REFUNDS & REIMBURSEMENTS	\$3,137	\$3,807	\$2,300	\$2,300
001-11000-3634	MISC. REVENUE	\$1,927	\$8,620	\$7,700	\$7,700
001-11000-3586	PHOTOCOPY SALES	\$22,944	\$24,010	\$20,000	\$20,000
001-11000-3567	POLICE REGULATED BUSINESSES FE	\$1,255	\$3,380	\$1,800	\$1,800
001-11000-3558	TOW/IMPOUND REFERRAL FEES	\$122,520	\$225,426	\$100,000	\$100,000
001-11000-3100	LICENSES AND PERMITS	\$8,143	\$9,155	\$7,320	\$7,320
001-11000-3551	ADMINISTRATIVE IMPOUND FEE	\$126,604	\$86,304	\$45,500	\$45,500
001-11000-3537	MISC. POLICE SERVICES	\$8,204	\$7,625	\$4,500	\$4,500
001-11000-3533	BOOKING FEES	\$28,752	\$16,825	\$25,000	\$25,000
001-11000-3469	OVERTIME REIMBURSEMENTS	\$5,187	\$150,378	\$40,000	\$40,000
001-11000-3220	OTHER FORFEITS & PENALTIES	\$2,164	\$3,557	\$2,000	\$2,000
001-11000-3205	CITATION SIGN-OFF FEE	\$0	\$750	\$2,000	\$2,000
001-11000-3200	VEHICLE CODE FINES	\$73,916	\$71,147	\$69,500	\$69,500
001-11000-3556	POLICE & FIRE SVCS - PORT OF SAN	\$712,409	\$733,781	\$736,642	\$778,468
Total		\$1,121,483	\$1,348,154	\$1,068,262	\$1,110,088
POLICE Total		\$1,121,483	\$1,348,154	\$1,068,262	\$1,110,088
001-11107-3467	SCHOOL DISTRICT CONTRACT REIMB	\$77,068	\$77,068	\$77,068	\$77,068
Total		\$77,068	\$77,068	\$77,068	\$77,068
POLICE Total		\$77,068	\$77,068	\$77,068	\$77,068
001-11108-3467	SCHOOL DISTRICT CONTRACT REIMB	\$105,000	\$105,000	\$105,000	\$105,000
Total		\$105,000	\$105,000	\$105,000	\$105,000
POLICE Total		\$105,000	\$105,000	\$105,000	\$105,000
001-11110-3550	VEHICLE IMPOUND FEES	\$18,822	\$9,986	\$20,000	\$20,000
Total		\$18,822	\$9,986	\$20,000	\$20,000



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
POLICE Total		\$18,822	\$9,986	\$20,000	\$20,000
001-11112-3461	P.O.S.T. REIMBURSEMENT	\$23,343	\$17,567	\$20,000	\$20,000
Total		\$23,343	\$17,567	\$20,000	\$20,000
POLICE Total		\$23,343	\$17,567	\$20,000	\$20,000
GENERAL FUND Total		\$1,345,715	\$1,557,775	\$1,290,330	\$1,332,156



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
131-00000-3300	INVESTMENT EARNINGS	\$2,510	\$1,452	\$0	\$1,500
131-00000-3302	UNREALIZED GAIN/LOSS ON INVESTM	(\$2,197)	(\$4,167)	\$0	\$0
131-00000-3539	SEIZED ASSETS	\$4,751	\$2,672	\$0	\$0
Total		\$5,063	(\$43)	\$0	\$1,500
POLICE Total		\$5,063	(\$43)	\$0	\$1,500
ASSET FORFEITURE FUND Total		\$5,063	(\$43)	\$0	\$1,500



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
208-00000-3463	OTHER STATE GRANTS	\$156,727	\$161,285	\$0	\$0
	Total	\$156,727	\$161,285	\$0	\$0
	POLICE Total	\$156,727	\$161,285	\$0	\$0
	SUPP.LAW ENFORCEMENT SVCS FUND (SLESF)	\$156,727	\$161,285	\$0	\$0



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
211-11000-3161	SECURITY ALARM PERMITS	\$31,608	\$8,055	\$12,000	\$12,000
211-11000-3202	FALSE ALARM FINES	\$11,245	\$49,250	\$24,600	\$35,000
Total		\$42,853	\$57,305	\$36,600	\$47,000
POLICE Total		\$42,853	\$57,305	\$36,600	\$47,000
SECURITY AND ALARM REGULATION FUND Total		\$42,853	\$57,305	\$36,600	\$47,000



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
282-11951-3498	OTHER FEDERAL GRANTS	\$0	\$17,100	\$17,000	\$0
	Total	\$0	\$17,100	\$17,000	\$0
	POLICE Total	\$0	\$17,100	\$17,000	\$0
	REIMBURSABLE GRANTS CITYWIDE Total	\$0	\$17,100	\$17,000	\$0



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
290-11626-3470	COUNTY GRANTS-RATT GRANT	\$100,751	\$94,457	\$0	\$80,000
Total		\$100,751	\$94,457	\$0	\$80,000
POLICE Total		\$100,751	\$94,457	\$0	\$80,000
290-11632-3498	OTHER FEDERAL GRANTS	\$11,292	\$9,682	\$0	\$0
Total		\$11,292	\$9,682	\$0	\$0
POLICE Total		\$11,292	\$9,682	\$0	\$0
290-11647-3463	OTHER STATE GRANTS	\$52,155	\$65,582	\$0	\$67,000
Total		\$52,155	\$65,582	\$0	\$67,000
POLICE Total		\$52,155	\$65,582	\$0	\$67,000
290-11671-3498	OTHER FEDERAL GRANTS	\$0	\$38,015	\$0	\$0
Total		\$0	\$38,015	\$0	\$0
POLICE Total		\$0	\$38,015	\$0	\$0
290-11678-3498	OTHER FEDERAL GRANTS	\$0	\$32,934	\$0	\$0
Total		\$0	\$32,934	\$0	\$0
POLICE Total		\$0	\$32,934	\$0	\$0
290-11690-3463	OTHER STATE GRANTS	\$0	\$0	\$0	\$0
Total		\$0	\$0	\$0	\$0
POLICE Total		\$0	\$0	\$0	\$0
POLICE DEPT GRANTS Total		\$164,198	\$240,670	\$0	\$147,000



REVENUE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
325-11000-3624	DEV. IMPACT FEES-POLICE	\$36,899	\$81,872	\$31,000	\$31,000
	Total	\$36,899	\$81,872	\$31,000	\$31,000
	POLICE Total	\$36,899	\$81,872	\$31,000	\$31,000
	DEVELOPMENT IMPACT FEES Total	\$36,899	\$81,872	\$31,000	\$31,000



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	001 411 000				
Personnel Services					
100	PART-TIME SALARIES	\$229,493	\$174,002	\$240,000	\$247,200
101	FULL-TIME SALARIES	0,977,693	\$10,875,348	\$12,884,469	\$13,125,463
102	OVERTIME	1,208,157	\$1,176,192	\$800,000	\$800,000
105	LONGEVITY	\$19,036	\$16,663	\$17,500	\$23,500
107	EDUCATIONAL INCENTIVE PAY	\$408,598	\$388,803	\$416,087	\$387,007
110	ALLOWANCES & STIPENDS	\$84,254	\$44,843	\$1,560	\$480
120	DIFFERENTIAL PAY	\$433,086	\$403,540	\$384,135	\$384,135
140	WORKERS' COMPENSATION	1,139,091	\$1,103,869	\$1,036,528	\$1,080,140
150	HEALTH INSURANCE	1,242,120	\$1,096,363	\$1,652,083	\$1,569,183
151	LTD INSURANCE	\$28,338	\$26,159	\$29,670	\$29,670
160	RETIREMENT PLAN CHARGES	6,390,307	\$6,382,195	\$6,621,809	\$5,445,394
161	MEDICARE	\$195,188	\$185,509	\$192,624	\$190,319
199	PERSONNEL COMPENSATION	\$460,396	\$397,084	\$140,000	\$140,000
Personnel Services Total		\$22,815,760	\$22,270,570	\$24,416,465	\$23,422,491
Maintenance & Operations					
205	MEDICAL SERVICES	\$23,783	\$40,721	\$66,500	\$67,500
213	PROFESSIONAL SERVICES	\$0	\$29,177	\$0	\$0
217	INVESTIGATIVE SERVICES	\$20,125	\$37,492	\$45,400	\$50,600
222	MEMBERSHIPS & SUBSCRIPTIONS	\$13,442	\$7,028	\$10,495	\$612
226	TRAINING, TRAVEL & SUBSISTENCE	\$130,553	\$198,191	\$172,500	\$177,500
230	PRINTING & BINDING	\$12,768	\$24,953	\$13,450	\$13,450
250	POSTAGE	\$1,190	\$603	\$500	\$2,000
259	K-9 CARE AND SUPPLIES	\$37,050	\$58,933	\$53,040	\$62,100
261	EMERGENCY ANIMAL TREATMENT	\$448,035	\$433,678	\$515,500	\$465,500
281	R & M - OFFICE EQUIPMENT	\$3,632	\$20,129	\$1,000	\$24,000
287	R & M - COMMUNICATIONS EQUIPT.	\$18,816	\$2,997	\$4,000	\$2,500
299	CONTRACT SERVICES	\$274,708	\$360,746	\$417,900	\$669,400
304	BOOKS	\$0	\$0	\$500	\$500
305	MEDICAL SUPPLIES	\$1,012	\$8,680	\$14,000	\$14,000
307	DUPLICATING SUPPLIES	\$8,469	\$4,564	\$8,500	\$8,500
316	AMMUNITION	\$80,547	\$82,812	\$99,500	\$110,500



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
318	WEARING APPAREL	\$17,017	\$27,014	\$22,300	\$22,300
318	WEARING APPAREL-VESTS	\$13,060	\$91,045	\$22,500	\$22,500
319	UNIFORM ACCESSORIES	\$13,377	\$17,363	\$16,500	\$20,500
353	PATROL/CRIME LAB/PROP.SUPPLIES	\$29,063	\$38,689	\$32,000	\$46,650
355	MINOR EQUIPMENT- LESS THAN \$5,000.00	\$26,486	\$30,865	\$26,000	\$32,500
399	MATERIALS & SUPPLIES	\$38,445	\$34,302	\$34,500	\$35,500
Maintenance & Operations Total		\$1,211,578	\$1,549,982	\$1,576,585	\$1,848,612
Internal Service Charges and Reserves					
740	BUILDING SERVICES CHARGES	\$511,003	\$463,071	\$509,563	\$525,860
750	VEHICLE SERVICES CHARGES	\$411,678	\$436,215	\$502,955	\$594,283
751	VEHICLE REPLACEMENT CHARGE	\$438,258	\$445,487	\$459,647	\$474,881
752	VEHICLE LEASE CHARGE	\$35,972	\$81,000	\$111,000	\$154,000
755	INFO. SYSTEMS MAINT. CHARGE	1,286,967	\$1,264,888	\$1,414,288	\$1,630,662
790	INSURANCE CHARGES	\$809,818	\$809,818	\$809,818	\$919,373
Internal Service Charges and Reserves Total		\$3,493,696	\$3,500,479	\$3,807,271	\$4,299,058
Fixed Charges & Debt Services					
470	PRINCIPAL PAYMENT-RCS	\$96,212	\$98,897	\$101,654	\$101,654
480	INTEREST PAYMENT - RCS	\$17,272	\$14,587	\$11,828	\$11,828
Fixed Charges & Debt Services Total		\$113,484	\$113,484	\$113,482	\$113,482
Capital Outlay					
502	COMPUTER EQUIPMENT	\$24,480	\$24,106	\$25,000	\$35,000
503	FURNITURE & FURNISHINGS	\$0	\$19,165	\$0	\$0
515	COMMUNICATIONS EQUIPMENT	\$55,743	\$11,970	\$60,000	\$60,000
518	PUBLIC SAFETY EQUIPMENT	\$55,649	\$52,639	\$58,500	\$65,000
Capital Outlay Total		\$135,872	\$107,880	\$143,500	\$160,000
OPERATIONS Total		\$27,770,390	\$27,542,395	\$30,057,303	\$29,843,643
Activity	NATIONAL SCHOOL DISTRICT CONTRACT				
Activity No.	001 411 107				
Personnel Services					
101	FULL-TIME SALARIES	\$34,792	\$40,819	\$42,593	\$47,125
102	OVERTIME	\$3,127	\$6,321	\$0	\$0



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
107	EDUCATIONAL INCENTIVE PAY	\$184	\$394	\$429	\$463
110	ALLOWANCES & STIPENDS	\$189	\$0	\$0	\$0
120	DIFFERENTIAL PAY	\$2,308	\$2,266	\$1,901	\$1,901
140	WORKERS' COMPENSATION	\$3,962	\$4,810	\$18,510	\$13,056
150	HEALTH INSURANCE	\$2,018	\$3,037	\$5,983	\$5,744
151	LTD INSURANCE	\$122	\$128	\$143	\$143
160	RETIREMENT PLAN CHARGES	\$22,140	\$25,667	\$24,898	\$22,688
161	MEDICARE	\$598	\$721	\$618	\$683
199	PERSONNEL COMPENSATION	\$614	\$446	\$0	\$0
Personnel Services Total		\$70,054	\$84,609	\$95,075	\$91,803
NATIONAL SCHOOL DISTRICT CONTRACT T		\$70,054	\$84,609	\$95,075	\$91,803
Activity	SWEETWATER UNION HS CONTRACT				
Activity No.	001 411 108				
Personnel Services					
101	FULL-TIME SALARIES	\$45,136	\$52,731	\$55,027	\$63,914
102	OVERTIME	\$4,030	\$8,161	\$0	\$0
107	EDUCATIONAL INCENTIVE PAY	\$246	\$526	\$572	\$1,278
110	ALLOWANCES & STIPENDS	\$252	\$0	\$0	\$0
120	DIFFERENTIAL PAY	\$3,077	\$2,962	\$2,501	\$2,501
140	WORKERS' COMPENSATION	\$5,147	\$6,218	\$18,510	\$13,939
150	HEALTH INSURANCE	\$2,581	\$3,914	\$7,711	\$7,404
151	LTD INSURANCE	\$158	\$165	\$185	\$185
160	RETIREMENT PLAN CHARGES	\$29,233	\$33,169	\$32,166	\$30,771
161	MEDICARE	\$777	\$931	\$798	\$927
199	PERSONNEL COMPENSATION	\$819	\$557	\$0	\$0
Personnel Services Total		\$91,455	\$109,334	\$117,470	\$120,918
SWEETWATER UNION HS CONTRACT Total		\$91,455	\$109,334	\$117,470	\$120,918
Activity	POST				
Activity No.	001 411 112				
Maintenance & Operations					
226	TRAINING, TRAVEL & SUBSISTENCE	\$34,857	\$32,086	\$0	\$50,000



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Maintenance & Operations Total		\$34,857	\$32,086	\$0	\$50,000
POST Total		\$34,857	\$32,086	\$0	\$50,000
Activity	TUITION REIMBURSEMENT				
Activity No.	001 411 136				
Maintenance & Operations					
226	TRAINING, TRAVEL & SUBSISTENCE	\$11,689	\$8,665	\$0	\$30,000
Maintenance & Operations Total		\$11,689	\$8,665	\$0	\$30,000
TUITION REIMBURSEMENT Total		\$11,689	\$8,665	\$0	\$30,000
Activity	SENIOR VOLUNTEER PROGRAM				
Activity No.	001 411 138				
Maintenance & Operations					
318	WEARING APPAREL	\$0	\$0	\$0	\$530
Maintenance & Operations Total		\$0	\$0	\$0	\$530
SENIOR VOLUNTEER PROGRAM Total		\$0	\$0	\$0	\$530
Activity	PROPERTY EVIDENCE SEIZURE				
Activity No.	001 411 198				
Maintenance & Operations					
399	MATERIALS & SUPPLIES	\$6,924	\$0	\$0	\$9,550
Maintenance & Operations Total		\$6,924	\$0	\$0	\$9,550
PROPERTY EVIDENCE SEIZURE Total		\$6,924	\$0	\$0	\$9,550
Activity	COVID-19 Response				
Activity No.	001 411 911				
Maintenance & Operations					
305	MEDICAL SUPPLIES	\$0	\$3,662	\$0	\$0
Maintenance & Operations Total		\$0	\$3,662	\$0	\$0
COVID-19 Response Total		\$0	\$3,662	\$0	\$0



POLICE

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
	POLICE Total	\$27,985,369	\$27,780,751	\$30,269,848	\$30,146,444
	GENERAL FUND Total	\$27,985,369	\$27,780,751	\$30,269,848	\$30,146,444



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	131 411 000				
Maintenance & Operations					
318	WEARING APPAREL	\$0	\$0	\$0	\$17,500
399	MATERIALS & SUPPLIES	\$0	\$6,612	\$0	\$0
Maintenance & Operations Total		\$0	\$6,612	\$0	\$17,500
Capital Outlay					
503	FURNITURE & FURNISHINGS	\$0	\$16,119	\$0	\$0
518	PUBLIC SAFETY EQUIPMENT	\$0	\$0	\$0	\$50,000
Capital Outlay Total		\$0	\$16,119	\$0	\$50,000
OPERATIONS Total		\$0	\$22,731	\$0	\$67,500
Activity	COUNTY ASSET FORFEITURE FUND				
Activity No.	131 411 149				
Refunds, Contributions & Special Paymnts					
650	AGENCY CONTRIBUTIONS	\$0	\$3,000	\$0	\$0
Refunds, Contributions & Special Paymnts Total		\$0	\$3,000	\$0	\$0
Maintenance & Operations					
399	MATERIALS & SUPPLIES	\$0	\$0	\$0	\$0
Maintenance & Operations Total		\$0	\$0	\$0	\$0
COUNTY ASSET FORFEITURE FUND Total		\$0	\$3,000	\$0	\$0
POLICE Total		\$0	\$25,731	\$0	\$67,500
ASSET FORFEITURE FUND Total		\$0	\$25,731	\$0	\$67,500



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	COPS 2015 GRANT				
Activity No.	208 411 917				
Capital Outlay					
518	PUBLIC SAFETY EQUIPMENT	\$38,102	\$101	\$0	\$0
Capital Outlay Total		\$38,102	\$101	\$0	\$0
COPS 2015 GRANT Total		\$38,102	\$101	\$0	\$0
Activity	COPS 2016 GRANT				
Activity No.	208 411 918				
Capital Outlay					
518	PUBLIC SAFETY EQUIPMENT	\$9,974	\$41,153	\$0	\$0
Capital Outlay Total		\$9,974	\$41,153	\$0	\$0
COPS 2016 GRANT Total		\$9,974	\$41,153	\$0	\$0
Activity	COPS 2017 GRANT				
Activity No.	208 411 919				
Capital Outlay					
518	PUBLIC SAFETY EQUIPMENT	\$146,835	\$10,715	\$0	\$0
Capital Outlay Total		\$146,835	\$10,715	\$0	\$0
COPS 2017 GRANT Total		\$146,835	\$10,715	\$0	\$0
Activity	COPS 2018 GRANT				
Activity No.	208 411 920				
Capital Outlay					
518	PUBLIC SAFETY EQUIPMENT	\$131,316	\$15,600	\$0	\$0
Capital Outlay Total		\$131,316	\$15,600	\$0	\$0
COPS 2018 GRANT Total		\$131,316	\$15,600	\$0	\$0
POLICE Total		\$326,227	\$67,569	\$0	\$0
SUPP.LAW ENFORCEMENT SVCS FUND (SLESF)		\$326,227	\$67,569	\$0	\$0



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	COPS 2015 GRANT				
Activity No.	208 411 917				
Capital Outlay					
518	PUBLIC SAFETY EQUIPMENT	\$38,102	\$101	\$0	\$0
Capital Outlay Total		\$38,102	\$101	\$0	\$0
COPS 2015 GRANT Total		\$38,102	\$101	\$0	\$0
Activity	COPS 2016 GRANT				
Activity No.	208 411 918				
Capital Outlay					
518	PUBLIC SAFETY EQUIPMENT	\$9,974	\$41,153	\$0	\$0
Capital Outlay Total		\$9,974	\$41,153	\$0	\$0
COPS 2016 GRANT Total		\$9,974	\$41,153	\$0	\$0
Activity	COPS 2017 GRANT				
Activity No.	208 411 919				
Capital Outlay					
518	PUBLIC SAFETY EQUIPMENT	\$146,835	\$10,715	\$0	\$0
Capital Outlay Total		\$146,835	\$10,715	\$0	\$0
COPS 2017 GRANT Total		\$146,835	\$10,715	\$0	\$0
Activity	COPS 2018 GRANT				
Activity No.	208 411 920				
Capital Outlay					
518	PUBLIC SAFETY EQUIPMENT	\$131,316	\$15,600	\$0	\$0
Capital Outlay Total		\$131,316	\$15,600	\$0	\$0
COPS 2018 GRANT Total		\$131,316	\$15,600	\$0	\$0
POLICE Total		\$326,227	\$67,569	\$0	\$0
SUPP.LAW ENFORCEMENT SVCS FUND (SLESF)		\$326,227	\$67,569	\$0	\$0



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	211 411 000				
Maintenance & Operations					
213	PROFESSIONAL SERVICES	\$6,032	\$11,367	\$0	\$0
Maintenance & Operations Total		\$6,032	\$11,367	\$0	\$0
OPERATIONS Total		\$6,032	\$11,367	\$0	\$0
POLICE Total		\$6,032	\$11,367	\$0	\$0
SECURITY AND ALARM REGULATION FUND Total		\$6,032	\$11,367	\$0	\$0



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	FY18 URBAN AREA SECURITY INITIATIVE				
Activity No.	282 411 951				
Capital Outlay					
518	PUBLIC SAFETY EQUIPMENT	\$18,603	\$220,000	\$0	\$0
Capital Outlay Total		\$18,603	\$220,000	\$0	\$0
FY18 URBAN AREA SECURITY INITIATIVE T		\$18,603	\$220,000	\$0	\$0
Activity	FY20 URBAN AREA SECURITY INITIATIVE				
Activity No.	282 411 955				
Maintenance & Operations					
226	TRAINING, TRAVEL & SUBSISTENCE	\$0	\$0	\$0	\$0
Maintenance & Operations Total		\$0	\$0	\$0	\$0
FY20 URBAN AREA SECURITY INITIATIVE T		\$0	\$0	\$0	\$0
Activity	FY20 STATE HOMELAND SECURITY GRANT				
Activity No.	282 411 957				
Capital Outlay					
518	PUBLIC SAFETY EQUIPMENT	\$0	\$0	\$0	\$0
Capital Outlay Total		\$0	\$0	\$0	\$0
FY20 STATE HOMELAND SECURITY GRANT		\$0	\$0	\$0	\$0
Activity	FY21 URBAN AREA SECURITY INITIATIVE				
Activity No.	282 411 959				
Maintenance & Operations					
226	TRAINING, TRAVEL & SUBSISTENCE	\$0	\$0	\$0	\$0
Maintenance & Operations Total		\$0	\$0	\$0	\$0
FY21 URBAN AREA SECURITY INITIATIVE T		\$0	\$0	\$0	\$0
POLICE Total		\$18,603	\$220,000	\$0	\$0
REIMBURSABLE GRANTS CITYWIDE Total		\$18,603	\$220,000	\$0	\$0



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	RATT Grant				
Activity No.	290 411 626				
Personnel Services					
101	FULL-TIME SALARIES	\$56,874	\$56,279	\$0	\$0
102	OVERTIME	\$21,047	\$18,369	\$0	\$0
107	EDUCATIONAL INCENTIVE PAY	\$1,138	\$1,126	\$0	\$0
110	ALLOWANCES & STIPENDS	\$942	\$981	\$0	\$0
140	WORKERS' COMPENSATION	\$1,081	\$3,374	\$0	\$0
150	HEALTH INSURANCE	\$4,082	\$4,001	\$0	\$0
151	LTD INSURANCE	\$172	\$171	\$0	\$0
160	RETIREMENT PLAN CHARGES	\$12,875	\$12,525	\$0	\$0
161	MEDICARE	\$1,647	\$1,172	\$0	\$0
Personnel Services Total		\$99,858	\$97,998	\$0	\$0
RATT Grant Total		\$99,858	\$97,998	\$0	\$0
Activity	2018 REGIONAL REALIGNMENT RESPONSE - R3				
Activity No.	290 411 647				
Personnel Services					
102	OVERTIME	\$48,368	\$59,070	\$0	\$0
140	WORKERS' COMPENSATION	\$4,705	\$5,746	\$0	\$0
161	MEDICARE	\$702	\$860	\$0	\$0
Personnel Services Total		\$53,775	\$65,676	\$0	\$0
2018 REGIONAL REALIGNMENT RESPONSE		\$53,775	\$65,676	\$0	\$0
Activity	AB109 - OUTREACH TO HIGH RISK POPULATION				
Activity No.	290 411 659				
Refunds, Contributions & Special Paymnts					
650	AGENCY CONTRIBUTIONS	\$0	\$7,000	\$0	\$0
Refunds, Contributions & Special Paymnts Total		\$0	\$7,000	\$0	\$0
AB109 - OUTREACH TO HIGH RISK POPULA		\$0	\$7,000	\$0	\$0



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	2019 OPERATION STONE GARDEN				
Activity No.	290 411 671				
Personnel Services					
102	OVERTIME	\$15,985	\$17,443	\$0	\$0
140	WORKERS' COMPENSATION	\$1,557	\$1,697	\$0	\$0
161	MEDICARE	\$232	\$253	\$0	\$0
Personnel Services Total		\$17,774	\$19,393	\$0	\$0
Maintenance & Operations					
314	GAS, OIL & LUBRICANTS	\$488	\$360	\$0	\$0
Maintenance & Operations Total		\$488	\$360	\$0	\$0
2019 OPERATION STONE GARDEN Total		\$18,262	\$19,753	\$0	\$0
Activity	STEP OTS GRANT PT22040				
Activity No.	290 411 678				
Personnel Services					
102	OVERTIME	\$0	\$19,761	\$0	\$0
102	OVERTIME	\$0	\$22,116	\$0	\$0
140	WORKERS' COMPENSATION	\$0	\$1,923	\$0	\$0
140	WORKERS' COMPENSATION	\$0	\$2,152	\$0	\$0
161	MEDICARE	\$0	\$287	\$0	\$0
161	MEDICARE	\$0	\$321	\$0	\$0
Personnel Services Total		\$0	\$46,560	\$0	\$0
Maintenance & Operations					
353	MAT & SUP-PROP PATROL & CRIME LAB	\$0	\$1,444	\$0	\$0
Maintenance & Operations Total		\$0	\$1,444	\$0	\$0
STEP OTS GRANT PT22040 Total		\$0	\$48,004	\$0	\$0
Activity	2020-VD-BX-0743 OJP COVID GRANT				
Activity No.	290 411 923				
Maintenance & Operations					
305	MEDICAL SUPPLIES	\$13,098	\$42,362	\$0	\$0



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Maintenance & Operations Total		\$13,098	\$42,362	\$0	\$0
Capital Outlay					
502	COMPUTER EQUIPMENT	\$0	\$9,546	\$0	\$0
Capital Outlay Total		\$0	\$9,546	\$0	\$0
2020-VD-BX-0743 OJP COVID GRANT Total		\$13,098	\$51,908	\$0	\$0
POLICE Total		\$184,993	\$290,339	\$0	\$0
POLICE DEPT GRANTS Total		\$184,993	\$290,339	\$0	\$0



EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	644 411 000				
Capital Outlay					
511	AUTOMOTIVE EQUIPMENT	\$0	\$383,876	\$370,000	\$535,000
Capital Outlay Total		\$0	\$383,876	\$370,000	\$535,000
OPERATIONS Total		\$0	\$383,876	\$370,000	\$535,000
POLICE Total		\$0	\$383,876	\$370,000	\$535,000
VEHICLE REPLACEMENT RESERVE Total		\$0	\$383,876	\$370,000	\$535,000

Preliminary Budget
Fiscal Year 2024

Non- Departmental





NON-DEPARTMENTAL

DEPARTMENT DESCRIPTION

This budget contains expenditures that affect all departments or the City as a whole. Examples of city expenditures include funding for post-employment health benefits for City retirees, memberships, legislative representation, printing, and postage. This fund also provides contributions to various organizations as recommended by the City Manager and City Council. Examples of contributions include the Chamber of Commerce, Independence Day Fireworks, SANDAG, and other contributions.



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	001 409 000				
Personnel Services					
160	RETIREMENT PLAN CHARGES	\$72,746	\$4,895	\$0	\$0
199	PERSONNEL COMPENSATION	\$0	\$0	\$1,272,000	\$1,300,000
Personnel Services Total		\$72,746	\$4,895	\$1,272,000	\$1,300,000
Other Financing Uses					
099	TRANSFERS TO OTHER FUNDS	2,368,520	\$2,883,446	\$2,557,210	\$2,829,069
Other Financing Uses Total		\$2,368,520	\$2,883,446	\$2,557,210	\$2,829,069
Maintenance & Operations					
209	LEGAL SERVICES	\$0	\$0	\$40,000	\$0
212	GOVERNMENTAL PURPOSES	\$3,370	\$2,017	\$15,000	\$15,000
213	PROFESSIONAL SERVICES	\$192,169	\$406,130	\$302,000	\$250,000
222	MEMBERSHIPS & SUBSCRIPTIONS	\$72,882	\$71,456	\$92,411	\$92,411
226	TRAINING, TRAVEL & SUBSISTENCE	\$19,699	\$13,887	\$0	\$20,000
230	PRINTING & BINDING	\$5,648	\$0	\$13,000	\$13,000
250	POSTAGE	\$16,492	\$11,225	\$30,000	\$30,000
264	PROMOTIONAL ACTIVITIES	\$1,532	\$11,856	\$62,200	\$87,200
299	CONTRACT SERVICES	\$149,317	\$200,044	\$189,355	\$189,355
399	MATERIALS & SUPPLIES	\$2,290	\$16	\$0	\$0
Maintenance & Operations Total		\$463,398	\$716,631	\$743,966	\$696,966
Internal Service Charges and Reserves					
710	PROVISION FOR CONTINGENCY	\$18,000	\$9,308	\$125,000	\$125,000
Internal Service Charges and Reserves Total		\$18,000	\$9,308	\$125,000	\$125,000
Fixed Charges & Debt Services					
452	UNEMPLOYMENT INSURANCE	\$85,130	\$9,155	\$0	\$0
470	BOND PRINCIPAL REDEMPTION	\$162,810	\$176,433	\$190,720	\$190,720
480	BOND INTEREST REDEMPTION	\$176,483	\$171,880	\$166,895	\$166,895
Fixed Charges & Debt Services Total		\$424,423	\$357,468	\$357,615	\$357,615
OPERATIONS Total		\$3,347,086	\$3,971,748	\$5,055,791	\$5,308,650



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	CAPITAL IMPROVEMENT PROGRAM				
Activity No.	001 409 500				
Capital Outlay					
598	CAPITAL IMPROVEMENT PROGRAM	\$0	\$0	\$0	\$0
598	FACILITIES UPGRADES - TIER 1 PROJECTS	\$486,908	\$1,151,805	\$900,000	\$1,000,000
598	WITOD IMPROVEMENTS	1,571,105	\$177,796	\$0	\$0
598	PARADISE CREEK PARK SITE REMEDIATION	\$621,448	\$123,933	\$0	\$0
598	TRAFFIC MONITORING/SYSTEM IMPROVEMENTS	\$808,975	\$269,709	\$800,000	\$800,000
598	CIVIC CENTER ADA IMPROVEMENTS	\$0	\$40,031	\$0	\$0
598	MISC STORM DRAIN IMPROVEMENTS	\$72,580	\$231,371	\$200,000	\$200,000
Capital Outlay Total		\$3,561,017	\$1,994,645	\$1,900,000	\$2,000,000
CAPITAL IMPROVEMENT PROGRAM Total		\$3,561,017	\$1,994,645	\$1,900,000	\$2,000,000
Activity	PARS TRUST ACCOUNT				
Activity No.	001 409 729				
Maintenance & Operations					
299	CONTRACT SERVICES	\$54,906	\$56,610	\$0	\$0
Maintenance & Operations Total		\$54,906	\$56,610	\$0	\$0
PARS TRUST ACCOUNT Total		\$54,906	\$56,610	\$0	\$0
NON-DEPARTMENTAL Total		\$6,963,009	\$6,023,003	\$6,955,791	\$7,308,650
GENERAL FUND Total		\$6,963,009	\$6,023,003	\$6,955,791	\$7,308,650



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	CAPITAL IMPROVEMENT PROGRAM				
Activity No.	109 409 500				
Capital Outlay					
598	RESURFACE VARIOUS STREETS	1,329,214	\$981,087	\$1,430,342	\$1,519,578
Capital Outlay Total		\$1,329,214	\$981,087	\$1,430,342	\$1,519,578
CAPITAL IMPROVEMENT PROGRAM Total		\$1,329,214	\$981,087	\$1,430,342	\$1,519,578
NON-DEPARTMENTAL Total		\$1,329,214	\$981,087	\$1,430,342	\$1,519,578
GAS TAXES FUND Total		\$1,329,214	\$981,087	\$1,430,342	\$1,519,578



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	117 409 000				
Personnel Services					
193	ARPA PREMIUM PAY	\$0	\$1,227,139	\$0	\$0
Personnel Services Total		\$0	\$1,227,139	\$0	\$0
Other Financing Uses					
099	TRANSFERS TO OTHER FUNDS	\$0	\$2,060,000	\$2,500,000	\$2,000,000
Other Financing Uses Total		\$0	\$2,060,000	\$2,500,000	\$2,000,000
Maintenance & Operations					
213	PROFESSIONAL SERVICES	\$0	\$53,888	\$2,500,000	\$0
Maintenance & Operations Total		\$0	\$53,888	\$2,500,000	\$0
OPERATIONS Total		\$0	\$3,341,027	\$5,000,000	\$2,000,000
Activity	CAPITAL IMPROVEMENT PROGRAM				
Activity No.	117 409 500				
Capital Outlay					
598	CAPITAL IMPROVEMENT PROGRAM	\$0	\$0	\$0	\$0
598	LAS PALMAS POOL WELLNESS CENTER	\$0	\$184,560	\$0	\$0
598	LAS PALMAS POOL RESTROOM REPLACEMENT	\$0	\$0	\$0	\$0
598	LAS PALMAS DOG PARK	\$0	\$0	\$0	\$0
598	KIMBALL DOG PARK AND LIGHTING	\$0	\$0	\$0	\$0
Capital Outlay Total		\$0	\$184,560	\$0	\$0
CAPITAL IMPROVEMENT PROGRAM Total		\$0	\$184,560	\$0	\$0
NON-DEPARTMENTAL Total		\$0	\$3,525,587	\$5,000,000	\$2,000,000
AMERICAN RESCUE PLAN ACT - ARPA Total		\$0	\$3,525,587	\$5,000,000	\$2,000,000



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	CAPITAL IMPROVEMENT PROGRAM				
Activity No.	125 409 500				
Capital Outlay					
598	SEWER UPSIZING	2,055,449	\$26,258	\$2,000,000	\$3,000,000
Capital Outlay Total		\$2,055,449	\$26,258	\$2,000,000	\$3,000,000
CAPITAL IMPROVEMENT PROGRAM Total		\$2,055,449	\$26,258	\$2,000,000	\$3,000,000
NON-DEPARTMENTAL Total		\$2,055,449	\$26,258	\$2,000,000	\$3,000,000
SEWER SERVICE FUND Total		\$2,055,449	\$26,258	\$2,000,000	\$3,000,000



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	CAPITAL IMPROVEMENT PROGRAM				
Activity No.	172 409 500				
Capital Outlay					
598	CAPITAL IMPROVEMENT PROGRAM	\$0	\$0	\$0	\$300,000
Capital Outlay Total		\$0	\$0	\$0	\$300,000
CAPITAL IMPROVEMENT PROGRAM Total		\$0	\$0	\$0	\$300,000
NON-DEPARTMENTAL Total		\$0	\$0	\$0	\$300,000
TRASH RATE STABILIZATION FUND Total		\$0	\$0	\$0	\$300,000



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	212 409 000				
Personnel Services					
199	PERSONNEL COMPENSATION	\$316,560	\$350,485	\$360,000	\$360,000
Personnel Services Total		\$316,560	\$350,485	\$360,000	\$360,000
OPERATIONS Total		\$316,560	\$350,485	\$360,000	\$360,000
NON-DEPARTMENTAL Total		\$316,560	\$350,485	\$360,000	\$360,000
POST-EMPLOYMENT BENEFITS FUND Total		\$316,560	\$350,485	\$360,000	\$360,000



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	258 409 000				
Fixed Charges & Debt Services					
470	BOND PRINCIPAL REDEMPTION	\$0	\$0	\$2,565,000	\$3,655,000
480	BOND INTEREST REDEMPTION	\$0	\$0	\$3,164,428	\$2,151,468
Fixed Charges & Debt Services Total		\$0	\$0	\$5,729,428	\$5,806,468
OPERATIONS Total		\$0	\$0	\$5,729,428	\$5,806,468
NON-DEPARTMENTAL Total		\$0	\$0	\$5,729,428	\$5,806,468
PENSION OBLIGATION BONDS Total		\$0	\$0	\$5,729,428	\$5,806,468



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	CAPITAL IMPROVEMENT PROGRAM				
Activity No.	296 409 500				
Capital Outlay					
598	CITYWIDE BIKE WAYFINDING	\$0	\$14,839	\$0	\$0
598	FIBER OPTIC TRAFFIC SIGNAL PHASE II	\$299,946	\$134,032	\$0	\$0
598	PEDESTRIAN ADA IMPROVEMENTS	\$48,292	\$186,377	\$0	\$0
598	E. 4TH STREET PROTECTED LEFT TURN ENHAN	\$126,755	\$9,834	\$0	\$0
598	SWEETWATER ROAD SAFETY ENHANCEMENTS	\$262,817	\$418,123	\$0	\$0
598	CITYWIDE PEDESTRIAN SAFETY IMPROV	\$384,334	\$63,135	\$0	\$0
598	CITYWIDE SAFETY LIGHTING ENHANCEMENTS	\$90,869	\$18,050	\$0	\$0
598	SRTS - PEDESTRIAN ENHANCEMENTS	\$0	\$32,010	\$0	\$0
598	PARADISE CREEK BIOFILTRATION - PROP 84	\$253,521	\$1,255	\$0	\$0
598	PARADISE CREEK EDUC PARK EXTENSION	\$0	\$0	\$0	\$0
598	PARADISE CREEK IMPV HIGHLAND AV PHASE II	\$22,286	\$754,647	\$0	\$0
598	PARADISE CREEK WTR QLT-COMM ENH PHASE II	\$0	\$185,029	\$0	\$0
598	PROP. 68 EL TOYON PARK PROJECT	\$0	\$83,880	\$0	\$0
598	30TH ST. PED AND BIKE ENHANCEMENTS ATP	\$564,817	\$278,583	\$0	\$0
598	EL TOYON-LAS PALMAS BICYCLE CORRIDOR	\$7,823	\$1,268,893	\$0	\$0
598	URBAN FOREST MGMT PLNG GRANT PHASE II	\$100,483	\$84,875	\$0	\$0
598	PARADISE CREEK PED&BIKE PATHWAY PHASE I	\$699,386	\$100,000	\$0	\$0
598	W. 19TH STREET GREENWAY PROJECT	\$0	\$95,057	\$0	\$0
598	NC EASTSIDE I-805 COMM GREENBELT PROJECT	\$0	\$0	\$0	\$0
598	NATIONAL CITY BLVD INTER-CITY BIKE CONN	\$4,498	\$17,595	\$0	\$0
598	24TH ST TOD OVERLAY	\$211,334	\$49,313	\$0	\$0
598	ROOSEVELT AVE CORRIDOR SMART GROWTH REVI	1,162,725	\$675,899	\$0	\$0
598	SWEETWATER RD PROTECTED BIKEWAY	\$168,530	\$76,905	\$0	\$0
598	CITYWIDE PROTECTED LEFT TURN ENHAN PROJ	\$115,522	\$37,236	\$0	\$0
598	BAYSHORE BIKEWAY - SDUPD	\$145,002	\$623,717	\$0	\$0
598	AHSC - BAYSHORE BIKEWAY SEGMENT 5	\$0	\$0	\$0	\$0
Capital Outlay Total		\$4,668,939	\$5,209,284	\$0	\$0
CAPITAL IMPROVEMENT PROGRAM Total		\$4,668,939	\$5,209,284	\$0	\$0
NON-DEPARTMENTAL Total		\$4,668,939	\$5,209,284	\$0	\$0



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
	ENGINEERING DEPT GRANTS Total	\$4,668,939	\$5,209,284	\$0	\$0



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	301 409 000				
Refunds, Contributions & Special Paymnts					
650	FAIR HOUSING SERVICES	\$35,000	\$41,000	\$0	\$0
650	SOUTH BAY COM SVS - NC PD SUPPORT SVS	\$17,500	\$20,000	\$0	\$0
Refunds, Contributions & Special Paymnts Total		\$52,500	\$61,000	\$0	\$0
OPERATIONS Total		\$52,500	\$61,000	\$0	\$0
Activity	Housing & Grants - CARES Act.				
Activity No.	301 409 922				
Refunds, Contributions & Special Paymnts					
650	FAIR HOUSING AND TENANT LANDLORD MITIGAT	\$20,000	\$0	\$26,171	\$0
650	SOUTH BAY COMMUNITY SERVICES	\$73,804	\$70,388	\$0	\$0
Refunds, Contributions & Special Paymnts Total		\$93,804	\$70,388	\$26,171	\$0
Housing & Grants - CARES Act. Total		\$93,804	\$70,388	\$26,171	\$0
NON-DEPARTMENTAL Total		\$146,304	\$131,388	\$26,171	\$0
GRANT-C.D.B.G. Total		\$146,304	\$131,388	\$26,171	\$0



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	CAPITAL IMPROVEMENT PROGRAM				
Activity No.	307 409 500				
Capital Outlay					
598	RESURFACE STREETS	\$180,657	\$430,925	\$1,284,000	\$1,313,000
598	SAFE ROUTES TO SCHOOL	\$76,273	\$26,291	\$200,000	\$236,000
598	UPGRADING TRAFFIC SIGNAL	\$79,474	\$404,972	\$300,000	\$300,000
Capital Outlay Total		\$336,403	\$862,188	\$1,784,000	\$1,849,000
CAPITAL IMPROVEMENT PROGRAM Total		\$336,403	\$862,188	\$1,784,000	\$1,849,000
NON-DEPARTMENTAL Total		\$336,403	\$862,188	\$1,784,000	\$1,849,000
PROPOSITION A" FUND Total		\$336,403	\$862,188	\$1,784,000	\$1,849,000



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	CAPITAL IMPROVEMENT PROGRAM				
Activity No.	325 409 500				
Capital Outlay					
598	EL TOYON MULTI PURPOSE FACILITY/FIRE STA	\$0	\$0	\$100,000	\$100,000
598	EL TOYON MULTI PURPOSE FACILITY/FIRE STA	\$0	\$0	\$100,000	\$100,000
Capital Outlay Total		\$0	\$0	\$200,000	\$200,000
CAPITAL IMPROVEMENT PROGRAM Total		\$0	\$0	\$200,000	\$200,000
NON-DEPARTMENTAL Total		\$0	\$0	\$200,000	\$200,000
DEVELOPMENT IMPACT FEES Total		\$0	\$0	\$200,000	\$200,000



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	CAPITAL IMPROVEMENT PROGRAM				
Activity No.	326 409 500				
Capital Outlay					
598	MOBILITY ENHANCEMENTS	\$0	\$0	\$1,000,000	\$1,500,000
Capital Outlay Total		\$0	\$0	\$1,000,000	\$1,500,000
CAPITAL IMPROVEMENT PROGRAM Total		\$0	\$0	\$1,000,000	\$1,500,000
NON-DEPARTMENTAL Total		\$0	\$0	\$1,000,000	\$1,500,000
TRANSPORTATION IMPACT FEE FUND Total		\$0	\$0	\$1,000,000	\$1,500,000



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	501 409 000				
Other Financing Uses					
099	TRANSFERS TO OTHER FUNDS	\$0	\$61,238	\$0	\$0
Other Financing Uses Total		\$0	\$61,238	\$0	\$0
OPERATIONS Total		\$0	\$61,238	\$0	\$0
NON-DEPARTMENTAL Total		\$0	\$61,238	\$0	\$0
HOUSING AUTHORITY Total		\$0	\$61,238	\$0	\$0



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	HOUSING				
Activity No.	505 409 462				
Refunds, Contributions & Special Paymnts					
650	SOUTH BAY COMM SERV - TBRA	\$510,862	\$139,475	\$0	\$0
Refunds, Contributions & Special Paymnts Total		\$510,862	\$139,475	\$0	\$0
HOUSING Total		\$510,862	\$139,475	\$0	\$0
NON-DEPARTMENTAL Total		\$510,862	\$139,475	\$0	\$0
HOME FUND Total		\$510,862	\$139,475	\$0	\$0



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	CAPITAL IMPROVEMENT PROGRAM				
Activity No.	629 409 500				
Capital Outlay					
598	CAPITAL IMPROVEMENT PROGRAM	\$0	\$0	\$100,000	\$100,000
598	PUBLIC SAFETY CAMERAS	\$3,854	\$1,040	\$0	\$0
Capital Outlay Total		\$3,854	\$1,040	\$100,000	\$100,000
CAPITAL IMPROVEMENT PROGRAM Total		\$3,854	\$1,040	\$100,000	\$100,000
NON-DEPARTMENTAL Total		\$3,854	\$1,040	\$100,000	\$100,000
INFORMATION SYSTEMS MAINTENANC Total		\$3,854	\$1,040	\$100,000	\$100,000



NON-DEPARTMENTAL

EXPENDITURE DETAIL

Account No.	Account Title	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted	FY 2024 Preliminary
Activity	OPERATIONS				
Activity No.	644 409 000				
Maintenance & Operations					
355	MINOR EQUIPMENT- LESS THAN \$5,000.00	\$0	\$0	\$25,000	\$45,000
Maintenance & Operations Total		\$0	\$0	\$25,000	\$45,000
Capital Outlay					
512	AUTOMOTIVE LEASES	\$0	\$191,553	\$297,000	\$356,000
Capital Outlay Total		\$0	\$191,553	\$297,000	\$356,000
OPERATIONS Total		\$0	\$191,553	\$322,000	\$401,000
NON-DEPARTMENTAL Total		\$0	\$191,553	\$322,000	\$401,000
VEHICLE REPLACEMENT RESERVE Total		\$0	\$191,553	\$322,000	\$401,000

Section

V.

Capital Improvement Program

Preliminary Budget
Fiscal Year 2024



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CAPITAL IMPROVEMENT PROGRAM



City of National City
5-Year Capital Improvement Program (FY 2024 - FY 2028)
FY 2024 Project Funding Recommendations

Project	Type	Description	General Fund (001)	Facilities Maintenance (001)	Maintenance Fund (105)	Facilities Maintenance (626)	Sewer Fund (125)	Gas Tax RMRA (SB1) Fund (109) *	TransNet (Prop. A) Fund (307)	Section 8 Fund (502)	Development Impact Fees	Impact Fees Fund (325)	Systems Maintenance Fund (629)	Solid Waste Fund (172)	Total
Drainage Improvements (001-409-500-598-7049)	Infrastructure	Replace deteriorated metal storm drain pipes, provide other high priority drainage improvements Citywide and initiate trash rack installation in inlets citywide	\$ 200,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 50,000	\$ 250,000
Solid Waste (172)	Infrastructure	Provide pavement restoration citywide in and around trash truck routes	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 250,000	\$ 250,000
Traffic Monitoring / Safety Enhancements (001-409-500-598-6573)	Infrastructure	Provide various infrastructure improvements to National City's transportation network to enhance safety and access for all users, including new sidewalks and pedestrian curb ramps for Americans with Disabilities Act (ADA) compliance.	\$ 800,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 800,000
Facilities Upgrades (629-409-500-598-1500)	Infrastructure	Provide maintenance, upgrades and additional information systems to Citywide areas as needed	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100,000	\$ -	\$ 100,000
Facilities Upgrades (001-409-500-598-1500)	Parks and Facilities	Provide major maintenance and upgrades to City parks and facilities to enhance safety, operations and quality of life.	\$ -	\$ 1,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,000,000
Sewer Replacement / Upsizing (125-409-500-598-2024)	Infrastructure	Projects include repair and/or replacement of deteriorated sewer lines and/or upsizing to increase capacity and efficiency of the sewer collection system Citywide.	\$ -	\$ -	\$ -	\$ -	\$ 3,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,000,000
Safe Routes to School Pedestrian and Bicycle Safety Enhancements (307-409-500-598-6166)	Infrastructure	Projects include various infrastructure improvements Citywide to enhance access and safety for children walking and biking to school.	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 236,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 236,000
Street Resurfacing (109-409-500-598-6035) (307-409-500-598-6035)	Infrastructure	Projects include a combination of roadway rehabilitation, grinding and overlay, slurry seals and restriping of finished pavement; other improvements include removal and replacement of damaged or lifted sidewalks and substandard pedestrian curb ramps for ADA compliance.	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,519,578	\$ 1,313,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,832,578
Traffic Signal Upgrades (307-409-500-598-6558)	Infrastructure	Projects include various upgrades and modifications to traffic signals and associated infrastructure / equipment Citywide, to enhance traffic safety and operations.	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 300,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 300,000
Vehicle Replacement Reserve	Vehicle Fleet	Vehicle Replacement, Rotation, Electrification or new	\$ 1,265,550	\$ -	\$ 103,400	\$ 39,600	\$ 19,800	\$ -	\$ -	\$ 13,750	\$ -	\$ -	\$ -	\$ 495,000	\$ 1,937,100
Mobility Enhancements 326-409-500-598-4114	Infrastructure	Projects include various upgrades and modifications to traffic signals and infrastructure to enhance mobility and operations.	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,500,000	\$ -	\$ -	\$ -	\$ 1,500,000
El Toyon Multipurpose Facility/Fire Station	Parks and Facilities	Design of El Toyon Park Community Center & Fire Station 33	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100,000	\$ -	\$ -	\$ 100,000
El Toyon Multipurpose Facility/Fire Station	Parks and Facilities	Design of El Toyon Park Community Center & Fire Station 33	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100,000	\$ -	\$ -	\$ 100,000
Total			\$ 2,265,550	\$ 1,000,000	\$ 103,400	\$ 39,600	\$ 3,019,800	\$ 1,519,578	\$ 1,849,000	\$ 13,750	\$ 1,500,000	\$ 200,000	\$ 100,000	\$ 795,000	\$ 12,405,678



CAPITAL IMPROVEMENT PROGRAM

Fiscal Year 2024 Vehicle Fleet Acquisition Program

	# of Vehicles		FY2024 Preliminary Budget	
Enterprise Lease Program (Fund 644)				
<i>Existing Vehicles (Obj Acct #512)</i>	49	\$	296,000	
New Vehicles (Obj Acct #512)				
Vehicle Description (Assigned Department)				
Detective Sedans - Replacement (Police)	4		44,000	
Small Inspector Truck - Replacement (Fire)	1		8,000	
Medium Truck - Equipment Maintenance	1		8,000	
Total New	6		60,000	
Accessory Equipment (Obj Acct #355) (one-time cost)				
Emergency Equipment for Detective Sedans			25,000	
Equipment Maintenance Truck - Outfitting			20,000	
			45,000	
Total Enterprise Lease Program	55	\$	401,000	
<p>Note: The costs for all leased vehicles are budgeted in the Vehicle Replacement Fund (#644). Departments/activities to which the vehicles are assigned will receive an internal service fund charge for the annual cost of their respective vehicles.</p>				

			FY24 Preliminary Budget: Vehicle Purchase Cost	FY24 Preliminary Budget: ISF Payments to Fund 644 (Obj Acct #751)
Vehicle/Equipment Purchase Program (Fund 644)				
<i>Existing Vehicles - Internal Service Fund Charges</i>			N/A	\$ 1,082,048
New Vehicles for Purchase				
		# of Vehicles		
Vehicle Description (Assigned Department)				
Police Patrol Vehicles - Replacement	4	\$	300,000	\$ 72,000
Lieutenant Vehicle - Replacement (Police)	1		75,000	18,000
K-9 Vehicle - Replacement (Police)	1		80,000	19,200
Supervisor Vehicle - Replacement (Police)	1		80,000	19,200
Small Kubota Tractor - Replacement (Streets)	1		75,000	10,500
Small Hybrid Riding Mower - Replacement (Parks)			50,000	9,143
Large Front Loader - Replacement (Streets)	1		250,000	26,667
Street Sweeper - Replacement	1		450,000	-
Total	10	\$	1,360,000	\$ 174,710
Total Vehicle/Equipment Purchase Program	10	\$	1,360,000	\$ 1,256,758
<p>Note: Under the vehicle purchase program, the acquisition cost of a vehicle is budgeted in the Vehicle Replacement Fund (#644). Based upon the value of the vehicle and its expected useful life, an annual replacement charge is calculated and that amount is budgeted as an internal service fund (ISF) charge (object account #751) in the department to which the vehicle is to be assigned. The monies accumulated in Fund 644 through the annual replacement charge will be used for the future replacement of the vehicles.</p>				

Section

VI.

Appendix

Preliminary Budget
Fiscal Year 2024

Preliminary Budget
Fiscal Year 2024

Accounting & Financial Policies





ACCOUNTING POLICIES & PROCEDURES

Purpose

This section describes the policies and procedures in place to ensure that assets are safeguarded, that financial statements are in conformity with generally accepted accounting principles, and that finances are managed with responsible stewardship. All personnel are expected to uphold to these internal policies and procedures. It is the intention of the City of National City Department of Finance that they serve as the Department's commitment to proper and accurate financial management and reporting.

Payroll

Payroll Processing

The City of National City compensates employees on a bi-weekly basis in accordance with the current and approved Memorandums of Understanding for the recognized employee unions, the Firefighters' Association (FFA), the Municipal Employees' Association (MEA), and the Police Officers' Association (POA). Executive, management, and confidential employees are unrepresented and negotiate separately from any other recognized group.

The payroll process consists of the following: 1) data entry and computer processing, 2) distribution of checks or transmittal of direct deposits, 3) payroll liability processing, and 4) filing both in house and with appropriate organizations/agencies.

Payroll Reporting

1. The Payroll Clerk performs the following payroll reporting requirements:
 - A. payroll tax deposit;
 - B. CalPERS contribution report;
 - C. CASDU garnishment;
 - D. PARS contribution report;
 - E. ICMA contribution report.
2. Direct Deposit
 - A. Once the payroll process is complete, the direct deposit file is submitted to the financial institution 48 hours in advance of payday.
3. Payroll Distribution
 - A. Each Payroll Check and Direct Deposit Voucher is inserted into a plain window envelope, sealed and sorted by Department. Checks are maintained in the Finance vault. Employees may opt for an electronic version of the Direct Deposit Voucher.
 - B. On payday, an authorized person from each department will come to the Payroll Office to pick up the checks for that department.



ACCOUNTING POLICIES & PROCEDURES

Accounts Payable

Create New Vendor Account

New vendors are set up in the system by the Accounting Assistant Staff upon collection of supporting documentation. A vendor record can be initiated by the Accounting Assistant or City Departments by requesting a signed W-9 form.

Invoice Processing

Request for Warrant Forms need to be filled out by the department requesting payment and provide the following information: Invoice number, Invoice Date, Description of goods/services being billed and paid for, purchase order (PO) number if applicable, expenditure account number, and amount. Requests for Payment must be signed by the Department Director or their designee.

Normal Accounts Payable Check Run

The City of National City uses a hybrid accounts payable and centralized purchasing process. Each department has the authority to purchase or contract for services as long as the purchases or contracts conform to the adopted purchasing resolution and the funds have been appropriated. Invoices are entered into the financial system's accounts payable (A/P) module by the departments in batches, which are submitted to Finance according to predetermined due dates. Weekly check runs occur on Thursdays. All items to be paid are to be entered by end of the day on Thursday of the prior week.

After the invoice batches are reviewed and posted, the Accountant reviews the Open Invoice Report that includes all of the posted invoices to be paid, and then gives approval for the checks to be processed.

After the warrants have been signed and printed, the A/P Senior Accounting Assistant prepares the warrant register report along with the Agenda Statement Form for the Director of Finance to review/sign and upload to the Questys system to be included in Council meeting agenda and package. For checks requested to be returned to the department, the party picking up the check(s) should sign the Voucher/Check Register.

The Accounting Assistant matches checks to the backup, makes sure appropriate signatures have been received, and that all backup is attached. The Accounting Assistant checks that the dollar amount of the check, vendor number and invoice number match the payment authorization, verifies the address of the vendor and mails check with any remittance slips. Packing slips, estimates, and statements are not considered adequate backup, but certainly can be added as additional supporting documentation. The primary documentation must be an invoice, although in certain instances a memo from a department head authorizing payment may be substituted. Any questionable backup is brought to the attention of the department supervisor. After all checks have been matched up to the appropriate backup, they are filed numerically by check number and by weekly register warrant number in the filing cabinets maintained by the A/P Accounting Assistant.



ACCOUNTING POLICIES & PROCEDURES

Petty Cash Fund

The petty cash fund is maintained by an Accounting Assistant designated by the Director of Finance. During the day, the cash is kept in a metal cash box located in a locked file cabinet. This cash box is kept locked, except when an authorized petty cash reimbursement is being made to an employee. After business hours, the box is locked in the Finance vault.

The Accounting Assistant is responsible for obtaining and maintaining from each department head a list of persons authorized to approve petty cash reimbursements, including a specimen signature for each person. The authorizing employee must be a member of management.



ACCOUNTING POLICIES & PROCEDURES

Purchasing

Purchasing Requisition Entry

The City of National City uses a centralized purchasing system. Under this system, each operating department is responsible for coordinating the purchase of goods and services needed for its operations. However, to ensure compliance with the City's purchasing manual, the City's Purchasing Ordinance designates that certain purchases must be approved by a Purchasing Officer designated by the City Manager.

Purchases may only be made by the following acceptable methods: 1) Purchase Order, 2) Request for Check, 3) Petty Cash, or 4) City Issued Credit Card. Funds must exist in the account to which the purchase is to be charged.

The document used to encumber funds is called a purchase order. When a purchase order is created, approved, and entered, it reserves a portion of the budget allocated to the particular line item in an amount equal to the purchase order. For example, if the office supply line item budget is \$1,000 and a purchase order is created for \$250, \$250 is considered encumbered and no longer available for spending. Encumbered funds may be contractually obligated at the time the purchase order is created (such as when there is a corresponding contract with a vendor to provide contractually specified goods or services) or they may relate to a "blanket" purchase authorization (when a specified volume of goods or services is purchased from a vendor throughout the fiscal year). In either case, once a purchase order is created the funds are no longer available for payment to any vendor (or for any other purpose) other than that specified on the purchase order. Once created a purchase order may later be increased, decreased, or cancelled.

When goods or services are rendered to the City, payment may then be authorized through four appropriate approval levels against a purchase order. When a payment is issued, the balance of the purchase order is reduced and the encumbrance becomes an expenditure.

Purchase Order Year-End Closeout

Purchase orders are closed out shortly after June 30th, with the exception of requested purchase orders that still remain open on contracts. Purchase orders that will automatically remain open are only those purchase orders related to an active Construction in Progress (CIP). All departments are requested to prepare a list of purchase orders to be carried into the following fiscal year and submit the list to Purchasing Division in Finance. Purchase orders requested to be carried forward by each department will be reviewed by Finance to insure that a contract is in place and that the purchase order balance is accurate. A Purchase Order Accounting Report is available so that departments can review a comprehensive list of all purchase orders open as of June 30th to determine which purchase orders should be carried forward into the next fiscal year and which purchase orders should be closed out permanently.

Purchase Orders to be Closed Permanently

In order to close out a purchase order in EDEN financial system, a change order must be entered to close out the purchase order balance.



ACCOUNTING POLICIES & PROCEDURES

Cash Receipts – Cash Register and Cashiering

Opening Activity and Cash Drawer Setup

Receipts are processed by several cashiers, each having their own separate cash drawer. At the end of the day, the cashiers balance their cash drawers with reports that have been generated by the Progressive cash receipt system. In the event of any unreconciled differences, the Supervisor in-charge is immediately notified. If the cash drawers are in balance, the main Cashier / Accounting Assistant will prepare a comprehensive cash balance report for the Supervisor in-charge.

Losses, Shortages, and Overages

A Shortage is an unintentional collection error, such as giving incorrect change or not collecting the correct amount. An Overage occurs when an employee has collected too much money and cannot immediately return the excess to a specific customer. A loss occurs when the cash handler has obtained physical custody of money and then due to reasons like negligence, an act of God, or an unlawful action, cannot deposit the funds into the City Treasury. "Negligence" includes such actions as leaving City money unattended and not properly safeguarding that money from loss. Losses are reported to the supervisor immediately.

Balancing the Cash Drawer

Each cashier has their own cash drawer for which they are responsible. At the end of the day, the cashier balances the cash drawer using the following steps:

1. Adding the currency and coins, and any funds that may have been removed from the cash drawer for safekeeping, and checks for a total dollar amount on-hand and then subtracting out the beginning cash bank.
2. Determining the dollar amount that has been collected per the cash register.
3. Comparing these two amounts to verify that they are the same.

The balancing process takes place out of public view in a location away from the collection area to protect the safety of the cash handler.

Locating Cash Differences

Every reasonable attempt is made to locate cash differences. If a cash shortage or overage occurs, staff follow these steps:

1. Recount all coins and currency to agree with the initial count.
2. Make sure that the proper amount was deducted as the beginning cash bank.

If the difference is more than \$5, the below steps are taken:

1. Recheck the amounts per the cash register to determine whether the amounts for checks and credit card transactions per the cash register agree to the actual count.
2. If a shortage exists, a physical search of the work area is conducted as well.



ACCOUNTING POLICIES & PROCEDURES

Entering Cash Receipts

The Progressive cash receipt system utilizes the general payment processing module to enter cash receipts at the Finance cashiers' counter and assign them to the appropriate revenue account.

Processing Cash Deposits Received by Finance

The main Cashier/Accounting Assistant is responsible for collecting cash and checks received the previous day from all cashiers and verifying all monies received. Cash and checks are prepared for deposit to the bank. Once completed, the cash and checks are placed in deposit bags and held in the Finance Department vault until being picked up by a courier for transport to the bank.

Treasury / Cash Management

Investment Procedures

As necessary, cash is transferred between bank accounts, to and from the state's Local Agency Investment Fund, or securities are purchased based on established criteria in accordance with City Council Policy #203 Investment of City Funds.

The City of National City's investment program conforms to federal, state, and other legal requirements, including California Government Code Sections 16429.1-16429.4, 53600 53609 and 53630-53686.

Transmitting Issued/Voiced Check Files to the Bank

As a security measure to prevent fraud, electronic files (positive pay file) of check registers are sent to the City's bank whenever either an Accounts Payable or a Payroll run is done. By submitting check registers to the bank at the time the checks are issued, the bank can then ensure that the checks being cashed were, in fact, issued by the City.

Bank and Check Reconciliation

On a monthly basis all cash accounts are reconciled between the General Ledger and the bank statements. Any differences are accounted for and necessary adjustments are made.

Returned Checks

Returned checks are recorded by the Accounts Receivable Accounting Assistant. Then, the Accounting Assistant records the proper adjustment and issues an invoice as part of the collection effort process. The respective departments are then notified of the returned checks.

Department of Finance Vault/Safe

Cash receipts collected at City Hall are processed at the Department of Finance cashier's counter. To ensure the safety of these monies until they are released to a courier for transport and deposit with the appropriate banking authority, cash and checks are locked in the Finance vault.



ACCOUNTING POLICIES & PROCEDURES

General Ledger

Accounting Periods

To allow for continuity and consistency, the accounting cycle of the fiscal year is divided into separate accounting periods. The first month of the fiscal year, July, is identified as Period 01, August is Period 02 and so on. At the end of the fiscal year Period 12 is used for the regular June activity. Fiscal year-end adjustments are recorded in Period 13 and dated 06/30/XX. Fiscal year closing entries are recorded in Period 14 and dated 06/30/XX.

Adjusting Journal Entries

Adjusting journal entries are used to directly record transactions to the City's general ledger, which are not otherwise posted through some other system. For example, if the State directly deposits the City's monthly sales tax remittance into the City's bank account, the general ledger has no way of knowing that this has occurred. In this case there is no check processed through the cash receipts system, and therefore no posting to the general ledger. The amount directly deposited must be recorded via an adjusting journal entry.

Adjusting journal entries may also be used to correct an item that was previously posted. The adjusting entry could be used to correct the amount, account used, or timing of a previously recorded transaction. As an example, if a check for gas tax revenues was received and erroneously posted to property tax revenues, an adjusting journal entry would be used to correct this situation.

Budget Adjustment Entries

Budget adjustment entries are used to modify the existing budgetary amounts for both revenue ("Estimated Revenues") and expenditure ("Appropriations") accounts. The entry may be used to either increase or decrease the budgeted amount within a revenue or expenditure account.

Accounts Receivable

There are several different categories for which the City establishes accounts receivable. The majority of the invoices prepared are for false alarms, annual inspection fee, administrative citations for Building, Planning, Engineering, and Code Enforcement, sewer billing, housing choice voucher program repayments, property leases, and intergovernmental contracts.

The AR process includes 1) setting up customer information, 2) preparing an invoice and mailing it, 3) posting payments and 4) generating monthly statements for unpaid invoices.

Capital Improvement Projects

Capital improvements are initiated at the direction of the departments and approved by the City Manager or City Council. A draft budget is submitted to Finance and then to the City Council for approval. Once approved, the Department of Finance maintains budgets, off-cycle funding, and transfers between funding sources; reviews expenses and revenues; and monitors available unspent balances for all CIP projects on an on-going basis.



ACCOUNTING POLICIES & PROCEDURES

Business Licensing

The business license tax is revenue to the general fund for the privilege of conducting business within the City of National City and receiving the benefits of various City services. In addition, the licensing process ensures that businesses comply with health, safety and other City regulatory requirements.

Budget

The City adopts an Operating and Capital Improvement budget on an annual basis. The adopted budget appropriates funds and establishes legal expenditure limits for the upcoming fiscal year beginning July 1. To develop the Operating Budget, departments are asked to submit estimates for revenues they will generate for the upcoming fiscal year and appropriations requests based upon the best estimates of products and services available. Finance staff reviews the submitted revenue estimates and appropriation requests then meets with each department to review them. Once departmental reviews are complete, Finance in conjunction with the City Manager, meets with departments to discuss revenues and appropriations and the preliminary status (surplus or deficit) of the budget. After all internal reviews are complete, a preliminary budget is prepared for review by the City Council. After City Council feedback and any requested revisions have been made, a final budget document is prepared for adoption prior to June 30. Adoption of the budget provides City administrators with the authority to incur liabilities to provide services. The approved budget may be modified throughout the fiscal year as funding sources and needs of the City change.

Appropriations Limit Calculation

California Constitution Article XIII B, Section 1 states that the total annual appropriations subject to limitation of the State and of each local government shall not exceed the appropriations limit of the entity of government for the prior year adjusted for the change in the cost of living and the change in population. The City calculates this limit annually and presents the result to the City Council for adoption.

Project Accounting

Project Accounting is used to keep track of activities relating to the City's capital improvement projects. All accounting entries that are entered against a project expenditure string from all other modules are posted into Project Accounting.

Capital Assets and Reporting

Capital Assets are defined as those assets acquired by the City to be used in the course of operations and providing services to the general public. The City uses a cost threshold of \$5,000 for the purpose of fixed asset and capital asset reporting.



ACCOUNTING POLICIES & PROCEDURES

Capital Assets List

The City maintains a current capital assets list for land, buildings, improvements other than buildings, and infrastructure costing \$10,000 or more, and for machinery and equipment with unit costs of \$5,000 or more and useful lives greater than 1 year. The City maintains one comprehensive list for general capital assets and proprietary fund capital assets. However, it identifies separately the general capital assets and individual fund capital assets for financial reporting purposes. Additional precautions are taken for high theft items, such as laptop computers, digital cameras, etc., which may fall below the capitalization thresholds. The City maintains a separate list for assets costing less than \$5,000 that are considered to be at a relatively high risk of theft, waste, or abuse. These assets are identified as City property, but may need not be numerically tagged.

Purpose

The purpose of this policy is to ensure the City's ability to withstand unexpected financial emergencies such as those that may result from natural disasters, revenue shortfalls, or unanticipated expenditures of a non-recurring nature, and to accumulate funds for large-scale purchases.

Policy

The City will accumulate and maintain reserves in the categories and at the target levels described below. The actual amount of any of the reserves may exceed its target level because any additional amounts would increase the financial security of the City.

- **GENERAL FUND ECONOMIC CONTINGENCY RESERVE:** an amount equal to twenty percent (20%) of a single year's budgeted General Fund operating expenditures. "Operating expenditures" shall be defined as all expenditures, except those of a capital nature, plus operating subsidies provided to the Library Fund, Parks Fund, and Personnel Compensation Fund (OPEB benefits payments), or to any other fund as determined by the City Council. Formal City Council action is required to increase the balance in the reserve or to authorize the use of any portion of its balance. This reserve is intended to be used in the event of a catastrophic event or significant downturn in the economy that cannot be mitigated with other funding sources.
- **GENERAL FUND UNASSIGNED FUND BALANCE:** an amount equal to ten percent (10%) of a single year's budgeted General Fund operating expenditures. The general fund unassigned fund balance is determined annually as part of the preparation of the City's Comprehensive Annual Financial Report (CAFR). Amounts in excess of the target level will be used to increase or replenish other reserves (with priority given to the Economic Contingency and Facilities Maintenance reserves), to set aside resources for specific one-time uses, or as a funding source for one-time expenditures included in the annual budget or for needs that arise subsequent to budget adoption.
- **GENERAL FUND FACILITIES MAINTENANCE RESERVE:** an amount equal to three times the annual amount budgeted to provide major maintenance for the City's building assets. "Building assets" shall be defined as all permanent or nonpermanent structures constructed or installed to provide a workplace for City employees or house City assets and/or operations. The annual amount to be budgeted for major maintenance projects is 1.5% of the City's General Fund operating budget. Formal City Council action is required to increase the balance in the reserve or to authorize the use of any portion of its balance. This reserve is to be used for extraordinary major maintenance costs that cannot be met within the annual budgeted amount and for which no other funding source is available.

TITLE: Maintenance of Reserve Funds

POLICY #201

ADOPTED: June 26, 1985

AMENDED: May 4, 2021

- **GAS TAXES FUND CONTINGENCY RESERVE:** an amount equal to a minimum of five percent (5%) of the estimated annual revenue of the Gas Taxes Fund.
- **SEWER SERVICE FUND OPERATIONS / CASH FLOW RESERVE:** an amount equal to between twenty-five percent (25%) and fifty percent (50%) of a single year's budgeted Sewer Service Fund operating expenditures.
- **SEWER SERVICE FUND METRO CASH FLOW RESERVE:** an amount equal to the City's estimated portion of the projected cash needs for capital costs of the San Diego Metropolitan Sewerage System's wastewater treatment program.
- **SEWER SERVICE FUND CAPITAL REPLACEMENT RESERVE:** an amount equal to between ten percent (10%) and fifteen percent (15%) of a single year's budgeted Sewer Service Fund operating expenditures.
- **SEWER SERVICE FUND CAPITAL EXPANSION RESERVE:** an amount equal to between ten percent (10%) and fifteen percent (15%) of a single year's budgeted Sewer Service Fund operating expenditures.
- **SEWER SERVICE FUND EMERGENCY / NATURAL DISASTER RESERVE:** an amount equal to a minimum of fifteen percent (15%) of a single year's budgeted Sewer Service Fund operating expenditures.
- **GENERAL LIABILITY INSURANCE RESERVE:** an amount of assets in the Liability Insurance Fund (an internal service fund) sufficient to meet the eighty percent (80%) confidence level of adequacy for net claims liability as updated annually by the City's actuary. The reserve level requirements will be reviewed as part of the annual budget process whereupon internal service fund charges will be set such that anticipated expenditures for the budget year can be met and the reserve level maintained.
- **WORKERS' COMPENSATION RESERVE:** an amount of assets in the Liability Insurance Fund (an internal service fund) sufficient to meet the eighty percent (80%) confidence level of adequacy for net claims liability as updated annually by the City's actuary. The reserve level requirements will be reviewed as part of the annual budget process whereupon internal service fund charges will be set such that anticipated expenditures for the budget year can be met and the reserve level maintained.
- **IRREVOCABLE SUPPLEMENTAL PENSION TRUST RESERVE:** an amount equal to two years of unfunded liability payments as determined by the most current CalPERS valuation reports for both the Safety and Miscellaneous plans. The assets of this reserve are held in an

irrevocable Section 115 pension trust that may be used only for pension related costs and upon direction of the City Council. Investment earnings on the assets in the trust will be the primary vehicle for reaching the target level of reserves, although periodic contributions may be made from other sources upon direction of the City Council. Once the target level is reached, the earnings on the assets in the trust may be used to fund a portion of the City's pension related payments to CalPERS. This target will be reevaluated should the City issue pension obligation bonds.

- **IRREVOCABLE OTHER POST-EMPLOYMENT BENEFITS TRUST RESERVE:** an amount equal to eighty percent (80%) of the total net other post-employment benefits (OPEB) liability of the City's OPEB plan. Under the plan, the City provides payments to City retirees to be used towards medical insurance premiums. The City's net OPEB liability is updated annually and reported in the City's CAFR. The assets of this reserve are held in an irrevocable Section 115 OPEB trust that may be used only for the City's OPEB plan and upon direction of the City Council. Investment earnings on the assets in the trust will be the primary vehicle for reaching the target level of reserves, although periodic contributions may be made from other sources upon direction of the City Council. Once the assets in the trust reach the target level, the earnings on the assets may be used to offset a portion of the OPEB plan benefits that are routinely annually budgeted and paid for using other resources of the general fund.
- **VEHICLE REPLACEMENT RESERVE:** an amount equal to thirty percent (30%) of the recorded (book) value of the motor vehicles and associated assets accounted for in the Vehicle Replacement Fund (an internal service fund). Internal service fund charges to benefitting departments provide the mechanism for building the reserves in the fund. The charges take into account the initial acquisition cost of the assets, their expected years of service, and the estimated cost to replace them at that the end of their useful life. Once the target level is reached, the adequacy of the reserve with respect to the status of the fleet should be reevaluated along with the formula used for developing the ISF charges.

The status of each reserve shall be reviewed each year by the City Manager as part of the budgeting process. The City Manager shall take into account the most recently completed CAFR and any other pertinent data and make recommendations to the City Council regarding any adjustments to reserve levels; however, nothing in this policy shall prevent determining or reporting on the level of any of the reserves at other times during the year.

Replenishment of Reserves

If a reserve balance falls below the targeted level, the City shall strive to restore it to the targeted level through budgetary or other means according to the following guidelines:

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- If a reserve is drawn down to 75-99% of its targeted balance, it shall be restored to 100% over a 1 to 3 year period.
- If a reserve is drawn down to 50-74% of its targeted balance, it shall be restored to 100% over a 3 to 5 year period.
- If a reserve is drawn down below 50% of its targeted balance, it shall be restored to 100% over a 5 to 7 year period.

These guidelines may be suspended, in whole or in part, if financial or economic circumstances prevent meeting any or all of the timelines.

Related Policy References

None

Prior Policy Amendments

September 17, 2019
November 21, 2017
June 7, 2016
October 7, 2014
December 10, 2013
March 12, 2002

CITY COUNCIL POLICY

CITY OF NATIONAL CITY

TITLE: Investments	POLICY #203
ADOPTED: October 23, 1990	AMENDED: August 18, 2020

I. INTRODUCTION

The City of National City’s investment program will conform to federal, state, and other legal requirements, including California Government Code Sections 16429.1-16429.4, 53600-53609, and 53630-53686. The following investment policy addresses the methods, procedures, and practices which must be exercised to ensure effective and judicious fiscal and investment management of the City’s funds. It is the policy of the City to invest public funds in a manner that will provide a market rate of return, given its requirements for preserving principal and meeting the daily cash flow demands of the City. All investments will comply with this Investment Policy and governing laws.

This Investment Policy replaces any previous Investment Policy or Investment Procedures of the City.

II. SCOPE

This Investment Policy applies to all the City’s financial assets and investment activities with the following exception(s):

Proceeds of debt issuance shall be invested in accordance with the City’s general investment philosophy as set forth in this policy; however, such proceeds are invested in accordance with permitted investment provisions of their specific bond indentures.

Pooling of Funds: Except for cash in certain restricted and special funds, the City will consolidate cash and reserve balances from all funds to maximize investment earnings and to increase efficiencies with regard to investment pricing, safekeeping and administration. Investment income will be allocated to the various funds based on their respective participation and in accordance with generally accepted accounting principles.

III. GENERAL OBJECTIVES

The overriding objectives of the investment program are to preserve principal, provide sufficient liquidity, and manage investment risks.

1. *Safety*: Safety of principal is the foremost objective of the investment program. Investments will be undertaken in a manner that seeks to ensure the preservation of capital in the overall portfolio. The objective will be to mitigate credit risk and interest rate risk.
2. *Liquidity*: The investment portfolio will remain sufficiently liquid to meet all operating requirements that may be reasonably anticipated.
3. *Return*: The investment portfolio will be designed with the objective of attaining a market rate of return throughout budgetary and economic cycles, taking into account the investment risk constraints for safety and liquidity needs.

IV. PRUDENCE, INDEMNIFICATION, AND ETHICS

- A. *Prudent Investor Standard*: Management of the City's investments is governed by the Prudent Investor Standard as set forth in California Government Code Section 53600.3:

“...all governing bodies of local agencies or persons authorized to make investment decisions on behalf of those local agencies investing public funds pursuant to this chapter are trustees and therefore fiduciaries subject to the prudent investor standard. When investing, reinvesting, purchasing, acquiring, exchanging, selling, or managing public funds, a trustee shall act with care, skill, prudence, and diligence under the circumstances then prevailing, including, but not limited to, the general economic conditions and the anticipated needs of the City, that a prudent person acting in a like capacity and familiarity with those matters would use in the conduct of funds of a like character and with like aims, to safeguard the principal and maintain the liquidity needs of the City. Within the limitations of this section and considering individual investments as part of an overall strategy, investments may be acquired as authorized by law.”

- B. *Indemnification*: The Director of Finance or City Manager designee hereinafter designated as Financial Services Officer and other authorized persons responsible for managing City funds, acting in accordance with written procedures and the Investment Policy and exercising due diligence, will be relieved of personal responsibility for an individual security's credit risk or market price changes, provided deviations from expectations are reported within 30 days and appropriate action is taken to control adverse developments.
- C. *Ethics*: Officers and employees involved in the investment process will refrain from personal business activity that could conflict with proper execution of the investment program, or which could impair their ability to make impartial investment decisions.

V. DELEGATION OF AUTHORITY

- A. Authority to manage the City's investment program is derived from California Government Code Section 53600 *et seq.* The City Council is responsible for the City's cash management, including the administration of this Investment Policy. Management responsibility for the cash management of City funds is hereby delegated to the Director of Finance and/or Financial Service Officer.

The Director of Finance and/or Financial Services Officer will be responsible for all transactions undertaken and will establish a system of procedures and controls to regulate the activities of subordinate employee.

- B. The City may engage the services of one or more external investment managers to assist in the management of the City's investment portfolio in a manner consistent with the City's objectives. Such external managers may be granted discretion to purchase and sell investment securities in accordance with this Investment Policy. Such managers must be registered under the Investment Advisers Act of 1940.

VI. AUTHORIZED FINANCIAL INSTITUTIONS, DEPOSITORIES, AND BROKER/DEALERS

A list will be maintained of financial institutions and depositories authorized to provide investment services. In addition, a list will be maintained of approved security broker/dealers selected by conducting a process of due diligence described in the investment procedures manual. These may include "primary" dealers or regional dealers that qualify under Securities and Exchange Commission (SEC) Rule 15C3-1 (uniform net capital rule).

- A. The City's Director of Finance and/or Financial Services Officer will determine which financial institutions are authorized to provide investment services to the City. Institutions eligible to transact investment business with the City include:
1. Primary government dealers as designated by the Federal Reserve Bank;
 2. Nationally or state-chartered banks;
 3. The Federal Reserve Bank; and
 4. Direct issuers of securities eligible for purchase.
- B. Selection of financial institutions and broker/dealers authorized to engage in transactions with the City will be at the sole discretion of the City.

- C. All financial institutions which desire to become qualified bidders for investment transactions (and which are not dealing only with the investment adviser) must supply the Director of Finance and/or Financial Services Officer with a statement certifying that the institution has reviewed California Government Code Section 53600 *et seq.* and the City's Investment Policy.
- D. Selection of broker/dealers used by an external investment adviser retained by the City will be at the sole discretion of the investment adviser.
- E. Public deposits will be made only in qualified public depositories as established by State law. Deposits will be insured by the Federal Deposit Insurance Corporation, or, to the extent the amount exceeds the insured maximum, will be collateralized in accordance with State law.

VII. DELIVERY, SAFEKEEPING AND CUSTODY, AND COMPETITIVE TRANSACTIONS

- A. *Delivery-versus-payment*: Settlement of all investment transactions will be completed using standard delivery-vs.-payment procedures.
- B. *Third-party safekeeping*: To protect against potential losses by collapse of individual securities dealers, and to enhance access to securities, interest payments and maturity proceeds, all securities owned by the City will be held in safekeeping by a third party bank custodian, acting as agent for the City under the terms of a custody agreement executed by the bank and the City.
- C. *Competitive transactions*: All investment transactions will be conducted on a competitive basis which can be executed through a bidding process involving at least three separate brokers/financial institutions or through the use of a nationally recognized trading platform.

VIII. AUTHORIZED AND SUITABLE INVESTMENTS

All investments will be made in accordance with California Government Code Section 53600 *et seq.* and as described within this Investment Policy. Permitted investments under this policy will include:

1. **Municipal Bonds.** These include bonds of the City, the State of California, any other state, and any local agency within the state of California. The bonds will be registered in the name of the City or held under a custodial agreement at a bank.

- a. Are rated in the category of “A” or better by at least two nationally recognized statistical rating organizations; and
 - b. No more than 5% per issuer.
 - c. No more than 30% of the total portfolio may be invested in municipal bonds.
2. **US Treasury** and other government obligations for which the full faith and credit of the United States are pledged for the payment of principal and interest. There are no limits on the dollar amount or percentage that the City may invest in US Treasuries.
3. **Federal Agency or United States government-sponsored enterprise obligations, participations, or other instruments**, including those issued by or fully guaranteed as to principal and interest by federal agencies or United States government-sponsored enterprises. There are no limits on the dollar amount or percentage that the City may invest in government-sponsored enterprises.
4. **Banker’s acceptances**, provided that:
 - a. They are issued by institutions with short term debt obligations rated “A1” or higher, or the equivalent, by at least two nationally recognized statistical-rating organization (NRSRO); and have long-term debt obligations which are rated “A” or higher by at least two nationally recognized statistical rating organization;
 - b. The maturity does not exceed 180 days; and
 - c. No more than 40% of the total portfolio may be invested in banker’s acceptances and no more than 5% per issuer.
5. **Federally insured time deposits** (Non-negotiable certificates of deposit) in state or federally chartered banks, savings and loans, or credit unions, provided that:
 - a. The amount per institution is limited to the maximum covered under federal insurance; and
 - b. The maturity of such deposits does not exceed 5 years.

6. Certificate of Deposit Placement Service (CDARS)

- a. No more than 30% of the total portfolio may be invested in a combination of certificates of deposit including CDARS.
- b. The maturity of CDARS deposits does not exceed 5 years.

7. Negotiable certificates of deposit (NCDs), provided that:

- a. They are issued by institutions which have long-term obligations which are rated “A” or higher by at least two nationally recognized statistical rating organizations; and/or have short term debt obligations rated “A1” or higher, or the equivalent, by at least two nationally recognized statistical rating organizations;
- b. The maturity does not exceed 5 years; and
- c. No more than 30% of the total portfolio may be invested in NCDs and no more than 5% per issuer.

8. Commercial paper, provided that:

- a. The maturity does not exceed 270 days from the date of purchase;
- b. The issuer is a corporation organized and operating in the United States with assets in excess of \$500 million;
- c. They are issued by institutions whose short term obligations are rated “A-1” or higher, or the equivalent, by at least two nationally recognized statistical rating organization; and whose long-term obligations are rated “A” or higher by at least two nationally recognized statistical rating organization; and
- d. No more than 25% of the portfolio is invested in commercial paper and no more than 5% per issuer.

9. State of California Local Agency Investment Fund (LAIF), provided that:

- a. The City may invest up to the maximum permitted amount in LAIF; and
- b. LAIF’s investments in instruments prohibited by or not specified in the City’s policy do not exclude it from the City’s list of allowable investments, provided that the fund’s reports allow the Director of Finance or Financial Services Officer to adequately judge the risk inherent in LAIF’s portfolio.

10. Local government investment pools.

- a. San Diego County Investment Pool

11. Corporate medium term notes (MTNs), provided that:

- a. Such notes have a maximum maturity of 5 years;
- b. Are issued by corporations organized and operating within the United States or by depository institutions licensed by the United States or any state and operating within the United States;
- c. Are rated “A” category or better by at least two nationally recognized statistical rating organization; and
- d. Holdings of medium-term notes may not exceed 30% of the portfolio and no more than 5% per issuer.

12. Mortgage pass-through securities and asset-backed securities, provided that such securities:

- a. Have a maximum stated final maturity of 5 years.
- b. Be rated in a rating category of “AA” or its equivalent or better by a nationally recognized statistical rating organization.
- c. Purchase of securities authorized by this subdivision may not exceed 20% of the portfolio.

13. Money market mutual funds that are registered with the Securities and Exchange Commission under the Investment Company Act of 1940:

- a. Provided that such funds meet either of the following criteria:
 - 1. Attained the highest ranking or the highest letter and numerical rating provided by not less than two nationally recognized statistical rating organizations; or,
 - 2. Have retained an investment adviser registered or exempt from registration with the Securities and Exchange Commission with not less than five years’ experience investing in the securities and obligations authorized by California Government Code Section 53601 (a through j) and with assets under management in excess of \$500 million.

- b. Purchase of securities authorized by this subdivision may not exceed 20% of the portfolio.

14. Supranationals, provided that:

- a. Issues are US dollar denominated senior unsecured unsubordinated obligations issued or unconditionally guaranteed by the International Bank for Reconstruction and Development, International Finance Corporation, or Inter-American Development Bank.
- b. The securities are rated in a category of “AA” or higher by a NRSRO.
- c. No more than 30% of the total portfolio may be invested in these securities.
- d. No more than 10% of the portfolio may be invested in any single issuer.
- e. The maximum maturity does not exceed five (5) years.

IX. PORTFOLIO RISK MANAGEMENT

A. The following are prohibited investment vehicles and practices:

- 1. State law notwithstanding, any investments not specifically described herein are prohibited, including, but not limited to futures and options.
- 2. In accordance with California Government Code Section 53601.6, investment in inverse floaters, range notes, or mortgage derived interest-only strips is prohibited.
- 3. Investment in any security that could result in a zero interest accrual if held to maturity is prohibited.
- 4. Trading securities for the sole purpose of speculating on the future direction of interest rates is prohibited.
- 5. Purchasing or selling securities on margin is prohibited.
- 6. The use of reverse repurchase agreements, securities lending or any other form of borrowing or leverage is prohibited.
- 7. The purchase of foreign currency denominated securities is prohibited.

B. Mitigating credit risk in the portfolio

Credit risk is the risk that a security or a portfolio will lose some or all of its value due to a real or perceived change in the ability of the issuer to repay its debt. The City will mitigate credit risk by adopting the following strategies:

1. The diversification requirements included in Section IX are designed to mitigate credit risk in the portfolio;
2. No more than 5% of the total portfolio may be invested in securities of any single issuer, except as noted in Section VIII of this Investment Policy;
3. The City may elect to sell a security prior to its maturity and record a capital gain or loss in order to improve the quality, liquidity, or yield of the portfolio in response to market conditions or the City's risk preferences; and
4. If securities owned by the City are downgraded by either Moody's or S&P to a level below the quality required by this Investment Policy, it will be the City's policy to review the credit situation and make a determination as to whether to sell or retain such securities in the portfolio.
 - a. If a security is downgraded, the Director of Finance and/or Financial Services Officer will use discretion in determining whether to sell or hold the security based on its current maturity, the economic outlook for the issuer, and other relevant factors.
 - b. If a decision is made to retain a downgraded security in the portfolio, its presence in the portfolio will be monitored and reported monthly to the City Council.

C. Mitigating market risk in the portfolio

Market risk is the risk that the portfolio value will fluctuate due to changes in the general level of interest rates. The City recognizes that, over time, longer-term portfolios have the potential to achieve higher returns. On the other hand, longer-term portfolios have higher volatility of return. The City will mitigate market risk by providing adequate liquidity for short-term cash needs, and by making longer-term investments only with funds that are not needed for current cash flow purposes. The City further recognizes that certain types of securities, including variable rate securities, securities with principal pay-downs prior to maturity, and securities with embedded options, will affect the market risk profile of the portfolio differently in different interest rate environments. The City, therefore, adopts the following strategies to control and mitigate its exposure to market risk:

1. The City will maintain a minimum of three months of budgeted operating expenditures in short term investments to provide sufficient liquidity for expected disbursements;
2. The maximum percent of callable securities (does not include “make whole call” securities as defined in the Glossary) in the portfolio will be 20%;
3. The maximum stated final maturity of individual securities in the portfolio will be five years, except as otherwise stated in this policy; and
4. The duration of the portfolio will at all times be approximately equal to the duration (typically plus or minus 20%) of a Market Benchmark Index selected by the City based on the City’s investment objectives, constraints and risk tolerances. The City’s current Benchmark will be documented in the investment procedures manual.

X. INVESTMENT OBJECTIVES (PERFORMANCE STANDARDS AND EVALUATION)

- A. **Overall objective:** The investment portfolio will be designed with the overall objective of obtaining a total rate of return throughout economic cycles, commensurate with investment risk constraints and cash flow needs.
- B. **Specific objective:** The investment performance objective for the portfolio will be to earn a total rate of return over a market cycle which is approximately equal to the return on the Market Benchmark Index as described in the City’s investment procedures manual.

XI. PROCEDURES AND INTERNAL CONTROLS

- A. **Procedures:** The Director of Finance and/or Financial Services Officer will establish written investment policy procedures in a separate investment procedures manual to assist investment staff with day-to-day operations of the investment program consistent with this policy. Such procedures will include explicit delegation of authority to persons responsible for investment transactions. No person may engage in an investment transaction except as provided under the terms of this policy and the procedures established by the Director of Finance and/or Financial Services Officer.
- B. **Internal Controls:** The Director of Finance and/or Financial Services Officer is responsible for establishing and maintaining an internal control structure designed to ensure that the assets of the City are protected from loss, theft, or misuse. The internal control structure will be designed to provide reasonable assurance that these objectives are met. Internal controls will be described in the City’s investment procedures manual.

XII. REPORTING AND REVIEW

- A. **Monthly reports:** The Director of Finance and/or Financial Services Officer must submit a monthly report to the legislative body accounting for transactions made during the reporting period.
- B. **Quarterly reports:** Quarterly investment reports will be submitted by the Director of Finance and/or Financial Services Officer to the City Council, at an agenda meeting. Consistent with the requirements contained in California Government Code Section 53646, information in the quarterly investment reports shall include, but not be limited to, the following:
1. Type of investment
 2. Name of issuer and/or financial institution
 3. Date of purchase
 4. Date of maturity
 5. Current market value for all securities
 6. Rate of interest
 7. Purchase price of investment
 8. Other data as required by the City
- C. **Annual policy review:** The Investment Policy will be reviewed at least annually and, as necessary, adopted, to ensure its consistency with the overall objectives of preservation of principal, liquidity, and return, and its relevance to current law and financial and economic trends.

Related Policy References

California Government Code Sections: 16429.1 – 16429.4, and 53600 – 53686

Investment Company Act of 1940

Investment Advisers Act of 1940

Securities and Exchange Commission Rule #15C3-1

Appendix I attached: “Authorized Personnel”

Appendix II attached: “Glossary of Investment Terms”

TITLE: Investments

POLICY #203

ADOPTED: October 23, 1990

AMENDED: August 18, 2020

Prior Policy Amendments

November 20, 2018

October 17, 2017

December 6, 2016

December 15, 2015

December 16, 2014

December 10, 2013

January 10, 2012

FINAL

Appendix I

Authorized Personnel

The following positions are authorized to transact investment business and wire funds for investment purposes on behalf of the City of National City:

City Manager
Assistant City Manager
Director of Finance
Financial Services Officer

FINAL

Appendix II

GLOSSARY OF INVESTMENT TERMS

Agencies. Shorthand market terminology for any obligation issued by a *government-sponsored entity (GSE)*, or a *federally related institution*. Most obligations of GSEs are not guaranteed by the full faith and credit of the US government. Examples are:

FDIC. The Federal Deposit Insurance Corporation provides insurance backed by the full faith and credit of the US government to certain bank deposits and debt obligations.

FFCB. The Federal Farm Credit Bank System provides credit and liquidity in the agricultural industry. FFCB issues discount notes and bonds.

FHLB. The Federal Home Loan Bank provides credit and liquidity in the housing market. FHLB issues discount notes and bonds.

FHLMC. Like FHLB, the Federal Home Loan Mortgage Corporation provides credit and liquidity in the housing market. FHLMC, also called “Freddie Mac” issues discount notes, bonds and mortgage pass-through securities.

FNMA. Like FHLB and Freddie Mac, the Federal National Mortgage Association was established to provide credit and liquidity in the housing market. FNMA, also known as “Fannie Mae,” issues discount notes, bonds and mortgage pass-through securities.

GNMA. The Government National Mortgage Association, known as “Ginnie Mae,” issues mortgage pass-through securities, which are guaranteed by the full faith and credit of the US Government.

PEFCO. The Private Export Funding Corporation assists exporters. Obligations of PEFCO are not guaranteed by the full faith and credit of the US government.

TVA. The Tennessee Valley Authority provides flood control and power and promotes development in portions of the Tennessee, Ohio and Mississippi River valleys. TVA currently issues discount notes and bonds.

Asked. The price at which a seller offers to sell a security.

Asset-Backed Securities. Securities supported by pools of installment loans or leases or by pools of revolving lines of credit.

Average life. In mortgage-related investments, including CMOs, the average time to expected receipt of principal payments, weighted by the amount of principal expected.

Banker’s acceptance. A money market instrument created to facilitate international trade transactions. It is highly liquid and safe because the risk of the trade transaction is transferred to the bank which “accepts” the obligation to pay the investor.

Benchmark. A comparison security or portfolio. A performance benchmark is a partial market index, which reflects the mix of securities allowed under a specific investment policy.

Bid. The price at which a buyer offers to buy a security.

Broker. A broker brings buyers and sellers together for a transaction for which the broker receives a commission. A broker does not sell securities from his own position.

Callable. A callable security gives the issuer the option to call it from the investor prior to its maturity. The main cause of a call is a decline in interest rates. If interest rates decline since an issuer issues securities, it will likely call its current securities and reissue them at a lower rate of interest. Callable securities have reinvestment risk as the investor may receive its principal back when interest rates are lower than when the investment was initially made.

Certificate of Deposit (CD). A time deposit with a specific maturity evidenced by a certificate. Large denomination CDs may be marketable.

Collateral. Securities or cash pledged by a borrower to secure repayment of a loan or repurchase agreement. Also, securities pledged by a financial institution to secure deposits of public monies.

Collateralized Mortgage Obligations (CMO). Classes of bonds that redistribute the cash flows of mortgage securities (and whole loans) to create securities that have different levels of prepayment risk, as compared to the underlying mortgage securities.

Commercial paper. The short-term unsecured debt of corporations.

Cost yield. The annual income from an investment divided by the purchase cost. Because it does not give effect to premiums and discounts which may have been included in the purchase cost, it is an incomplete measure of return.

Coupon. The rate of return at which interest is paid on a bond.

Credit risk. The risk that principal and/or interest on an investment will not be paid in a timely manner due to changes in the condition of the issuer.

Current yield. The annual income from an investment divided by the current market value. Since the mathematical calculation relies on the current market value rather than the investor's cost, current yield is unrelated to the actual return the investor will earn if the security is held to maturity.

Dealer. A dealer acts as a principal in security transactions, selling securities from and buying securities for his own position.

Debenture. A bond secured only by the general credit of the issuer.

Delivery vs. payment (DVP). A securities industry procedure whereby payment for a security must be made at the time the security is delivered to the purchaser's agent.

Derivative. Any security that has principal and/or interest payments which are subject to uncertainty (but not for reasons of default or credit risk) as to timing and/or amount, or any security which represents a component of another security which has been separated from other components ("Stripped" coupons and principal). A derivative is also defined as a financial instrument the value of which is totally or partially derived from the value of another instrument, interest rate or index.

Discount. The difference between the par value of a bond and the cost of the bond, when the cost is below par. Some short-term securities, such as T-bills and banker's acceptances, are known as **discount securities**. They sell at a discount from par, and return the par value to the investor at maturity without additional interest. Other securities, which have fixed coupons trade at a discount when the coupon rate is lower than the current market rate for securities of that maturity and/or quality.

Diversification. Dividing investment funds among a variety of investments to avoid excessive exposure to any one source of risk.

Duration. The weighted average time to maturity of a bond where the weights are the present values of the future cash flows. Duration measures the price sensitivity of a bond to changes in interest rates. (See modified duration).

Federal funds rate. The rate of interest charged by banks for short-term loans to other banks. The Federal Reserve Bank through open-market operations establishes it.

Federal Open Market Committee: A committee of the Federal Reserve Board that establishes monetary policy and executes it through temporary and permanent changes to the supply of bank reserves.

Haircut: The margin or difference between the actual market value of a security and the value assessed by the lending side of a transaction (i.e. a repo).

Leverage. Borrowing funds in order to invest in securities that have the potential to pay earnings at a rate higher than the cost of borrowing.

Liquidity: The speed and ease with which an asset can be converted to cash.

Local Agency Investment Fund (LAIF). A voluntary investment fund managed by the California State Treasurer's Office open to government entities and certain non-profit organizations in California.

Local Government Investment Pool. Investment pools including the Local Agency Investment Fund (LAIF), county pools, joint powers authorities (JPAs). These funds are not subject to the same SEC rules applicable to money market mutual funds.

Make Whole Call. A type of call provision on a bond that allows the issuer to pay off the remaining debt early. Unlike a call option, with a make whole call provision, the issuer makes a lump sum payment that equals the net present value (NPV) of future coupon payments that will not be paid because of the call. With this type of call, an investor is compensated, or "made whole."

Margin: The difference between the market value of a security and the loan a broker makes using that security as collateral.

Market risk. The risk that the value of securities will fluctuate with changes in overall market conditions or interest rates.

Market value. The price at which a security can be traded.

Marking to market. The process of posting current market values for securities in a portfolio.

Maturity. The final date upon which the principal of a security becomes due and payable.

Medium term notes. Unsecured, investment-grade senior debt securities of major corporations which are sold in relatively small amounts either on a continuous or an intermittent basis. MTNs are highly flexible debt instruments that can be structured to respond to market opportunities or to investor preferences.

Modified duration. The percent change in price for a 100 basis point change in yields. Modified duration is the best single measure of a portfolio's or security's exposure to market risk.

Money market. The market in which short term debt instruments (T-bills, discount notes, commercial paper and banker's acceptances) are issued and traded.

Mortgage pass-through securities. A securitized participation in the interest and principal cash flows from a specified pool of mortgages. Principal and interest payments made on the mortgages are passed through to the holder of the security.

Municipal Securities. Securities issued by state and local agencies to finance capital and operating expenses.

Mutual fund. An entity which pools the funds of investors and invests those funds in a set of securities which is specifically defined in the fund's prospectus. Mutual funds can be invested in various types of domestic and/or international stocks, bonds, and money market instruments, as set forth in the individual fund's prospectus. For most large, institutional investors, the costs associated with investing in mutual funds are higher than the investor can obtain through an individually managed portfolio.

Nationally Recognized Statistical Rating Organization (NRSRO). A credit rating agency the United States Securities and Exchange Commission uses for regulatory purposes. Credit rating agencies provide assessments of an investment's risk. The issuers of investments,

especially debt securities, pay credit rating agencies to provide them with ratings. The three most prominent NRSROs are Fitch, S&P, and Moody's.

Premium. The difference between the par value of a bond and the cost of the bond, when the cost is above par.

Prepayment speed. A measure of how quickly principal is repaid to investors in mortgage securities.

Prepayment window. The time period over which principal repayments will be received on mortgage securities at a specified prepayment speed.

Primary dealer. A financial institution (1) that is a trading counterparty with the Federal Reserve in its execution of market operations to carry out US monetary policy, and (2) that participates for statistical reporting purposes in compiling data on activity in the US Government securities market.

Prudent person (man) rule. A standard of responsibility which applies to fiduciaries. In California, the rule is stated as "Investments shall be managed with the care, skill, prudence and diligence, under the circumstances then prevailing, that a prudent person, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of like character and with like aims to accomplish similar purposes."

Realized yield. The change in value of the portfolio due to interest received and interest earned and realized gains and losses. It does not give effect to changes in market value on securities, which have not been sold from the portfolio.

Regional dealer. A financial intermediary that buys and sells securities for the benefit of its customers without maintaining substantial inventories of securities, and that is not a primary dealer.

Repurchase agreement (RP, Repo). Short term purchases of securities with a simultaneous agreement to sell the securities back at a higher price. From the seller's point of view, the same transaction is a **reverse repurchase agreement**.

Safekeeping. A service to bank customers whereby securities are held by the bank in the customer's name.

Short Term. Less than one (1) year's time.

Structured note. A complex, fixed income instrument, which pays interest, based on a formula tied to other interest rates, commodities or indices. Examples include inverse floating rate notes which have coupons that increase when other interest rates are falling, and which fall when other interest rates are rising, and "dual index floaters," which pay interest based on the relationship between two other interest rates - for example, the yield on the ten-year Treasury note minus the Libor rate. Issuers of such notes lock in a reduced cost of borrowing by purchasing interest rate swap agreements.

Supranational. A Supranational is a multi-national organization whereby member states transcend national boundaries or interests to share in the decision making to promote economic development in the member countries.

Total rate of return. A measure of a portfolio's performance over time. It is the internal rate of return, which equates the beginning value of the portfolio with the ending value; it includes interest earnings, realized and unrealized gains, and losses in the portfolio.

US Treasury obligations. Securities issued by the US Treasury and backed by the full faith and credit of the United States. Treasuries are considered to have no credit risk, and are the benchmark for interest rates on all other securities in the US and overseas. The Treasury issues both discounted securities and fixed coupon notes and bonds.

Treasury bills. All securities issued with initial maturities of one year or less are issued as discounted instruments, and are called Treasury bills. The Treasury currently issues three- and six-month T-bills at regular weekly auctions. It also issues “cash management” bills as needed to smooth out cash flows.

Treasury notes. All securities issued with initial maturities of two to ten years are called Treasury notes, and pay interest semi-annually.

Treasury bonds. All securities issued with initial maturities greater than ten years are called Treasury bonds. Like Treasury notes, they pay interest semi-annually.

Value. Principal plus accrued interest.

Volatility. The rate at which security prices change with changes in general economic conditions or the general level of interest rates.

Yield to Maturity. The annualized internal rate of return on an investment which equates the expected cash flows from the investment to its cost.

FINAL



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Preliminary Budget
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Glossary of Acronyms & Terms





GLOSSARY OF ACRONYMS & TERMS

ACTIVITY

A specific function, department, or group of services.

ADJUSTED BUDGET

The (current) fiscal year's adopted budget, plus appropriations continued from prior years, encumbrances, and amendments.

APPROPRIATION

An authorization made by the City Council that permits officials to incur obligations against, and to make expenditures of, governmental resources. Appropriations are usually made for fixed amounts and are typically granted for a one-year period.

ASSESSED VALUATION

The estimated value placed upon real and personal property by the County Assessor as the basis for levying property taxes.

BUDGET

A plan of financial operation including an estimate of Preliminary expenditures for a given period of time and the proposed means of financing them. Used without any modifier, the term usually indicates a financial plan for a single fiscal year. The term can refer to the financial plan presented to the governing body for adoption or the plan approved by that body.

CAPITAL IMPROVEMENT PROGRAM (CIP)

A plan of proposed major capital expenditures including land and rights-of-way acquisition, buildings, street construction, and related facilities to be incurred over a fixed period of years. The plan sets forth each capital project, the amount to be expended in each year, and the method of financing those expenditures.

CAPITAL OUTLAY

Expenditures for the acquisition of equipment of significant value and having a useful life of several years.

COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG)

Funds received from the US Department of Housing and Urban Development to assist with housing and economic opportunities, principally for low- and moderate-income persons.

CONTINGENCY

Assets or other resources set aside to provide for unforeseen expenditures or uncertain amount(s).

CPI

Consumer Price Index.

DEBT SERVICE FUND

A fund which accounts for the accumulation of resources for, and the payment of, general long-term debt principal and interest.



GLOSSARY OF ACRONYMS & TERMS

DEPARTMENT

The basic organizational unit of City government responsible for carrying out specific functions.

ENCUMBRANCE

The recognition of a financial commitment that will subsequently become an expenditure, when goods and services are received. An encumbrance is created when a purchase order or contract is approved.

EXPENDITURES

The outlay of financial resources. Expenditures include current operating expenses, debt service, and capital outlay.

FISCAL YEAR

A 12-month period to which the annual operating budget applies and at the end of which, a government determines its financial position and operational results.

FULL-TIME EQUIVALENT (FTE)

A term that expresses the amount of time for which a position has been budgeted in relation to the amount of time a regular, full-time employee normally works in a year. For budget and planning purposes, a year is defined as 2,080 hours. Firefighters may have a different level of hours worked but are displayed using the same basic method.

FUND

A self-balancing set of accounts that is segregated for a specific purpose. These accounts are used to record cash and/or other resources together with all related liabilities, obligations, reserves, and equities of the fund.

FUND BALANCE

The excess of a fund's assets over its liabilities.

GANN LIMIT

The annual appropriation limit established in accordance with Article XIII B of the California Constitution. The limit is calculated by adjusting the 1978-79 "base" year appropriation by population growth and cost-of-living factors each year.

GENERAL FUND

A governmental unit's primary operating fund that accounts for all of its activities and resources that are not required to be accounted for in a special purpose fund.

GENERALLY ACCEPTED ACCOUNTING PRINCIPLES (GAAP)

Uniform minimum standards and guidelines for financial accounting and reporting. They govern the form and content of the financial statements. GAAP provides a standard by which to measure financial presentations. The primary authoritative body on the application of GAAP to state and local government is the Governmental Accounting Standards Board.



GLOSSARY OF ACRONYMS & TERMS

GOVERNMENTAL ACCOUNTING STANDARDS BOARD (GASB)

The authoritative accounting and financial reporting standard-setting body for governmental entities.

GRANT

A contribution of assets (usually cash) by one government unit or other organization to be used for a specific purpose, activity, or facility. Typically, these contributions are made to local governments from the state and federal governments.

HUD

US Department of Housing and Urban Development.

INTERNAL SERVICE FUND

A fund which accounts for the financing of goods or services provided by one department to other departments of the City on a cost-reimbursement basis.

LOCAL AGENCY INVESTMENT FUND (LAIF)

A voluntary program created by statute in 1977 as an investment alternative for California's local governments and special districts.

NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES)

The federal Water Quality Act, which is coordinated with the Regional Water Quality Review Board, addressing the treatment of storm drain pollution.

NCJPFA

National City Joint Powers Financing Authority.

POSITION

A post of employment or defined role in an organization.

POST

Peace Officer Standards Training.

OBJECTIVE

A desired accomplishment that can be measured and achieved within a given period.

REVENUES

Income received by the City, including such items as property taxes, fees, user charges, grants, fines and forfeitures, interest income, and other miscellaneous sources.

SAN DIEGO ASSOCIATION OF GOVERNMENTS (SANDAG)

An association of San Diego County's 18 cities and the County of San Diego that serves as the forum for regional decision-making. As an association of local governments, SANDAG builds consensus, makes strategic plans, obtains and allocates resources, and provides data on a broad range of subjects pertinent to the San Diego region's quality of life.

SBOE

State Board of Equalization.



GLOSSARY OF ACRONYMS & TERMS

SPECIAL REVENUE FUND

A fund used to account for the proceeds of specific revenue sources (other than special assessments, expendable trusts, or for major capital projects) that are legally restricted to expenditures for specified purposes.

TAXES

Compulsory charges levied by a government to finance services performed for the common benefit. This does not include charges for services rendered only to those who pay for and use those services.

TRANSIENT OCCUPANCY TAX (TOT)

A tax levied by the City on persons who, on a temporary basis, occupy a hotel or other lodging facility.

TRUST AND AGENCY FUND

A fund which accounts for assets held by the City in a trustee capacity or as an agent for individuals, private organizations, other governmental agencies, and/or other funds.

UNFILLED POSITION

A vacant position for which funds have been appropriated

UNFUNDED POSITIOIN

A position for which no funds have been appropriated.

VEHICLE LICENSE FEE (VLF)

A fee established by the California Legislature in 1935 in lieu of property tax on vehicles. Vehicle owners pay a fee annually to the State based on a formula established by the Legislature.

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Schedule of Funds





SCHEDULE OF FUNDS

Fund accounting is an accounting system emphasizing accountability rather than profitability, used by non-profit organizations and governments. In this system, a fund is a self-balancing set of accounts, segregated for specific purposes in accordance with laws and regulations or special restrictions and limitations.

Government agencies use three broad categories of funds: governmental, proprietary, and fiduciary. These categories are divided into classifications as follows:

GOVERNMENTAL FUNDS

GENERAL FUND

An agency's primary operating fund. It is used to account for and report all financial resources of the agency's general governmental activities, except those required to be accounted for in another fund. It accounts for taxes and other general revenues not restricted for a specific purpose to support most agency services.

SPECIAL REVENUE FUNDS

Funds used to account for and report the proceeds of specific revenue sources restricted or committed to expenditure for specified purposes other than debt service or capital projects.

CAPITAL PROJECTS FUNDS

Funds used to account for and report financial resources restricted, committed, or assigned to expenditure for capital outlays, including the acquisition or construction of capital facilities and other capital assets.

DEBT SERVICE FUNDS

Funds used to account for and report financial resources restricted, committed, or assigned to expenditure for principal and interest.

PERMANENT FUNDS

Funds used to account for and report resources restricted to the extent that only earnings, and not principal, may be used for purposes which support the reporting government's programs that benefit of the government or its citizenry.

PROPRIETARY FUNDS

INTERNAL SERVICE FUNDS

Funds used to account for and report operations serving other funds or departments within a government on a cost-reimbursement basis.



SCHEDULE OF FUNDS

ENTERPRISE FUNDS

Funds used to account for and report services provided to the public on a user charge basis, similar to the operation of a commercial.

FIDUCIARY FUNDS

Funds used to account for assets held in trust by the government for the benefit of individuals or other entities.



SCHEDULE OF FUNDS

Within the above classifications, funds are defined as follows:

GOVERNMENTAL FUNDS

001 General Fund

As noted above, the City's primary operating fund, accounting for all financial resources of the general governmental activities, except those that are required to be accounted for in another fund. It accounts for taxes and other general revenues not restricted for a specific purpose to support most city services.

SPECIAL REVENUE FUNDS

103 General Capital Outlay Fund

This fund is used to account for funds set aside from the proceeds of sale and rental from surplus real property for the City's five-year improvement program.

104 Library Fund

This fund is used to account for the operations of the National City Library.

105 Parks Maintenance Fund

This fund is used to account for operating and maintaining the City's parks.

108 Library Capital Outlay Fund

This fund is used to account for revenues from real property transfer taxes set aside to finance capital outlay and capital improvement expenditures of the National City Library.

109 Gas Taxes Fund

This fund is used to account for the City's share of state gas tax revenue restricted for street improvement and maintenance.

115 Park & Recreation Capital Outlay Fund

This fund is used to account for revenues from dwelling fees set aside for park- and/or recreation-related capital improvement expenditures.

131 Asset Forfeiture Fund

This fund account for funds received from the federal and state governments for the equitable transfer of forfeited property and cash in which the City's law enforcement participates in the law enforcement efforts leading to the seizure and forfeiture of the property.

166 Nutrition Fund

This fund accounts for the operational activities of the nutrition center



SCHEDULE OF FUNDS

195 Landscape Maintenance District # 1

This fund is used to account for the levies collected as a result of a special assessment on parcels that are generally located along National City Boulevard and bounded by 18th Street to the north and 33rd Street and State Route 54 to the south (the "District"). The amounts collected are utilized to maintain improvements and provide services that benefit parcels within the District. The City formed the District in 1995 pursuant to the Landscape and Lighting Act of 1972, part 2 of Division 15 of the California Streets and Highway Code. The Mile of Cars Association maintains and administers the improvements and services funded by the District under an agreement with the City.

208 Supplemental Law Enforcement Services Fund (SLESF)

This fund accounts for the Citizen's Option for Public Safety (COPS) program revenues and expenditure activities in connection with front-line law enforcement services.

301 Community Development Block Grant (CDBG) Fund

This fund is used to account for federal funds received from the United States Department of Housing and Urban Development (HUD) Community Development Block Grant (CDBG) program

420 Parking Authority

This fund is used to account for all activities of the Parking Authority of the City of National City. The purpose of the Parking Authority is to provide parking facilities for motor vehicles.

501 Housing Authority

This fund is to assist housing programs and projects by complementing existing Federal and state funding sources and effectively increasing and preserving the supply of affordable housing in National City.

502 Housing Choice Voucher Fund

This fund accounts for the activities of the Housing Choice Voucher Program, which provides rental assistance to low income families by subsidizing a portion of the rent directly to landlords on behalf of low income households.

505 HOME Fund

This fund accounts for federal funds received from the HUD HOME program.

523 Brownfield Grant Fund

This fund is to account for the Revolving Loan Fund program to assist the community with funding for cleanup planning and remediation activities.



SCHEDULE OF FUNDS

OTHER SPECIAL REVENUE FUNDS

120 Plan Checking Revolving Fund

This fund is used to account for revenues and expenditure activities in connection with Building Division project reviews.

130 EMT-D Revolving Fund

This fund is used to account for revenues and expenditure activities to support the City's EMT-D program and firefighter first response training.

172 Trash Rate Stabilization Fund

This fund is used to provide rate stabilization and to account for activities in connection with refuse related purposes, including AB 939 expenses, litter control, City assistance at Citywide cleanup, special studies, staff support, and other related functions.

212 Personnel Compensation Fund

This fund is used to account for retiree health benefits activities.

246 WINGS Grant Fund

This fund is used to account for revenues and expenditures related to the after school education and safety program operated by the National City Library.

277 National City Public Library Donations Fund

This fund is used to account for small donations from individuals and organizations to support library services.

282 Reimbursable Grants City-wide Fund

This fund is used to account for grant revenues and expenditures for various Fire Department programs and activities.

290 Police Department Grants Fund

This fund is used to account for grant revenues and expenditures for various Police Department programs and activities.

296 Engineering Department Grants Fund

This fund is used to account for grant revenues and expenditures for various Engineering Department projects.

308 Highway Bridge Rehabilitation Grant Fund

This fund is used to account for federal grant revenues for the objective of removing or retrofitting several bridges located in National City due to seismic concerns.

320 Library Grants Fund

This fund is used to account for grant revenues and expenditures for various Library Department programs and activities.



SCHEDULE OF FUNDS

321 Smart Growth Incentive Program Fund

This fund is used to account for grant monies received from the SANDAG TransNet Smart Growth Incentive Program (SGIP) for transportation-related infrastructure improvements and planning efforts that support smart growth development in Smart Growth Opportunity Areas, as defined by SANDAG.

323 Safe Routes to School Fund

This fund is used to account for grant monies received from the State of California through Caltrans as part of the California Department of Health Services Safe Routes to School Program for transportation projects that increase the safety of pedestrians and bicyclists.

325 Development Impact Fees Fund

This fund accounts for fees imposed on new development used to finance public facilities improvements related to parks, police, fire, and library services.

326 Transportation Impact Fees Fund

This fund accounts for fees collected on private development to fund transportation projects along regional arterial roadways to mitigate the traffic impacts of new development

343 State-Local Partnership Fund

This fund is used to account for the revenues and expenditures of funds provided by the state under the State-Local Transportation Partnership program.

731 Construction & Demolition Debris Fund

This fund accounts for collection of waste diversion security deposits and revenues for the objective to divert debris from residential and commercial construction projects to a recycling facility.

CAPITAL PROJECTS FUNDS

307 Proposition A Fund

This fund is used to account for the City's allocation for the 2% transactions & use tax imposed by Proposition A (San Diego Transportation Improvement Program) passed by the voters of San Diego County.

DEBT SERVICE FUNDS

201 National City Joint Powers Financing Authority (NCJPFA) Debt Service Fund

This fund is used to account for funds maintained by the trustee bank solely for the purpose of paying, when due and payable, the principal and interest obligations of the lease revenue refunding bonds.



SCHEDULE OF FUNDS

259 Library Bonds Debt Service Fund

This fund is used to account for Library debt service obligations.

PERMANENT FUNDS

The City of National City maintains no permanent funds.

ENTERPRISE FUNDS

125 Sewer Service Fund

This fund is used to account for the collection of sewer connection fees and monthly sewer charges for the construction and maintenance of the City's sewer systems.

INTERNAL SERVICE FUNDS

626 Facilities Maintenance Fund

This fund is used to account for the cost of maintaining all City-owned buildings in a clean, safe, workable, and pleasant condition.

627 Liability Insurance Fund

This fund is used to account for the costs of maintaining the City's Worker's Compensation and liability insurance programs.

629 Information Systems Maintenance Fund

This fund is used to account for the costs to replace City office equipment and information technology software and hardware.

630 Office Equipment Depreciation Fund

This fund is used to account for the costs to replace City office equipment.

631 Telecommunications Revolving Fund

This fund is used to account for the costs of maintaining the City's telecommunication systems.

643 Motor Vehicle Service Fund

This fund is used to account for the City's costs of preventative maintenance and repairs for its fleet, including police, fire, general administrative, park, sewer, and public works equipment.

644 Vehicle Replacement Fund

This fund is used to account for the costs to replace City equipment, including fleet vehicles.



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Preliminary Budget
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Schedule of Object Accounts





SCHEDULE OF OBJECT ACCOUNTS

Expenditures are organized into seven broad categories, defined as follows:

100 PERSONNEL SERVICES

Salaries, wages, benefits and all other forms of compensation paid to City employees and elected officials.

200 SPECIAL SERVICES

Professional services, contract services, memberships, training, travel and subsistence, subscriptions, postage, sewage treatment, refuse collection charges, personnel examination costs, etc.

300 MATERIALS & SUPPLIES

Office and computer supplies, books, furniture and equipment that costs less than \$5,000, fuel, ammunition, uniforms and accessories, and other expendable materials and supplies.

400 FIXED CHARGES & DEBT SERVICE

Rents, insurance of all types, workers compensation claim costs, debt service principal and interest, and taxes.

500 ADDITIONS TO FIXED ASSETS

Vehicles, equipment, land, structures, streets, sidewalks, facilities, and other purchases that exceed \$5,000.

600 REFUNDS, CONTRIBUTIONS, & SPECIAL PAYMENTS (EXCLUDING 698)

Refunds, donations, judgments and losses, transfers and distributions between funds.

700 ALLOCATED COSTS & INTERNAL SERVICE CHARGES (INCLUDES 698)

Charges for goods or services provided by one department to other departments of the City on a cost-reimbursement basis and charges for recovery of indirect/overhead costs incurred by the General Fund for departments with common or joint objectives with General Fund departments.



SCHEDULE OF OBJECT ACCOUNTS

Within the above classifications, expenditures are classified by type as follows:

100 – PERSONNEL SERVICES

100 Part-Time Salaries

Compensation paid to part-time City employees in the form of wages.

101 Full-Time Salaries

Compensation paid to full-time City employees and elective officials in the form of salaries and wages.

102 Overtime

Compensation paid in excess of normal salaries and wages for time worked over and above the regular workweek.

105 Longevity

Compensation paid for continued meritorious service over an extended period of time.

107 Educational Incentive Pay

Compensation paid for individual educational achievement subsequent to permanent appointment.

109 Vacation Relief

Funds used to compensate temporary workers during the absence of regular permanent employees who are on extended periods of vacation leave or who find it necessary to be absent from work for long periods of time due to conditions beyond their control.

110 Allowances & Stipends

Compensation paid to City employees for lease, purchase, or maintenance of automobiles, uniforms, and equipment, or other prescribed or necessary equipment.

120 Differential Pay

Additional compensation paid to employees for special assignments or possession of special skills; investigative pay, police liaison officer, K-9 pay, motorcycle pay, bi-lingual pay, out-of-class pay, fire prevention pay, shorthand pay, etc.

140 Workers' Compensation

Transfers to the City's Self-Insured Trust Fund for imputed premium costs.

150 Employees' Group Insurance

City's share of employee group insurance premiums.

151 LTD Insurance

City's share of long-term disability insurance premiums.

160 Retirement Plan Charges

City's share of retirement costs based on rates prescribed by the California Public Employees' Retirement System ("CalPERS"). Does not include administrative charges for operation of the fund.

161 Medicare

City's share of insurance premiums.



SCHEDULE OF OBJECT ACCOUNTS

- 199 Personnel Compensation**
All other compensation for personnel services not properly assigned to one of the foregoing designations.
- 200 – SPECIAL SERVICES**
- 201 Accounting & Auditing Services**
Compensation paid a public accountant engaged by the City Council and for other professional auditing and accounting work performed by other than a City employee.
- 203 Engineering & Architectural Services**
Compensation paid private firms engaged to perform engineering, architectural, and similar services for the City.
- 205 Medical Services**
Compensation paid doctors and medical technicians for physical examinations, special tests, laboratory work, etc.
- 207 Technical Personnel Services**
Charges made by the State Personnel Board or other professional agency in connection with examinations prepared, given, marked, or graded by that Board, and for personnel advice given by an outside consultant.
- 209 Legal Services**
Compensation paid lawyers, other than the City Attorney, for legal advice, appearance before courts on behalf of the City; litigation expenses; etc.
- 211 Laundry & Cleaning Services**
Cleaning and laundry services by commercial agencies.
- 212 Governmental Purposes**
Expenses incurred for general governmental purposes, generally of an unforeseen or emergency nature, in the managerial and legislative areas of concern.
- 213 Expert and Consultant Services**
Compensation paid to outside professional services of a specific nature, i.e., economic surveys, planning studies, etc.
- 215 Custodial Services**
Payments to outside firms performing these tasks on a contractual basis.
- 217 Investigative Services**
Fees, charges, or other means of compensation paid for work of an investigative nature.
- 222 Subscriptions & Memberships**
For “trade journals” and for membership dues of officers and key employees in the various municipal and professional organizations formed to promote interchange of ideas between such individuals. Also used for the City’s membership in the same type of organization.
- 226 Training**
Compensation paid for in-service training programs and for outside institutes, seminars, etc.



SCHEDULE OF OBJECT ACCOUNTS

- 230 Printing and Binding**
Producing printed reports, flyers, brochures, bulletins, forms, etc.; binding or rebinding of books, pamphlets or other records. Includes printed forms, stationery, etc.
- 234 Electricity & Gas**
Payment for electrical service, power, and light only. Installation costs should be in the 500 series as applicable.
- 235 Street Lights & Signals**
Payment for electrical energy used in street lights and traffic signals and amortization of construction and installation costs of utility-owned street lighting.
- 236 Water**
Payment for water service only. Installation costs should be in the 500 series as applicable.
- 240 Equipment Rental**
Payment for the short-term use of trenchers, cranes, gravel spreaders, paving machines, concrete mixers, air compressors, sanders, etc., when obtained from sources outside of City government.
- 242 Fire Hydrant Charges**
Payment for use of water hydrants by City departments in the same manner as commercial firms.
- 244 Photography & Blueprinting**
Photostatic and blueprinting services.
- 248 Telephone, Telegraph, & Teletype**
All telephone charges for services, installations, long-distance calls, facsimile transmissions; cost of sending telegrams, cost of Teletype operations; includes City's share of the County-wide police Teletype service.
- 250 Postage**
Postage services, stamps, metered postage, postal cards, stamped envelopes, registered mail, special delivery, and parcel post.
- 254 Automobile Allowances**
Money paid employees for use of their own cars, either on a time basis or mileage basis established in each instance.
- 256 Extradition Expense**
Money expended in the extradition of prisoners or suspected criminals and reimbursed by the State.
- 258 Travel & Subsistence**
Expense reimbursement made to City employees for attending authorized functions in connection with official City business. Includes reimbursements for meals, lodging, conferences, registrations, airfares, private car use, and dinner meetings. Includes prisoner meals and transportation.



SCHEDULE OF OBJECT ACCOUNTS

- 259 K-9 Care and Supplies**
Money expended in the K -9 care and supplies.
- 260 Advertising**
Money paid to publishers for advertising placed in periodicals; includes legal advertising.
- 261 Emergency Animal Treatment**
Charges for contractual services to provide animal shelter and control services for the impounding, adoption, redemption, and care and disposition of dogs, cats, and other small animals.
- 264 Promotional Activities**
For decorating streets at holiday or other special occasions, for publicity tending to attract industry or desirable business to the City – usually the subject of a contract with the local Chamber of Commerce.
- 268 Rentals & Leases**
Long-term rentals or leases of equipment or real property for the purpose of conducting City business.
- 272 Sewage Transportation & Treatment**
Contract charges payable to City of San Diego.
- 274 Dumping Fees**
Charges required for dumping debris and other materials at regional dumpsites.
- 276 Trash Collection & Disposal**
Removal of refuse, waste, or other debris performed by a commercial agency.
- 281 R&M-Office Equipment**
Repairs of typewriters, adding machines, duplicating machines, data processing equipment, etc., when the repairs are performed by a commercial agency. Includes cost of maintenance service contracts.
- 282 R&M – Automotive Equipment**
Repair of trucks, passenger cars, street sweepers, and other automotive equipment performed by commercial agencies. Includes towing charges of automotive equipment.
- 283 R&M – Fire-fighting Apparatus**
Work done by outside firms on fire-fighting equipment including: fire trucks, rescue trucks, components thereof; trailer-type fire engines, fire extinguishers, etc., when not part of buildings.
- 284 R&M – Street Lights**
Work by outside firms on the maintenance of City-owned street lighting standards and fixtures.
- 285 R&M – Traffic Control Devices**
Work by outside firms on the maintenance of City-owned traffic signal standards and fixtures. books, pamphlets, or other records. Includes printed forms, stationery, etc.



SCHEDULE OF OBJECT ACCOUNTS

- 286 R&M – Recreation & Playground Equipment**
Cost of repairs by outside firms to recreational equipment and playground equipment such as slides, balls, swings, and other items not structures nor part of structures.
- 287 R&M – Communications Equipment**
Repairs of radio, Teletype, and other electronic communication equipment, when the repairs are performed by a commercial agency.
- 288 R&M – Buildings & Structures**
Contractual repairs and materials used concurrently by the same contractor for repair and maintenance of buildings and structures; their fixed accessories and complete
- 289 R&M – Non-Structural Items**
Fences, gates thereof, parking areas.
- 290 R&M – Grounds**
Contractual maintenance of areas around buildings, park areas, vacant lots owned by the City.
- 291 R&M – Audio-Visual Equipment**
Repairs of motion-picture and still projectors, phonographs, recorders and tape decks, microfilming devices and reader/printers, and similar devices, including bulb replacement, changing of styli, etc.
- 299 Contract Services**
All other contractual services not properly assigned to one of the foregoing designations.
- 300 – MATERIALS & SUPPLIES**
- 301 Office Supplies**
Supplies which are consumed or used in the regular course of office activities.
- 302 Periodicals & Newspapers**
For the purchase and subscription of magazines and newspapers, other than trade journals and publications in connection with the membership in an organization or an association, i.e., subscription to magazines, newspapers, and other periodical publications for the Public Library.
- 303 Janitorial Supplies**
Those items used for cleaning buildings but not limited to: rags, mops, brooms, soaps, cleaners for walls, windows, tile, floors, etc.
- 304 Books**
Bound publications, fiction or non-fiction, technical manuals, reference books, and including circulars, pamphlets, phonograph records, etc.
- 305 Medical Supplies**
Drugs, medicines, first aid supplies, laboratory glassware, papers, and supplies, etc.
- 306 Computer Supplies**
Computer supplies, including hardware, software, and electrical components.



SCHEDULE OF OBJECT ACCOUNTS

- 307 Duplicating Supplies**
Paper, ink, and other supplies used in printers and photocopy machines.
- 309 Photographic Supplies**
For the purchase of films, filmstrips, slides, and similar video media material. Also for consumable items used in taking pictures, processing the same, enlarging by photographic means; chemicals, paper, etc.
- 311 Recreation Supplies**
Balls, bats, gloves, tumbling mats, nets, games, phonograph records, handicraft materials, etc.
- 314 Gas, Oil, & Lubricants**
Gasoline, lubricating oils, greases, compounds, etc., used in or to service City-owned equipment.
- 316 Ammunition**
Pistol and rifle ammunition, mace, tear gas, fuses, targets, gas shells, grenades, and supplies used in reloading and cleaning cartridge for power-activated tools.
- 318 Wearing Apparel**
Uniforms, special work clothing required for the protection and safety of employees, boots, insignia worn on the garments, identification badges, caps, etc.
- 321 Planting Materials**
Small items for planting, excluding trees; includes fertilizers, peat moss, insecticides, and sprays.
- 323 Plumbing Materials**
Household-type plumbing items, pipe, faucets, sinks, lavatories, showers, garden hose, etc.
- 325 Electrical Materials**
Electrical wire, insulators, conduit, switches, fuses, lamps, dry cell batteries, including fixtures.
- 327 Building Materials**
All building materials, including lumber and hardware, roofing items, plaster, doors, windows, brick, etc.
- 329 Paint Materials**
Paint and consumable components, thinners, lacquers, enamels, paint brushes, paint rollers.
- 331 Horticultural Items**
All forms of trees, plants and bushes used in City parks, street rights-of-way, and around public buildings.
- 334 Automotive Parts**
Parts purchased for the repair and maintenance of City-owned automotive equipment by City personnel.
- 335 Tires**
Tires for the City's fleet, including labor and environmental fee.



SCHEDULE OF OBJECT ACCOUNTS

- 337 Small Tools**
Drafting supplies, hand tools and blades, bits and cutters used in power-operated equipment.
- 340 Shop Supplies**
Stock, brass, steel, rod, bar or slab, oxygen, acetylene, welding rod, flux, etc, soaps and detergents, when required for other than cleaning buildings.
- 342 Communication Materials**
Items purchased for the City's fire alarm system, radios, monitors, etc., including wire messengers, batteries, and related parts for communication equipment. construction, i.e., painting, patching, etc.
- 346 Traffic Control Supplies**
Temporary traffic control signs; barricade material and miscellaneous warning signs, paints and other supplies used in the painting on public streets.
- 348 Water Pipe, Valves, & Fittings**
All such items excepting domestic plumbing materials. Includes irrigation hose for public parks.
- 352 Sewer Pipe & Materials**
Sewer pipe, joint materials therefore, sewer manhole covers.
- 353 Patrol/Crime/Lab/Prop. Supplies**
Money expended in the extradition of prisoners or suspected criminals and reimbursed by the State.
- 354 Chemical Products**
Swimming pool chemicals, sewer supplies, etc.
- 355 Minor Equipment – Less than \$5,000**
Equipment with a cost not exceeding \$5,000 not properly assigned to one of the foregoing equipment designations.
- 356 Rock & Sand**
Aggregate, subgrade, fill materials, etc.
- 360 Sidewalk, Curb, & Gutter Materials**
Cement and premixed concrete, including additives.
- 362 Roadway Materials**
Asphalt, black top, asphalt mixed with stone and plant mix, road oil slurry seal.
- 399 Materials & Supplies**
Those items which have not been placed in one of the foregoing classifications.
- 400 – FIXED CHARGES & DEBT SERVICE**
- 410 Property Insurance**
Fire insurance premiums.



SCHEDULE OF OBJECT ACCOUNTS

- 420 Public Liability Insurance**
Premiums paid for liability insurance, including automotive insurance and false arrest insurance.
- 430 Fidelity Insurance**
Honesty policies, performance bonds, notary bonds, weighmaster bonds, etc.
- 432 Liability Claim Cost**
Payments for loss or damages for which the City is held responsible and which are not covered by insurance; awards made by City Council to individuals.
- 433 WC Claim Cost**
Payments for loss or damages arising from job-related Workers' Compensation claims for which the City is held responsible
- 452 Unemployment Insurance**
Payments for the City's share of regular unemployment insurance reimbursable benefit charges.
- 470 Bond Principal Redemption**
Expenditures to retire the principal portion maturing on bonds or other evidence of debt.
- 480 Bond Interest Redemption**
Expense incurred for periodic interest charges and related service charges on bonds or other evidence of debt.
- 488 Loan to Other Funds**
Loan to other Funds.
- 499 Fixed Charges**
When not assignable to any other number in this series.
- 500 – ADDITIONS TO FIXED ASSETS**
- 501 Mechanical Office Equipment**
Office machines, typewriters, adding machines, calculators, check writers, and such other machines as are required to facilitate office procedures.
- 502 Computer Equipment**
Data processing and office automation equipment; computers, printers, scanners, faxes, data processing terminals, modems, etc.
- 503 Furniture & Furnishings**
New and replacement equipment for office use, i.e., desks, chairs, tables, stands, filing and storage cabinets, credenzas, pictures, carpets, drapes, clocks and like items.
- 505 Training Equipment**
Items required to assist in training activities of a significant expense.
- 506 Audio-Visual Equipment**
Equipment designed to aid in learning or teaching by making use of both hearing and sight; slide projectors, movie and video tape equipment, sound projectors, etc.



SCHEDULE OF OBJECT ACCOUNTS

- 507 Library Equipment**
Library shelving, card catalogs, mobile book carts, book processing and mending equipment, etc.
- 508 Photographic & Recording Equipment**
Tape recorders, cameras, photo developing equipment, etc.
- 509 Mobile Tools**
Equipment mounted on wheels for ease of movement. Wood chippers, rotary tiller, lawn
- 511 Automotive Equipment**
Expenditures for the acquisition of passenger cars, pick-up trucks, vans, street sweepers, dump trucks, etc. These expenditures include the initial cost, transportation charges, sales and use taxes, and installation costs.
- 512 Automotive Leases**
Contractual services for vehicle leases
- 513 Automotive Accessories**
Equipment designed and secured to supplement, improve, or expand the use of automotive equipment.
- 514 Custodial Equipment**
Floor polishers, carts, mechanical cleaning devices, vacuum sweepers, etc.
- 515 Communication Equipment**
Base stations, antennas, monitors, radios, Teletype, radio, telephone, and other electronic communication equipment.
- 517 Engineering Equipment**
All items of equipment secured for office engineering activities and for field survey and inspection work.
- 518 Public Safety Equipment**
Rifles, handguns, bulletproof armor and shields, machine-guns, etc.
- 519 Fire Fighting Apparatus**
Fire trucks, rescue vehicles, salvage trucks, special vehicles, or other items that are procured for the primary purpose of extinguishing fires, including vehicles for movement of firefighting personnel and their equipment.
- 521 Fire Fighting Accessories**
Equipment designed and secured to supplement, improve, or expand the use of firefighting apparatus; fire extinguishers.
- 523 Athletic & Recreational Equipment**
All items of equipment purchased for competitive athletic events, recreation centers, special programs, and adult activities.
- 527 Playground Equipment**
Equipment designed for the use of small children in a mini-park, tiny tot play area, public park, etc.



SCHEDULE OF OBJECT ACCOUNTS

- 551 Traffic Control Devices**
Signs for directional or speed control of vehicles, street name signs, parking limitation signs; includes traffic signal lights and equipment.
- 554 Street Lights & Electroliers**
Street lights, their standards, arms, lamps, starters, ballasts, and other parts, used for street and walk illumination, and for improved lighting at intersections.
- 559 Sewer Mains & Appurtenances**
Sewer mains, manholes, covers and structures
- 563 Drainage Structures**
Ditches, culverts, and underground pipes for movement of storm waters.
- 565 Land Acquisition**
The acquisition of land for any governmental purpose.
- 567 Streets & Alleys**
Areas of land procured and improvements thereon for the movement of people on foot or in vehicles, drainage, utility use; includes all portions dedicated to public use.
- 569 Buildings**
A structure of three or more walls and a roof, capable of housing personnel, equipment, or machinery.
- 570 Building & Plant Equipment**
Heating and cooling equipment, security devices, safety items, replacement items.
- 571 Major Structures**
A special category for reservoirs, bridges, swimming pools, etc.
- 572 Non-Structural Improvements**
Fences, their gates and parts, walls not supporting roofs.
- 598 Capital Improvement Program**
Major public facility and infrastructure improvements that cost in excess of \$100,000 and have an expected life of 10 or more years.
- 599 Fixed Assets**
Those items not properly classified in a foregoing classification.
- 600 – REFUNDS, CONTRIBUTIONS, & SPECIAL PAYMENTS**
- 610 Deposits Refunded**
Cash bond deposits no longer required and returned to the depositor.
- 620 Return of Fees**
Return of fees, licenses, and other charges received by the City to the person or agency making the original payment.



SCHEDULE OF OBJECT ACCOUNTS

- 640 Inventory Purchases**
Central stores purchases held as inventory stock for further distribution to City departments.
- 650 Agency Contributions**
Contributions to other governmental agencies and non-profit organizations engaged in activities supplementary to those of the City.
- 651 Capacity Charge**
Payments for the San Diego Metropolitan Sewerage System capacity charge.
- 660 Special Payments**
Used only on special orders of the City Manager and the City Treasurer.
- 698 Indirect/Overhead Costs**
Costs charged to departments with common or joint objectives with General Fund departments for recovery of indirect/overhead costs incurred by the General Fund for the activities associated with those objectives.
- 700 – INTERNAL SERVICES CHARGES AND RESERVES**
- 710 Provision for Contingency**
Funds set aside by Budget action for allocation at a later date.
- 720 Equipment Depreciation Reserve**
Depreciation expense on equipment to be applied to purchase of new equipment at a later date.
- 740 Building Services Charges**
Charges to other departments for services provided by the Public Works Department for building and facilities maintenance.
- 750 Vehicle Services Charges**
Charges to other departments for services provided by the Public Works Department for maintenance of City-owned vehicles.
- 751 Vehicle Replacement Charges**
Charges to other departments for use of City-owned vehicles purchased through the Vehicle Replacement Fund.
- 752 Vehicle Replacement Charges**
Charges to other departments for use of City-owned vehicles leased by the City.
- 755 Information System Services Charges**
Charges to other departments for services provided by the Information Technology Services.
- 790 Insurance Charges**
Charges to departments for their respective shares of the cost of the public liability insurance program.

Preliminary Budget
Fiscal Year 2024

Fund Type Matrix





FUND TYPE MATRIX

Fund Type by Department Matrix

Department	General Fund (Major)	Special Revenue	Debt Service	Capital Projects	Internal Service
City Attorney	✓				✓
City Clerk	✓				
City Council	✓				
City Manager	✓				✓
City Treasurer	✓				
Community Services	✓	✓			
Engineering & Public Works	✓	✓			✓
Finance	✓				
Fire	✓	✓			
Housing & Economic Development	✓	✓			
Human Resources	✓				✓
Library		✓	✓		
Neighborhood Services	✓				
Non-Departmental	✓	✓		✓	
Planning	✓				
Police	✓	✓			



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**City of National City
City Council Workshop
Held March 24, 2023**

March 2023

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Workshop Report

The City of National City held a City Council workshop on Friday, March 24, 2023, from 9:00 a.m. to 2:30 p.m. at the Senior Center. The workshop provided an opportunity for Councilmembers to discuss governance and agree on a set of Council norms, create consensus on priorities for the coming year, and strengthen teamwork. This report contains a summary of the results of the workshop. Jan Perkins and Magda Gonzalez facilitated the workshop.

Mayor and Council

**Mayor
Ron Morrison**



**Vice Mayor
Luz Molina**



**Councilmember
Marcus Bush**



**Councilmember
Jose Rodriguez**



**Councilmember
Ditas Yamane**



¹ Councilmember Rodriguez did not attend.

City Staff

- Brad Raulston, City Manager
- Barry J. Schultz, City Attorney
- Carlos Aguirre, Director of Housing
- Molly Brennan, Administrative Services Director
- Shelley Chapel, City Clerk
- Alex Hernandez, Police Captain (representing Chief Tellez, Chief of Police)
- Sergio Mora, Fire Chief
- Joyce Ryan, Library and Community Services Director/Librarian
- Lourdes Silva, Human Resources Director
- Armando Vergara, Director of Community Development
- Roberto Yano, Director of Public Works/City Engineer

Workshop Preparation

In preparation for the session, Jan and Magda interviewed each member of the Council to learn about their priorities for the coming year and hear feedback about some of the City's recent accomplishments and current challenges. The facilitators prepared an agenda and PowerPoint presentation along with handout materials to guide discussions during the session.

Retreat Overview

Objectives

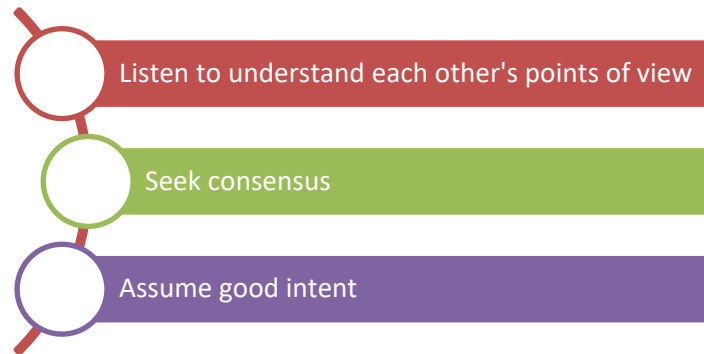
- Discuss the transition to the new Councilmember election by-district system and establish Council norms and protocols.
- Understand Councilmembers' priorities and establish a set of Council priorities for FY 2023-24.
- Strengthen teamwork.

Agenda

- Welcome and call to order by the Mayor
- Public comments
- Comments from the City Manager
- Icebreaker exercise
- Discuss article, "Attributes of Exceptional Councils" and roles
- Discuss districts and develop Council norms
- Introduce and set the context for priority setting
- Discuss and establish City Council priorities for FY 2023-24
- Discuss how to keep priorities on course
- Public comments
- Wrap-up and next steps

Workshop Ground Rules

Magda suggested several ground rules to help the group have a successful workshop.



Highlights of Retreat Results

As a result of the Council's discussion, Council norms were adopted, and priorities were established for FY 2023-24.

Council Norms and District Protocols

Councilmembers agreed to adopt the suggested norms and identified several protocols related to districts. The facilitators noted that these could be used as a check-in each year. The Council norms are listed below.

1. Maintain a citywide perspective, while being mindful of our districts.
2. Move from I to we and from campaigning to governing.
3. Work together as a body modeling teamwork and civility for our community.
4. Assume good intent.
5. Disagree agreeably and professionally.
6. Utilize long range plans to provide big picture context that is realistic and achievable.
7. Stay focused on the topic at hand. Ensure each member of Council has an opportunity to speak.
8. Demonstrate respect, consideration, and courtesy to all.
9. Share information and avoid surprises.
10. Keep confidential things confidential.
11. Respect the council/manager form of government and the roles of each party.
12. Communicate concerns about staff to the City Manager and do not criticize staff in public.

District-Related Protocols. The following protocols were also agreed to:

- Keep each other informed of communications/contacts from constituents from their districts.

- Keep the Mayor informed of contacts and issues we hear about in our districts.
- Keep each other informed about issues we hear about in any district.
- Maintain a “city first” approach so that individual districts are not above a city-wide perspective.

Priorities

The Council established two Tier 1 priorities and four Tier 2 priorities for the coming year as listed below.

Tier 1: For Highest Attention

- Improve permitting and development process for greater efficiency
- Provide services that impact quality of life (e.g., cleanliness)

Tier 2: For Attention as Resources Permit

- Improve communication and outreach overall and tailor some by district
- Maintain and improve infrastructure
- District budgeting (to be defined, with the first step being research into what other cities of similar size do)
- Pipelines for public safety jobs



Welcome and Opening Comments

The workshop began with a welcome and call to order from Mayor Ron Morrison. City Manager Brad Raulston then offered opening comments about the importance of the day for staff.

Governance Principles

Following the icebreaker exercise, the group discussed what makes a Council work well. Jan discussed the four things that are critical for effective Councils. These four elements are shown below.



The Council also discussed the key attributes of exceptional Councils which are identified in the Institute for Local Government (ILG) article, *Attributes of Exceptional Councils*. The six attributes are listed below.

Exceptional City Councils

Institute for Local Government

1. Have a **sense of team**; a partnership with the city manager to govern and manage the city
2. Have **clear roles** and responsibilities that are understood and adhered
3. **Honor the relationship with staff and each other**
4. Routinely conduct **effective meetings**
5. Hold themselves and the city **accountable**
6. Have members who practice **continuous improvement**

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Jan asked a series of questions related to how Council can become the best team they can be. The questions posed, and a summary of the discussions that followed, are listed in Table 1 below.

Table 1. Becoming the Best Team We Can Be

Discussion Question	Summary of Discussion
<p>What are we doing well as a Council?</p>	<ul style="list-style-type: none"> Communicating Working things out one-on-one Having shorter meetings Researching and understanding issues Understanding priorities
<p>What do Councilmembers need from each other?</p>	<ul style="list-style-type: none"> Keeping our priorities in focus Understand that our work is on behalf of the community and their issues Respect each other and everyone’s roles Understand communication styles Assume good intent Give each other space – especially when there is a misunderstanding Listen to understand

Discussion Question	Summary of Discussion
<p>What does the City Manager need from the Council on behalf of staff to be most effective?</p>	<ul style="list-style-type: none"> • Understand pace of government and all the rules we must follow • Balance with providing information so all can understand; be on same page • Respect for time needed by staff to carry out their work and special projects • Allow time so staff can solve issues • Respect each other's roles, with everyone "staying in their lane" • Understand that the city manager must work within the confines of his role and city manager code of ethics • Council does not manage staff; allow the City Manager to do his work • Staff need to have clarity that they have one boss; Councilmembers do not direct staff • Council to know and understand what staff are doing to understand the time resources needed • Consistency in Council priorities • Be clear about the issues being addressed • Define problems clearly so city manager can best direct staff • Understand the difference between urgent and important • Help explain reason behind information and what
<p>What can we collectively do to improve?</p>	<ul style="list-style-type: none"> • Make greater use of study sessions • Understand that certain council members have expertise in important issues and areas that can be used more • Breaking bread together • Enhanced communication with each other

National City's Core Values

City Manager Brad Raulston reviewed the City's core values and why they are important. He emphasized the culture of courtesy, collaboration, and communication that is fundamental to what the staff does. Brad indicates he refers to this frequently with staff. The City's core values are shown below.

*We Pledge to Provide **Customer Service***

*through a **Culture of...***

Courtesy

We treat everyone with dignity and respect.

Collaboration

We work to achieve common goals and value our differences.

Communication

We communicate openly, honestly, and with clear, consistent messages.

*with a **Commitment to Our Community!***



Transition to Districts

The group then turned their attention to the City’s transitioning to districts which will be fully in place with all members of Council (except for the directly elected Mayor) in 2024.

Jan noted that as cities move to elections by district, there is focus on ensuring that a “one city” approach is retained while being mindful of each district. Jan shared a typical norm that addresses this issue.

Typical Council Norm with Districts: Maintain a citywide perspective while being mindful of districts.

The group discussed what is different, now that districts have been established. The City currently has two Councilmembers elected by district with two districts to have their Councilmembers elected in 2024.

As noted in the “Results” section of the report above, several district-related protocols were agreed to by the Council.

Future Discussion. The Council agreed to discuss at another time how to address representation of the two districts that currently do not have Councilmembers elected by those districts.



Norms

The next segment of the workshop focused on Council norms, which are agreed upon standards of behavior and practices. Jan explained that many Councils have adopted norms for governance. The facilitators shared some typical norms for effective governance. They asked Council whether the sample norms resonated, and if they thought they would be good norms for the National City Council.

Consensus: Council agreed to adopt the 12 Council norms, as presented, and as referenced in the first section of this report.

Issues for Discussion

The group turned their attention to some issues that were raised by Councilmembers during their individual interviews. Some Councilmembers indicated that they would like to discuss study sessions, large agenda items, and the budget process during the workshop. The discussion points that were made on each of these topics are listed below.

- **More study sessions desired.** The City Manager likes this idea and has started them.
- **Council briefings.** A Councilmember suggested that it could be helpful to have two Councilmembers in briefings from time to time.
- **Large agenda items out earlier.** Councilmembers expressed an interest in more time to review large agenda items. The discussion also involved the feasibility of a “look ahead” of agenda items. Comments included:
 - Large staff reports require more lead time for review
 - City manager is supportive and will try to accommodate this request
 - Would be good to know approximately when significant items will be coming before the Council; concern about putting dates on these as expectations can be raised when the dates change – important to

manage expectations; could create a list of upcoming items with general timeframes

- Title of agenda items may need to be clearer in some cases to ensure the public knows what is to be discussed
- **Better understanding of the budget process:** City manager is working to get the budget out one week earlier to give the Council more time for review; two-year budgeting may be helpful in the future.



Priority Setting



Following a brief stretch break, the Council began the discussion of priorities. Context was set through a few slides which included accomplishments and challenges.

Accomplishments

Key accomplishments during the prior year highlighted by Councilmembers in their interviews with the facilitators are shown on the following slide.

Examples of Accomplishments from Councilmembers

- Passed cannabis ordinance
- Put several development agreements into place
- Implemented district elections
- Implemented general improvements in the community
- Passed mobile home rent control ordinance
- Balanced the budget with use of ARPA and other one-time dollars
- Made improvements to parks, dog park
- Good response to Covid, high vaccination rate
- Held more community events

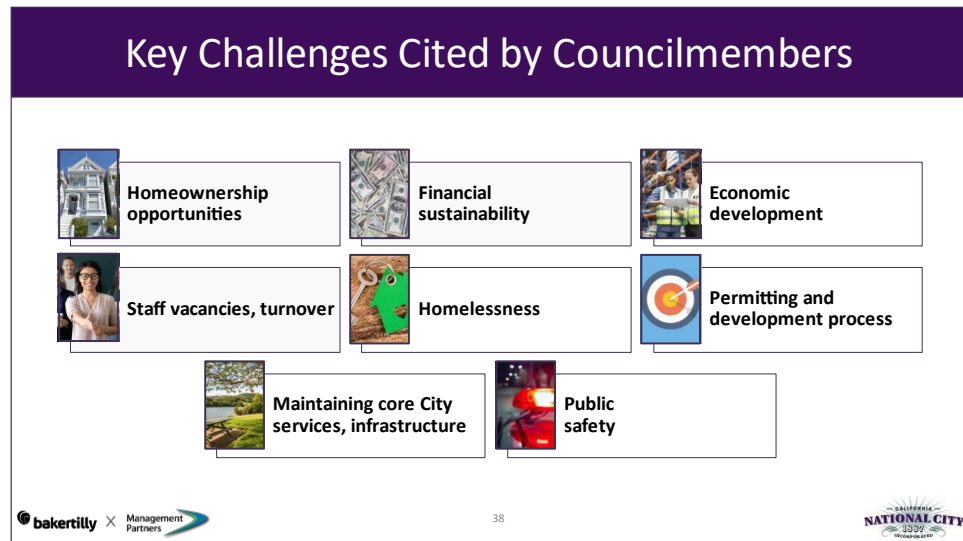
 Management Partners 37 

Other accomplishments noted by Councilmembers at the retreat were:

- Succession planning in police and fire
- Employee retention in city departments

Challenges

Councilmembers also noted a number of important challenges for the City, as shown on the slide below.



Council Priorities

During a working lunch, the Council discussed a series of priorities which were identified during the individual Councilmember interviews conducted by the facilitators. Jan oriented the group to a handout that listed Council priorities, which is provided in the attachment to this report.

The listed potential priorities and why they are important were each discussed. Key discussion points are listed in Table 2 below.

Table 2. Council Priority Discussion

Potential Priority	Discussion Summary
Address future deficit and maintain a balanced budget	<ul style="list-style-type: none"> • This is the heartbeat of organization • Without a balanced budget and staff, we cannot provide services to the community
Improve permitting and development process for greater efficiency	<ul style="list-style-type: none"> • Development is important for revenue generation • How do we get to yes versus saying we can't do something • Need to elevate customer service approach, since the permitting process is already challenging • Council could use more education from staff experts • Can we review requirements, especially those that seem to be outliers?

Potential Priority	Discussion Summary
<p>Increase home ownership opportunities and the ratio of ownership to rental housing</p>	<ul style="list-style-type: none"> • Stability of community • More commitment to community • More engagement • We are the densest city in the county; not a lot of vacant space • Regional Housing Needs Allocation (RHNA) requirements are hard to meet
<p>Improve communication and outreach overall and tailor some by district</p>	<ul style="list-style-type: none"> • Need more timely (advanced) communication • How do we communicate for events within specific districts? • Examine what is most cost effective for outreach • Make sure Councilmember from district is aware of all events
<p>Address homelessness through partnerships with other agencies</p>	<ul style="list-style-type: none"> • We must monitor closely so encampments do not return to same spots • Can we set goals for ourselves, to define success regarding homelessness • Must work on a regional level • Should also work to hold other agencies accountable (i.e., state property) • Work with community to educate and help them feel more comfortable with measures the city may take • Must follow laws and respect rights of individuals • Identify new tools to address homelessness • Educate public as to history and causes of homelessness to help them understand root causes
<p>Consider rent stabilization</p>	<ul style="list-style-type: none"> • Protect renters from displacement • Must be balanced to protect tenants and property owners • Rent stabilization was previously considered
<p>Enhance public safety through short- and long-term solutions to crime involving youth</p>	<ul style="list-style-type: none"> • Partnerships with the community are occurring and are important • Council to understand police operations • Youth programs offer structure that can help with crime prevention • Public safety is important for economic development • Community needs to have respect and confidence in public safety • Having relationships with our community so residents are comfortable with police • Desire more of an understanding of calls for service, trends and what officers are seeing every day • Continue to keep Council informed related to big incidents
<p>Maintain and improve infrastructure</p>	<ul style="list-style-type: none"> • We hear a lot about roads, sidewalks and other infrastructure needs from our community • Capital improvement program is important • Coordinate with neighboring cities (i.e., traffic issues)
<p>Provide services that impact quality of life (e.g., cleanliness)</p>	<ul style="list-style-type: none"> • Understanding and mitigating environmental impacts, such as pollution • Street sign replacement • Could do more with sign enforcement (e.g., old commercial advertisements that should come down or are not in compliance)

Potential Priority	Discussion Summary
	<ul style="list-style-type: none"> • Most effective sign enforcement is a corridor approach (e.g., taking an entire corridor at a time) • Residents also have responsibilities for cleanliness, yards, neighborhood appearances
District budgets (to be defined)	<ul style="list-style-type: none"> • Interest in understanding what other cities budget for Council districts – staff to conduct such research and report back • Once the data is available, then the Council will have a further discussion
Two-year budgeting	<ul style="list-style-type: none"> • City Manager indicated that this is something the staff has discussed • Council consensus to pursue, if it will help staff
Cruising ordinance	<ul style="list-style-type: none"> • Cruising is part of our cultural identity; interested in creating events • Ordinance is on an upcoming agenda • Need to make sure we are all safe
Golf course redevelopment	<ul style="list-style-type: none"> • Need for more open space to be made available to all members of the community • Few residents play golf now • Most of the users of the golf course are not residents of National City • Long term lease up next year
Pedestrian crossing project	<ul style="list-style-type: none"> • Project is moving along
Pipelines for public safety jobs	<ul style="list-style-type: none"> • Interest in more outreach to the high school • Would like to see more public safety employees from National City • Difficulty recruiting public safety and other local government positions throughout all cities
Expand tree trimming	<ul style="list-style-type: none"> • An additional crew may be added through the budget process; currently contracting out some of this work

Dot Voting on Priorities for FY 2023-24

Councilmembers used dot voting to determine Council consensus on priorities. Each Councilmember was given 4 dot stickers and asked to place the dots on their top priorities.



The results of the dot voting exercise are shown below. Two of the items received a majority of Councilmembers' dots. Four of the items received two dots.

Address future deficit and maintain a balanced budget	•
Improve permitting and development process for greater efficiency	••••
Increase home ownership opportunities and the ratio of ownership to rental housing	•
Improve communication and outreach overall and tailor some by district	••
Address homelessness through partnerships with other agencies	•
Consider rent stabilization	
Enhance public safety through short and long-term solutions to crime involving youth	•
Maintain and improve infrastructure	••
Provide services that impact quality of life (e.g., cleanliness)	•••

District budgeting (to be defined)	••
Two-year budgeting	
Addressing the Cruise Ordinance and sponsoring cruising events	
Golf course redevelopment	•
Youth development (including after school programming)	
Pipelines for public safety jobs	••
Improved pedestrian connections at Interstate 5 (study ped bridge)	
Enhance street sweeping	
Expand tree trimming	

Tier 1 and Tier 2 Priorities

The Council reflected on the voting results and as a result established two Tier 1 and four Tier 2 priorities that emerged are shown in Table 3 below.

Table 3. Tier 1 and Tier 2 Priorities

Priorities
Tier 1: Highest Priority Items for Focused Attention
▪ Improve permitting and development process for greater efficiency
▪ Provide services that impact quality of life (e.g., cleanliness)
Tier 2: Issues for Attention as Resources Permit
▪ Improve communication and outreach overall and tailor some by district
▪ Maintain and improve infrastructure
▪ District budgeting (to be defined)
▪ Pipelines for public safety jobs

Staying on Course with Priorities

After the priorities were established, there was a discussion about what would help the Council and staff team stay on track given the limited staff and financial resources.

Staff will continue to provide regular reports to the Council and will provide more detail about the progress that is being made regarding each priority. Councilmembers will hold off on new Council initiatives until the next goal setting cycle per the best practice criteria that was presented.

Wrap-up and Next Steps

Follow-up Steps

Jan explained that Baker Tilly would prepare this report. She also noted that the City Manager and his staff would prepare a work plan and budget to operationalize the Council’s priorities.

Bike Rack

The following item was added to the bike rack for future discussion.

- How to handle issues that come up while we transition fully to districts

Closing Reflections from Council and Staff

To conclude the workshop, the Mayor and Councilmembers shared comments about what was useful to them as a result of spending time together during the retreat. A summary is provided below.

- Thank you. This was an awesome venue choice, and it was nice to get out of City Hall. We had good discussions and open communication. This was a good format for other issue areas.
- I appreciate everyone being here. This is important work. Thank you to the public; the dedication of all was evident. This was a very good exercise and well worth the time.

- This workshop was held at a good location. Thank you to staff – open to different ideas. Safe discussion venue.
- Thank you for facilitating. I liked the candor to express our thoughts – thank you to staff and leadership and the public who are here today – would like to continue doing this.

Attachment: Priorities Handout

City of National City Summary of Councilmember Priorities For Initial Review in Budget Discussion February 21, 2023

The table on the following page contains a list of the priorities shared by members of the City Council in their interviews. These will be discussed during the Council priority setting workshop scheduled for March 24, 2023. An initial discussion will take place during a budget session to be held on February 21, 2023.

Summary List

An overall summary list of policy priorities suggested by Councilmembers is as follows. Following discussion on March 24, Council direction will be provided on what will move forward as priorities in the upcoming fiscal year. After the workshop, staff will develop implementation plans and prepare budgets based on the Council priorities, including updating the Strategic Plan document.

- **Address future deficit and maintain a balanced budget**
- **Improve overall communication and outreach and tailor some communications by district**
- **Increase home ownership opportunities and the ratio of ownership to rental housing**
- **Improve permitting and development process for greater efficiency**
- **Address homelessness through partnerships with other agencies**
- **Interest in rent stabilization**
- **Enhance public safety through short- and long-term solutions to crime involving youth**
- **Maintain and improve infrastructure**
- **Provide and maintain basic City services that impact quality of life (e.g., cleanliness)**

Organization of the Table:

- The priorities noted by Councilmembers have been placed into the categories of the City's adopted Strategic Plan. All categories within the Strategic Plan were cited as important priorities by two or more members of Council.
- Bullet points below each topic in the first column are explanatory notes provided by Councilmembers.
- The City Manager's notes provided in the second column provide information for each of the categories to aid in discussions at the retreat.

Strategic Plan Category and Councilmember Notes Regarding Their Priorities	City Manager Notes and Plans for FY 2023-24
<p>1. Balanced Budget and Economic Development</p> <ul style="list-style-type: none"> • Address future deficit and maintain a balanced budget • Future deficit projected; need to diversify revenue • Understand the budget process (one-time vs ongoing expenses) • Understanding levels of service we can provide based on financial resources; use of funding for core city services • Potential new development by Plaza Bonita • Increase property tax through home sales; increase the percentage of for-sale housing 	<ul style="list-style-type: none"> • Stay focused on revenue generation for general fund • CarMax/Cannabis should be completed this year with revenue the following year • Other initiative(s) such as Balanced Plan/Downtown revitalization, parcel tax or other revenue measure will take more time • Focus on staffing levels for existing core service and stay competitive with meaningful and sustainable wage increases for our workers • Recognize that tax-exempt affordable housing projects do not create tax revenue but expand service demands; need to find a balance through policies, plans, programs, and projects that maximize resources for delivering services • Explore alternate funding sources through partnerships and grants • Consider and analyze revenue measures for next two elections
<p>2. Communication and Outreach</p> <ul style="list-style-type: none"> • Improve overall communication and outreach and tailor some communications by district • Increase the level of engagement and connection to community • Connecting people in the community to local government; connect with our constituents post-COVID • How we communicate and relay information to residents and businesses • Tailor community outreach for feedback by district 	<ul style="list-style-type: none"> • Establish balance between staff and councilmember outreach • Recognize the resources and be realistic about staff capabilities • Utilize boards, commissions and committees; regional assignments, and staff liaisons • Determine best practices for restarting Neighborhood Councils or other engagement strategies (District Councils?); consider staffing and PIO role • Utilize analysts in each functional area to collaborate on communication materials provided to the public; establish staff working group • Develop quarterly management report for City Council that includes financial data, service requests, calls for services, and major priorities
<p>3. Health, Environment, and Sustainability</p> <ul style="list-style-type: none"> • Continuation of existing projects 	<ul style="list-style-type: none"> • We are hiring a Health/Environmental Justice Planner that will provide staff support for a potential Health and Environmental Justice (HEJ) Committee. • The HEJ committee could guide policies and priorities such as amortization of non-conforming uses that are unhealthy • San Diego Community Power (SDCP) will be rolled out to SDG&E customers and we can work on other energy initiatives through them.

<p>4. Housing and Community Development</p> <ul style="list-style-type: none"> • Increase home ownership opportunities and the ratio of ownership to rental housing (build more townhomes, potential to use City property for home ownership development, incentives for developers) • Improve permitting and development process for greater efficiency • Address homelessness through partnerships with other agencies • Interest in rent stabilization 	<ul style="list-style-type: none"> • Will finalize our Focused General Plan Update (FGPU) in 2023 where we update housing element and related policies. • Implemented rent stabilization on mobile home parks in 2022 and can continue to address specific problems in the community • Overall rent stabilization measure failed at the ballot box in 2020. State and region continue to expand renter protections and we need to keep up with best practices. • Need to clarify our role and influence regarding homelessness on regional, state and federal initiatives and maximize outcomes for National City
<p>5. Parks, Recreation and Library</p> <ul style="list-style-type: none"> • Provide these important city services 	<ul style="list-style-type: none"> • More specifics would be useful (e.g., defining desired programs for after school programming or youth development) • Recognize what school and other non-governmental organizations (NGOs) are already providing • Finish plans and build park improvements at all three parks • Develop a vision for a “youth development center” at Kimball Park that incorporates the rebuild of the Kimball Rec Center. • Strengthen partnerships with local schools
<p>6. Public Safety</p> <ul style="list-style-type: none"> • Enhance public safety through short- and long-term solutions to crime involving youth 	<ul style="list-style-type: none"> • Center for Public Safety Management (CPSM) reports have been presented to City Council and will guide priorities • Recruitment pipelines/programs (youth development)
<p>7. Transportation Choices and Infrastructure</p> <ul style="list-style-type: none"> • Maintain and improve infrastructure for the enjoyment of community; need sufficient funding • Provide and maintain basic city services that impact quality of life (i.e., trash cans, lighting, roads, parks) 	<p>Consider infrastructure through the separate components we maintain:</p> <ul style="list-style-type: none"> • Streets/Pavement: update PCI and prioritize resources accordingly. • Address street lights and best practices for signals and traffic control • Sewer/Wastewater: Implement master plan and ongoing maintenance • Storm water: Identify funding sources and prioritize projects • Parks: Finalize funded projects and continue assessing needs

Footnote from Chief Tellez:

The Police Department continues to prioritize our engagement with community youth. In California, several changes have occurred that have reduced penalties for youth and/or decriminalized crimes normally committed by youth. While we continue to enforce the law by arresting those that commit crimes, it is essential that as laws change, we continue to change and adapt as well. The Police Department has taken the following proactive steps to engage youth and reduce youth crime:

1. Increased the number of School Resource Officers (SRO) in the elementary and secondary schools, from 2 to 3 officers.
2. The SROs are providing curriculum instruction at the elementary schools regarding bullying, general safety and cyber bullying. The SRO presence at the school provides a positive law enforcement role model. Their presence at the school is also intended to deter crime.
3. Prostitution has once again become a problem in our city due to a recent change in the law that decriminalized solicitation for prostitution. Unfortunately, young people are forced to work in this industry against their will. In order to identify victims, the department works in collaboration with the county Human Trafficking Task Force (HTTF) to identify victims and arrest those that prey on them.
4. The police department has a long-standing working partnership with South Bay Community Services (SBCS) to provide counseling and diversion services to youth that commit crimes. Our diversion program identifies youth with minor criminal violations that can benefit from counseling and community services versus custody. SBCS provides wraparound services to youth and their families to address the problem holistically with the goal of steering youth from committing additional crimes.
5. The department has established partnerships with community youth centers that service At Risk Youth and their families. Officers not only give of their time to work with youth as volunteers, but officers also frequently conducted presentations regarding gang awareness, cyber safety, and law enforcement careers. The presence of officers in these youth centers not only provides a positive role model but also provides engagement opportunities to build meaningful relationships with youth in our community.

NATIONAL CITY POLICE DEPARTMENT

MEMORANDUM

DATE: March 6, 2023

TO: Brad Raulston, City Manager

FROM: Jose Tellez, Chief of Police

SUBJECT: Executive Summary - Center for Public Safety Management (CPSM)
Recommended Additional Staffing for Police Department

In 2021, the Center of Public Safety Management, LLC (CPSM) was contracted by the City to conduct the study. The focus of CPSM was to analyze all aspects of the Police Department's operations particularly identifying the appropriate staffing levels given the workload, community demographics, and crime levels. Another aspect evaluated by CPSM is the department's organizational structure, specifically the effectiveness and efficiency of all divisions and units.

To ensure the analysis conducted by CPSM was complete, representatives were provided access to calls for service and crime data, policies and procedures, unit operational manuals, statistical data and regarding administrative investigations, and city and department demographic data. CPSM representatives also conducted in-depth interviews with sworn and professional staff supervisors and team members to better understand department operations. In February 2022, two representatives from CPSM conducted an onsite visit and held additional meetings with staff. Subsequently, the final report (Appendix A) from CPSM generated several recommendations that included the addition of 15 positions to the police department's current staffing levels. The additional positions recommended are:

- Police Officer – 5 (FTE)
- Community Service Officer – 4 (FTE)
- Police Dispatcher – 2 (FTE)
- Senior Police Dispatcher – 2 (FTE)
- Records Clerk – 1 (FTE)
- Civilian Police Investigator – 1 (FTE)

If approved, the above recommendation will continue to support the department's succession plan by creating supervisory and entry level positions for professional staff members. Entry level positions such as Community Service Officer, Records Clerk, and Dispatcher are essential to creating an avenue for community members that have an

interest in law enforcement to join our department. Also, the addition of police officers expand the department's overall capacity to maintain pace with city growth and the increasing calls for service. Below is the recommended timeline for adding the above staff.

Note: positions are listed by priority

YEAR ONE

- 1 – Police Officer
- 2 – Dispatchers
- 1 – Records Clerk
- 1 – Community Service Officer

YEAR TWO

- 1 – Police Officer
- 1 – Senior Police Dispatcher
- 1 – Community Service Officer
- 1 – Civilian Police Investigator

YEAR THREE

- 1 – Police Officer
- 1 – Senior Police Dispatcher
- 1 – Community Service Officer

YEAR FOUR

- 1 – Police Officer
- 1 – Community Service Officer

YEAR FIVE

- 1 – Police Officer

TOTAL AFTER YEAR FIVE (# Recommended by CPSM = 15)

- ❖ **93 Police Officers (5)**
- ❖ **12 Police Dispatchers (2)**
- ❖ **4 Senior Police Dispatchers (2)**
- ❖ **6 Community Service Officers (4)**
- ❖ **6 Records Clerks (1)**
- ❖ **2 Civilian Police Investigators (1)**

While the level of attrition in law enforcement remains high, the department continues to be proactive and mitigate anticipated challenges of recruitment, retention, and loss of experience and institutional knowledge. In closing, the CPSM analysis is invaluable as it will be used by the department as a future baseline for continued improvement and incremental growth of staffing levels.

POLICE OPERATIONS AND DATA ANALYSIS REPORT

NATIONAL CITY, CALIFORNIA

FINAL



POLICE OPERATIONS

CPSM[®]

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ICMA

Exclusive Provider of Public Safety Technical Services for
International City/County Management Association

THE ASSOCIATION & THE COMPANY

The International City/County Management Association is a 103-year old, nonprofit professional association of local government administrators and managers, with approximately 13,000 members located in 32 countries.

Since its inception in 1914, ICMA has been dedicated to assisting local governments and their managers in providing services to its citizens in an efficient and effective manner. ICMA advances the knowledge of local government best practices with its website (www.icma.org), publications, research, professional development, and membership. The ICMA Center for Public Safety Management (ICMA/CPSM) was launched by ICMA to provide support to local governments in the areas of police, fire, and emergency medical services.

ICMA also represents local governments at the federal level and has been involved in numerous projects with the Department of Justice and the Department of Homeland Security.

In 2014, as part of a restructuring at ICMA, the Center for Public Safety Management (CPSM) was spun out as a separate company. It is now the exclusive provider of public safety technical assistance for ICMA. CPSM provides training and research for the Association's members and represents ICMA in its dealings with the federal government and other public safety professional associations such as CALEA, PERF, IACP, IFCA, IPMA-HR, DOJ, BJA, COPS, NFPA, and others.

The Center for Public Safety Management, LLC, maintains the same team of individuals performing the same level of service as when it was a component of ICMA. CPSM's local government technical assistance experience includes workload and deployment analysis using our unique methodology and subject matter experts to examine department organizational structure and culture, identify workload and staffing needs, and align department operations with industry best practices. We have conducted over 341 such studies in 42 states and provinces and 246 communities ranging in population from 8,000 (Boone, Iowa) to 800,000 (Indianapolis, Ind.).

Thomas Wiczorek is the Director of the Center for Public Safety Management and Leonard Matarese serves as the Managing Partner for Research and Project Development. Dr. Dov Chelst is the Director of Quantitative Analysis.

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SECTION 1. EXECUTIVE SUMMARY

The Center for Public Safety Management, LLC (CPSM) was commissioned to review the operations of the National City Police Department. While our analysis covered all aspects of the department's operations, particular areas of focus of this study were identifying appropriate staffing of the department given the workload, community demographics, and crime levels; the effectiveness of the organizational structure; and efficiency and effectiveness of division/unit processes.

We analyzed the department workload using operations research methodology and compared that workload to staffing and deployment levels. We reviewed other performance indicators that enabled us to understand the implications of service demand on current staffing. Our study involved data collection, interviews with key operational and administrative personnel, focus groups with line-level department personnel, on-site observations of the job environment, data analysis, comparative analysis, and the development of alternatives and recommendations.

Based upon CPSM's detailed assessment of the National City Police Department, it is our conclusion that the department, overall, provides quality law enforcement services. The staff is professional and dedicated to the mission of the department. Throughout this report, we will strive to allow the reader to take a look inside the department to understand its strengths and its challenges. The recommendations made in this report offer an opportunity for the department's strengths to become stronger and the challenges to become less challenging. We sincerely hope that all parties utilize the information and recommendations contained herein in a constructive manner to make a fine law enforcement agency even better.

As part of this Executive Summary, below we list general observations that we believe identify some of the more significant issues facing the department. Additionally, in this summary we also include a master list of recommendations for consideration; we believe these recommendations will enhance organizational effectiveness. Some of these recommendations involve the creation of new job classifications. Others involve the reassignment/repurposing of job duties to other sections or units. Oftentimes, the recommendations we make require a substantial financial commitment on the part of a jurisdiction. In the case of the National City Police Department, many recommendations can be accomplished by realignment of workload and/or reclassification of job descriptions. It is important to note that in this report we will examine specific sections and units of the department and will offer a detailed discussion of our observations and recommendations for each.

The list of recommendations is extensive. Should the City of National City choose to implement any or all recommendations, it must be recognized that this process should be approached as a long-term endeavor, since implementation of some recommendations could require a year, two years, or more. The recommendations are intended to form the basis of a long-term improvement plan for the city and department. It is important that we emphasize that this list of recommendations, though lengthy, is common in our operational assessments of agencies around the country. The number of recommendations should in no way be interpreted as an indictment of what we consider to be a fine department. As well, having new leadership in the department is conducive to creating an environment in which constructive change can thrive.

GENERAL OBSERVATIONS

- The department's employees and command staff are dedicated, committed, and enjoy working as a team to provide police service to the community. This was clearly evident to us while speaking with employees individually and when speaking with them during focus groups. There is a strong sense of caring for fellow employees and a caring for the community that is rarely seen in many police departments.
- The Chief of Police appears to be well-respected and well-liked by members of the department. He also appears to be well managing the department during difficult times of vacancies and COVID-related issues.
- The police facility is almost 20 years old; however, it is very clean and still functional. The department is in the process of rehabilitating many of the areas inside the building. For example, the department just completed outfitting a new gym for employees which rivals most small commercial gyms, recently completed an overhaul of the employees' locker rooms with new spacious lockers and remodeled the communications center.
- Although staffing issues and COVID-related issues have plagued the department recently, morale appears to have remained high. Employees consider fellow employees to be family and they seem to really enjoy working together. This kind of bond and caring for fellow employees is not seen in all police departments.
- The communications unit is struggling with staffing issues; this is causing stress on the unit's operators who are having to work forced overtime to meet minimum staffing needs. Due to those vacancies and continually working at minimum staffing levels, dispatchers are forced to eat meals at their dispatch consoles and are unable to take breaks away from the communications center.
- The department provides excellent equipment for officers to do their jobs. In fact, one employee said, *"our equipment is phenomenal."*
- Many years ago, the department created the rank of corporal. That rank, although thought to be a good idea when created, has manifested itself into a roadblock for advancement and reduced opportunities for non-corporal officers to transfer to the Investigations Division.
- Although National City is already a built-out city with virtually no vacant land for new development, developers are demolishing older areas and constructing large residential complexes in place of single-family residences. This gentrification will increase the city's population and possibly alter some demographics. The department should be alert to any trends.
- The department is currently experiencing vacancies primarily with sworn police officers; however, the chief believes that the issue will be rectified by mid-2022.
- The department is handling many of its PRA requests by dividing them up within a committee instead of using a dedicated PRA Unit.
- The recommendations made in this report are based upon information received at the time of the site visit and the systems in place at that time. It was learned that some of the recommendations made by the assessment team regarding specific divisions are in some phase of being assessed or explored by the department or the department is already moving ahead on a recommendation. CPSM recommends the department continue moving forward with completion of the projects that coincide with this report's recommendations.

- In virtually all police studies conducted by CPSM, lack of communication is cited as an organizational impediment. That sentiment was expressed in National City as well. In some cases, the concern raised is justifiable, and in other cases, those who express the concern have subjected themselves to selective awareness. In any event, we suggest open, constructive communication up and down the line is vital to any organization.

As noted previously, a master list of recommendations follows; each is covered in detail throughout the report. These recommendations are offered to enhance the operation of the National City Police Department. The recommendations are aimed at ensuring that law enforcement resources are optimally deployed, operations are streamlined for efficiency, and services provided are cost-effective, all while maintaining a high level of service to the citizens of the City of National City.

CPSM staff would like to thank Chief of Police Jose Tellez and the entire staff of the National City Police Department for their gracious cooperation and assistance during this study.

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RECOMMENDATIONS

Administrative

1. Continue to develop and complete the strategic plan, which should include a succession plan. (See p. 19.)
2. Improve internal communications, both top to bottom, and bottom to top, to ensure members of the organization are aware of the department's work plan, and that they feel valued and considered. (See p. 20.)

Investigations

Core Investigations

3. CPSM recommends the addition of one civilian investigator to handle digital forensic evidence and property crimes cases when available. (See p. 22.)
4. Based on the number of Part I Crimes in National City, the number of budgeted detectives, and the high number of child sex crimes cases, it is highly recommended that at least one sworn detective be added to Investigations to assist in handling child sex crimes. (See p. 22.)
5. CPSM recommends a comprehensive review, reorganization, and modernization of how cases are reviewed, assigned, and managed. (See p. 23.)
6. CPSM recommends the department research other agency case management protocols and establish a priority system and criteria for guiding the working and closing of cases. (See p. 23.)
7. CPSM recommends filling the vacant officer position in the Gang Unit. (See p. 24.)
8. The Gang Enforcement Team should develop a system for tracking its productivity and how officers spend their time related to gang issues and non-gang issues. (See p. 24.)
9. CPSM recommends the department review and evaluate the need for each task force officer position and determine the actual need versus the cost and demand for staffing in patrol. (See p. 24.)

Property/Evidence Unit

10. CPSM recommends changing the division the Property and Evidence Unit reports to from Investigations to Support Services. (See p. 25.)
11. Evaluate the feasibility of adding a dedicated security camera to the entrance of the narcotics room. (See p. 25.)
12. Install an electronic temperature monitoring system on DNA cold storage equipment to avoid accidental losses of DNA evidence. (See p. 26.)
13. Working with the technology staff in the city and private vendors (if necessary) the department should find a solution to the bar code scanning issue and fix it as soon as practical. (See p. 27.)
14. CPSM recommends that NCPD hire a technology consultant to determine if the planned new RMS system will meet the needs of the Property and Evidence Unit or if a stand-alone property and evidence management system would be more appropriate. (See p. 27.)

15. CPSM recommends the department develop a formal plan to complete the digitization of all property and evidence records with progress benchmarks outlined and prioritized. (N/A)
16. It is recommended that the city prioritize a renewed effort to find a permanent solution to the environmental issues in the Property Room. (See pp. 27-28.)
17. CPSM recommends the department formulate a plan of action to increase the rate at which the volume of property purged exceeds the volume brought in annually. (See p. 28.)

Crisis Negotiation Team

18. Increase CNT officer training to 40 hours annually. (See p. 29.)
19. Track each CNT officer's training and document into an annual evaluation process for each team member. (See p. 29.)

Operations Division

20. Ensure the new positions hired by NCPD are assigned to patrol operations. (See pp. 31-39.)
21. CPSM recommends that National City update its alarm program to "best practices through a model ordinance." (See p. 41.)
22. Create a CFS working group to explore potential ways of eliminating workload demands and non-emergency CFS from patrol workload. (See p. 42.)
23. Explore implementation of a web-based reporting system for nonserious crime reports. (See p. 44.)
24. Consider the implementation of a 12-hour shift schedule for patrol. (See pp. 44-45.)

Traffic Unit

25. CPSM recommends filling the vacant traffic officer position when possible. (See p. 47)
26. CPSM recommends that the Traffic Unit's hours be modified to 8:00 a.m. to 6:00 p.m., which would enable the traffic officers to work traffic-related issues during the busiest traffic hours of the day. (See p. 47.)
27. It is recommended the sergeant delegate more of the administrative responsibilities he is now handling to the administrative secretary in the unit to free up his time. (See p. 47.)
28. It is recommended that all officers assigned to traffic, at a minimum, attend a POST-approved Basic and Advanced Accident Investigation class. (See p. 47.)
29. Since traffic officers do not respond to patrol-related calls to assist patrol, it is recommended that when they are working the traffic officers be assigned to all traffic accident calls for service. (See p. 48.)
30. CPSM would recommend that NCPD cease responding to non-injury traffic accident calls for service unless there are some identified police-related issues involved. (See p. 48.)
31. NCPD should review traffic accident data for locations where a large number of traffic accidents are occurring and after identifying primary collision factors, conduct directed enforcement to reduce the number of accidents at those locations. (See pp. 48-49.)
32. Employ the Three E's of traffic safety throughout the department. (See p. 49.)
33. Consideration should be given to altering the Traffic Unit's approach to responding to parking calls for service as well as the issuance of parking citations in lieu of issuing a moving violation citation. (See p. 50.)

34. The Traffic Unit must undergo a paradigm shift away from its focus of receiving the OTS grant to one of reducing the number of traffic accidents in the city. (See pp. 50-51.)

Community Services

35. CPSM recommends the vacant HOT position be filled as soon as practicable. (See p. 53.)
36. It is critical that the city encourage and work with the county to replace the two PERT positions that had been assigned to NCPD. (See p. 53.)
37. CPSM recommends filling the soon-to-be-vacant SRO position as soon as practical. (See p. 53.)
38. It is recommended that the department have a discussion with the school district and the community to determine the support for having the SROs in the schools. (See p. 54.)
39. The department should consider providing the volunteer application on its website in Spanish. (See p. 54.)
40. CPSM recommends the department emphasize recruitment for that segment of the community who would qualify for the Senior Volunteer Program. (See p. 54.)
41. The department needs to update its policy which still refers to the Cadet Program as the Explorer Program. (See p. 55.)
42. CPSM recommends the department make a concerted effort to bring new cadets into the department's Cadet Program. (See pp. 55-56.)
43. The department should consider offering a Community Police Academy at least twice a year to residents and business owners in the city. (See p. 56.)
44. Assess whether it is viable to contract out the city's animal control activities to San Diego County. (See pp. 56-57.)
45. If the opportunity arises to increase the department's complement of full-time employees, consideration should be given to including several more CSO positions. (See p. 56.)

SWAT

46. Provide an organizational commitment from the Police Chief that SWAT training is essential and mandatory. (See p. 58.)
47. Explore partnering with other agencies to create a regional SWAT Team to share expenses, liability, and workload. (See p. 58.)
48. Devise a model that meets the needs of NCPD in order to increase the number of training hours for SWAT members to 192 hours per year. (See p. 58.)
49. Develop a tracking system for SWAT training; include the hours per officer per year in an annual evaluation for each SWAT team member. (See p. 59.)
50. Provide NTOA or CATOA membership for each operator on the SWAT team to provide access career development training, education classes, and materials. (See p. 59.)
51. The department should invest in two new sniper rifles and associated equipment to standardize all five sniper platforms. (See p. 59.)

Canine Unit

52. Use a cost-benefit approach to evaluate the need for three canine teams versus two canine teams. (See p. 60.)

53. Send the sergeant and lieutenant assigned to the Canine Unit to a recognized canine manager's course. (See p. 60.)
54. Change department policy to require the Canine Coordinator or the lieutenant to respond to all situations where a canine apprehends and injures a suspect. (See p. 60.)
55. Create a Canine Unit Manual or set of Standard Operating Procedures to have in place more detailed canine standards and handler expectations. (See p. 60.)

Operations Support

Facility

56. CPSM recommends the department continue to move forward with any needed remodeling and renovations to improve the facility. (See p. 61.)

Fleet

57. As standard practice, replace patrol vehicles at five years or 100,000 miles. (See p. 63.)
58. Examine the feasibility and potential cost savings of purchasing lease return vehicles at auctions for detective, undercover, or command vehicles. (See p. 63.)
59. It is recommended that the department assess each year the practicality of leasing its patrol vehicles. (See p. 63)
60. If the department implements a 12-hour work schedule, it is recommended patrol vehicles be assigned according to night shift or day shift so that there is some consistency with vehicle mileage. (See p. 63.)

Administrative Division

Internal Affairs

61. As there is no administrative assistance in the I/A unit, it is recommended the department create an administrative assistant position to assist with CPRA requests as well as to assist with other administrative work in the unit. (See p. 65.)
62. The city should consider having a tenured command level person with experience in investigating personnel misconduct also review the investigations and act as a liaison with the Complaint Review Subcommittee (CRS). (See p. 66.)
63. The department complaint form should be prominently displayed on the department's website "home page" and be interactive so a complaint can be submitted online. (See p. 66.)
64. Based on community demographics and identified need, NCPD should provide the complaint form in Spanish. (See p. 66.)
65. It is recommended that the department purchase the BlueTeam module for the IAPro system. (See pp. 66-67.)
66. It is recommended the department strive to complete misconduct investigations in 45 calendar days and service complaint investigations in 30 days, if possible. (See pp. 68-69.)
67. When the department is faced with an employee's discipline that rises to anything that results in monetary loss, Education Based Discipline (EBD) should be considered. (See p. 69.)

68. CPSM recommends the department consider creating a matrix that reflects the rules and regulations governing discipline specific to the department and consider its use. (See pp. 69-70.)
69. CPSM recommends the department develop a standardized early warning system complete with thresholds that trigger an EIP. (See pp. 71-72.)

Use of Force

70. CPSM recommends that each use of force incident be reviewed by a use of force instructor for trends that may indicate training needs, equipment upgrades, and/or policy modification. (See p. 74.)
71. It is recommended a monthly, instead of an annual, report be developed to provide timely use of force analytic information for command staff review. (See p. 74.)
72. The Duty to Intercede policy (300.2.1) should include specific directions regarding what an officer must do after interceding in a use of force incident. (See pp. 74-75.)
73. It is recommended that the department include a de-escalation policy in its Use of Force policy. (See p. 75.)
74. CPSM recommends that each officer and witnessing officers to incidents involving a death should be required to see a psychological professional soon after the incident occurs. (See p. 75.)

Personnel and Recruitment

75. CPSM recommends that all hiring backgrounds for sworn personnel positions be contracted out to a private investigation company specializing in hiring background investigations. (See pp. 77-78.)
76. Absent a switch to a private investigation company, it is recommended the department consider purchasing a background investigation software system designed to reduce the amount of time it takes to complete backgrounds. (See p. 78.)
77. The department should strive to recruit and hire for diversity for sworn positions. (See p. 78.)
78. The department again should consider developing a recruitment team made up of officers who represent the demographic profile of the community. (See pp. 78-79.)
79. The recruitment effort should be focus more of its attention upon websites such as Indeed, LinkedIn, and the like to reach a younger demographic. (See pp. 78-79.)
80. In order to remain competitive in the lateral police officer market, CPSM recommends that National City consider offering a hiring bonus to attract lateral officers. (See p. 79.)

FTO

81. CPSM recommends appointing a patrol sergeant, as a collateral duty, to handle the operational aspects of observing the trainees and FTOs and being available to handle situations or problems that arise in the field. (See pp. 80-81.)
82. It is recommended that the FTO coordinator attend the annual National Association of Field Officers conference. (See p. 81.)
83. CPSM recommends that meetings be conducted quarterly to discuss the progress of trainees, discuss problems FTOs may be having with trainees, and provide additional training to the FTOs. (See pp. 83.)

Training

84. The city and department should expedite the environmental remediation of the department's indoor firearms range to save the rental fees for off-site ranges and to alleviate the need to take staff off the street to travel to the off-site ranges. (See pp. 83-84.)

Support Services Division

Communications

85. The city should consider combining police and fire dispatch centers to avoid duplication of work, save costs, and provide better coordination on major incidents. (See p. 85.)
86. It is recommended that lines from city hall be transferred elsewhere in the city until such time that dispatch is fully staffed. (See p. 85.)
87. The department should determine if its current phone system can be upgraded to allow callers to identify the officer whom they want to leave a message for, and then be transferred to an officer's voicemail without having to speak to a dispatcher. (See pp. 85-86.)
88. As the Communication Center's policies have not been reviewed or revised since 2018, it is recommended that NCPD begin a review and revision of these policies as expeditiously as possible. (See p. 86.)
89. The vacant dispatcher positions should be filled as quickly as possible. (See p. 87.)
90. CPSM recommends reclassifying two of the dispatch positions to senior dispatcher in order to have direct supervision on the night shift. (See pp. 87-88.)
91. CPSM would recommend the department build a cadre of part-time retired dispatchers to fill shifts when needed. (See p. 88.)
92. In order to fill the midwatch shift, which is necessary based on call load, CPSM recommends an additional two dispatcher positions be created for a total of 12 dispatcher positions. (See pp. 88-89.)
93. CPSM recommends sending at least several additional dispatchers to tactical dispatcher training once the unit is fully staffed. (See p. 95.)
94. CPSM recommends that the quality assurance monitoring policy be updated and included in the department's policy and procedure manual. (See p. 95.)
95. CPSM recommends that all dispatchers and call takers be required once a year to meet with a mental health professional for debriefing. (See pp. 95-96.)

Records

96. CPSM recommends an internal review of the workload and schedule of the Records Unit to determine if the schedule can be modified to allow for the unit to be open and accessible to the public on Fridays. (See p. 97.)
97. CPSM recommends an internal review of the daily patrol vehicle inspection process, form, and routing of the form. The inspection form, if necessary, should be completed electronically, and consideration should be given to not involving Records in this process. (See pp. 97-98.)
98. CPSM recommends the department and city collaborate to move the police department to the same electronic parking ticket system and vendor used by the city. Records should

not be processing and filing paper copies of thousands of parking citations while a third-party electronic process is in place elsewhere in the city. (See p. 98.)

99. The department should internally review the need for Records to be routinely running record checks and printing rap sheets for officers and detectives. With minimal training, officers and detectives can run queries and print rap sheets. (See p. 98.)
100. The department-wide workflow for police reports should be evaluated in detail for process improvement. If necessary, a professional experienced in process mapping can assist in mapping the process for improvement. The current system has inefficiencies, duplication, and lack of automation. (See p. 99.)
101. Consider adding a position to the Records Unit to handle the processing of PRAs. (See p. 100.)

Crime Analyst

102. Reassign the crime analyst's administrative duties unrelated to a crime analysis or intelligence-related function, particularly processing the PRA requests. (See p. 100.)
103. Assign a captain to research and develop an ongoing crime suppression strategy. The strategy should include working with the crime analyst to create meaningful reports and other data to develop strategies to reduce crime and traffic collisions in National City. (See p. 100.)

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SECTION 2. METHODOLOGY

Data Analysis

CPSM used numerous sources of data to support our conclusions and recommendations for the National City Police Department. Information was obtained from the FBI Uniform Crime Reporting (UCR) Program, Part I offenses, along with numerous sources of internal information. UCR Part I crimes are defined as murder, rape, robbery, aggravated assault, burglary, larceny-theft, and larceny of a motor vehicle. Internal sources included data from the computer-aided dispatch (CAD) system for information on calls for service (CFS).

All data, analysis, and recommendations, especially for patrol operations, are based upon CPSM's examination of 26,073 calls for service, which are those calls specifically handled by the department's patrol officers. The reader must understand that although CPSM examined only those calls handled by patrol officers, the department touched in some manner 67,438 calls for service. In Appendix B, we isolate those calls for service that were not included in the data examined by CPSM for patrol operations. For example, more than 7,000 calls of those 67,438 calls were not included in the data because they were handled by non-patrol officers (Detectives, SROs, Gangs, K-9). Also, there were a large number of calls not included in the data examination for various reasons, such as no units dispatched, or the call being canceled.

Unfortunately, due to an antiquated computer-aided dispatch (CAD) system that the department had at the time of the project, much of the information on those calls not included in the data examination was not captured. For example, if a call was entered into the CAD system as a call for service, but before it can be dispatched either an officer or dispatcher canceled the call for whatever reason, that data was not captured. Anecdotally, it was learned that there were many of those calls, but because of the limitations of the CAD at the time, they were not captured. However, while not included in the analysis they were in fact handled by the department in some manner.

The department is currently attempting to fill all vacant positions; however, CPSM recommends those filled positions be assigned to patrol. While those newly-filled, existing positions will fully staff that part of the department, there are other sworn positions for which additional personnel will be recommended.

Interviews

This study relied extensively on intensive interviews with personnel. On-site and in-person interviews were conducted with all division commanders regarding their operations.

Focus Groups

A focus group is an unstructured group interview in which the moderator actively encourages discussion among participants. Focus groups generally consist of eight to ten participants and are used to explore issues that are difficult to define. Group discussion permits greater exploration of topics. For the purposes of this study, focus groups were held with a representative cross-section of employees within the department.

Document Review

CPSM consultants were furnished with numerous reports and summary documents by the National City Police Department. Information on strategic plans, personnel staffing and

deployment, monthly and annual reports, operations manuals, intelligence bulletins, evaluations, training records, and performance statistics were reviewed by project team staff. Follow-up phone calls were used to clarify information as needed.

Operational/Administrative Observations

Over the course of the evaluation period, numerous observations were conducted. These included observations of general patrol; investigations; support services such as records, communications, and property and evidence; and administrative functions. CPSM representatives engaged all facets of department operations from a "participant observation" perspective.

Staffing Analysis

In virtually all CPSM studies, we are asked to identify appropriate staffing levels. That is the case in this study as well. In this report we will discuss workload, operational and safety conditions, and other factors to be considered in establishing appropriate staffing levels. Staffing recommendations are based upon our comprehensive evaluation of all relevant factors.

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SECTION 3. COMMUNITY AND DEPARTMENT OVERVIEW

COMMUNITY

The City of National City is located in the south bay region of the San Diego metropolitan area in San Diego County. It is the second-oldest city in San Diego County, having been incorporated in 1887. The population of the city based on U.S. Census estimates in 2020 is approximately 61,394 people. The city has a total land area of 7.29 square miles and a water area of 1.82 square miles. The city is bounded by the City of San Diego to the north, Bonita to the southeast, and Chula Vista to the south across the Sweetwater River. It is accessed by Interstate 5, Interstate 805, and California State Route 54.

National City operates under a Council/Manager government, with an elected mayor and a four-member city council. The city's climate is characterized by warm, dry summers and mild winters, with most of the annual precipitation falling between December and March.

Demographics

The City of National city is a heterogeneous community. According to the 2020 Census the city's demographic makeup is 11.6 percent White, 63.5 percent Hispanic, 4.8 percent African-American/Black, 0.5 percent Native American, 18.5 percent Asian, and 3.0 percent two or more races. The city is home to an estimated 25,000 immigrants and refugees, or two out of every five residents.

The owner-occupied housing rate in the city is 33.5 percent; 66.5 percent of the residents live in rental housing. The median household income is \$47,119 for the city, compared to \$80,447 for the State of California. Persons living in poverty make up 18.3 percent of the city's population, compared to 15.1 percent for the State of California. This comparison shows that the city poverty rate is slightly higher than the state rate, while the household median income is considerably lower. The median home price in the City of National City is \$473,207, compared to \$717,000 for the State of California.

LAW ENFORCEMENT SERVICES

The National City Police Department provides a full range of law enforcement services, excluding custody operations.

Uniform Crime Report/Crime Trends

While communities differ from one another in population, demographics, geographical landscape, and social-economic distinctions, comparisons to other jurisdictions can be helpful in illustrating how crime rates in the City of National City measure up against those of other local California agencies as well as the State of California and the nation overall.

The FBI's Uniform Crime Reporting (UCR) Program assembles data on crime from police departments across the United States; the reports are utilized to measure the extent, fluctuation, and distribution of crime. For reporting purposes, criminal offenses are divided into two

categories: Part 1 offenses and Part 2 offenses. For Part 1 offenses, representing the most serious crimes, the UCR index is split into two categories: violent crimes and property crimes. Violent crimes include murder, rape, robbery, and aggravated assault. Property crimes include burglary, larceny, and motor vehicle theft. Crime rates are expressed (indexed) as the number of incidents per 100,000 population to allow for comparison.

Data acquired by CPSM from the FBI for use in this report is for 2020, which is the most recent annual information available. As indicated in the following table, in 2020 the National City Police Department reported a UCR Part I violent crime rate of 569 (indexed per 100,000) and a property crime rate of 1,880 (indexed per 100,000).

In comparing National City's data with other California cities, one can see that National City reports a violent crime rate that is higher than both the state and national rates, and a property crime rate that is higher than most of the comparable cities in the table but lower than the state and national rates. National City has a higher overall crime rate compared to the national rate but slightly lower than the overall California rate.

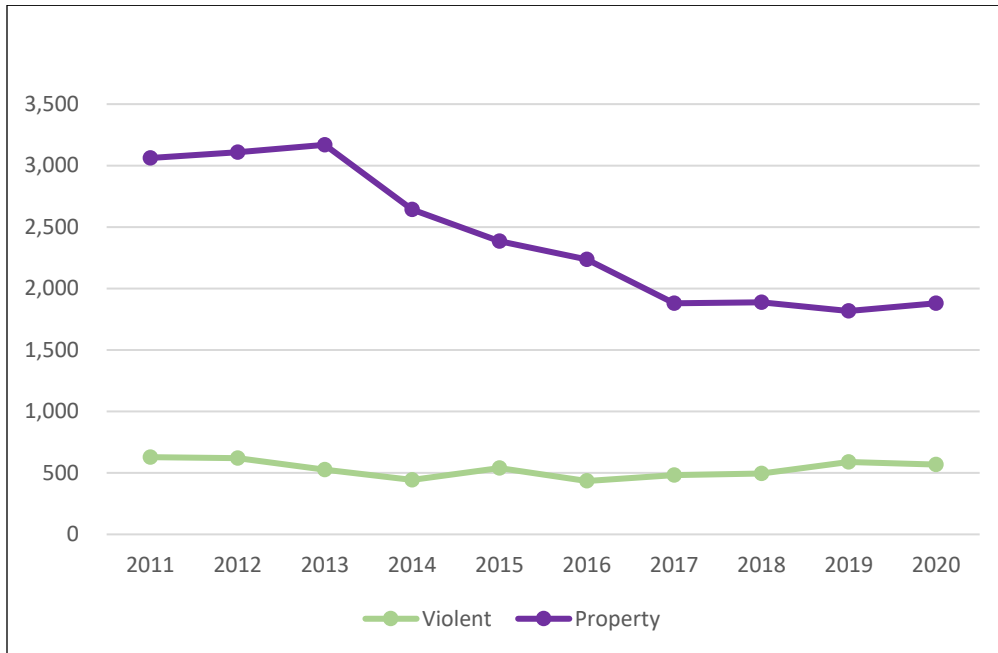
TABLE 3-1: Reported Crime Rates in 2020, by City

Municipality	State	Population	Crime Rates		
			Violent	Property	Total
Carlsbad	California	116,516	192	1,580	1,772
Chula Vista	California	278,027	329	1,171	1,501
Coronado	California	23,750	72	1,124	1,196
El Cajon	California	103,035	497	1,792	2,289
Escondido	California	152,446	373	1,769	2,142
La Mesa	California	59,488	304	1,742	2,046
Oceanside	California	176,616	406	1,801	2,206
San Diego	California	1,437,608	369	1,692	2,061
San Diego County Sheriff	California	908,834	158	428	586
Richmond	California	111,367	964	3,303	4,268
National City	California	61,710	569	1,880	2,449
California		39,538,223	442	2,139	2,581
National		331,449,281	399	1,958	2,357

Note: Indexed per 100,000 population. Source: FBI Uniform Crime Report.

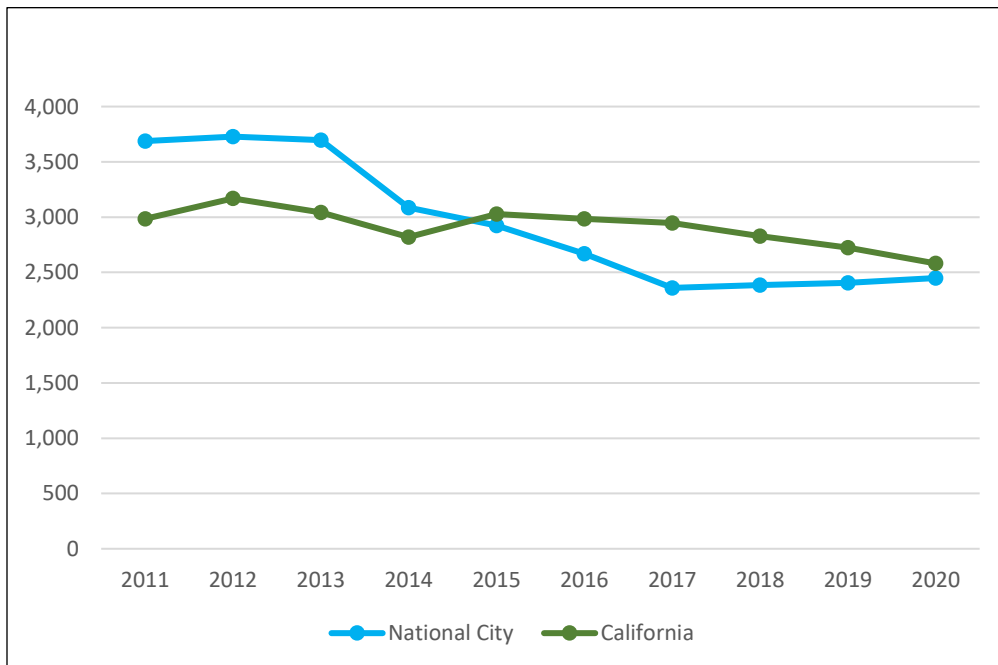
The following figure illustrates the trend in Part 1 crime in National City over the past ten years. It shows violent crime has remained mostly constant from 2010 to 2019. The property crime rate started seeing a decline in 2014 and reached its lowest point in 2019.

FIGURE 3-1 : Reported National City Violent and Property Crime Rates, by Year



The following figure shows that since 2011 the State of California has seen a consistent drop in crime rates. The City of National City took a more downward trajectory than the state, but the city's overall crime rate in 2020 is about equal to the state's rate.

FIGURE 3-2: Reported National City and State Crime Rates, by Year



The following table compares National City's crime rates to both the state and national rates year by year for the period 2011 through 2020. Again, this data is indexed per 100,000 population. It is provided for illustration purposes only.

TABLE 3-2: Reported National City, California, and National Crime Rates, by Year

Year	National City				California				National			
	Population	Violent	Property	Total	Population	Violent	Property	Total	Population	Violent	Property	Total
2011	59,271	628	3,061	3,688	37,819,249	410	2,574	2,983	317,186,963	376	2,800	3,176
2012	59,920	619	3,109	3,728	38,183,375	421	2,747	3,169	319,697,368	377	2,758	3,135
2013	59,637	527	3,169	3,696	38,498,377	394	2,646	3,041	321,947,240	362	2,627	2,989
2014	60,130	444	2,643	3,087	38,970,399	389	2,430	2,819	324,699,246	357	2,464	2,821
2015	60,768	538	2,384	2,923	39,315,550	424	2,605	3,029	327,455,769	368	2,376	2,744
2016	61,550	434	2,236	2,669	39,421,283	443	2,541	2,984	329,308,297	383	2,353	2,736
2017	61,574	481	1,879	2,360	39,536,653	449	2,497	2,946	325,719,178	383	2,362	2,745
2018	61,763	495	1,889	2,384	39,557,045	447	2,380	2,828	327,167,434	369	2,200	2,568
2019	61,791	589	1,817	2,406	39,959,095	434	2,290	2,724	328,239,523	379	2,010	2,489
2020	61,710	569	1,880	2,449	39,538,223	442	2,139	2,581	331,449,281	399	1,958	2,357

The following table compares National City's crime clearance rates to the state and national averages. These clearance rates are based on the department's reporting to the UCR. As can be seen, the department's clearance rates are consistent with those of the state and nation, except for rapes, where it is considerably lower.

At the same time, it is difficult to make an apples-to-apples comparison in the data above because of the many variables involved, such as relative resources of a jurisdiction to solve crimes.

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TABLE 3-3: Reported National City, California, and National Crime Clearance Rates

Crime	National City			California			National		
	Crimes	Clearances	Rate	Crimes	Clearances	Rate	Crimes	Clearances*	Rate
Murder Manslaughter	4	2	50%	2,202	1,296	59%	18,109	9,851	54%
Rape	19	2	11%	12,641	4,673	37%	110,095	33,689	31%
Robbery	99	40	40%	44,684	14,816	33%	209,643	60,377	29%
Aggravated Assault	229	118	52%	113,539	57,868	51%	799,678	371,051	46%
Burglary	139	17	12%	145,377	17,229	12%	898,176	125,745	14%
Larceny	760	85	11%	527,748	45,114	9%	4,004,124	604,623	15%
Vehicle Theft	261	22	8%	168,046	15,800	9%	727,045	89,427	12%

Note: *Clearances were calculated from crimes and clearance rates, as these numbers are not directly available from the FBI.

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SECTION 4. ADMINISTRATIVE

CPSM'S PERSONNEL RECOMMENDATIONS IN THIS REPORT

From the end of 2007 through mid-2009, the United States went through one of the worst recessions in its history. During the recession and in the months that followed, the U.S. labor market shed millions of jobs, and the unemployment rate peaked at 10 percent.

While the nation eventually recovered from the recession and then greatly surpassed the pre-recession employment levels and economic output, in some localities the recovery was not strong enough to offset the economic activity that was lost. For these areas, the economic situation was then compounded by the lockdowns and employment lost due to the COVID-19 pandemic.

That is the case with National City, which continues to face economic struggles, like many other cities, due to these two cataclysmic economic shocks.

CPSM fully understands that the city's current financial situation may not allow for the implementation of all the recommendations made in this report, especially regarding additional new positions. While recommended positions should be filled or created as soon as possible, CPSM urges the city to use this report's recommendations regarding additional personnel as a "road map" for the future staffing of the department.

CPSM also fully understands that the city's financial situation may not allow for the purchase of technology recommendations made here; however, it must be considered that monies spent on technology-related recommendations can and usually does result in a savings in personnel hours expended.

Recommended New Personnel Positions

- Detectives–2
- Civilian Investigator–1
- Gang Officer–1
- Traffic Officer–1
- School Resource Officer–1
- Records Clerk–1
- Senior Dispatchers–2
- Dispatchers–2

NOTE: All of CPSM's recommended police officer positions are to fill current vacancies in those units; however, since all new officer positions hired will be going to patrol to fully staff that function, these will need to be new funded positions.

STRATEGIC PLAN

Strategic planning is an organizational management activity that is used to set priorities, focus energy and resources, strengthen operations, ensure that employees and other stakeholders are working toward common goals, establish agreement around intended outcomes/results, and assess and adjust the organization's direction in response to a changing environment. It is a disciplined effort that produces fundamental decisions and actions that shape and guide what an organization is, who it serves, what it does, and why it does it, with a focus on the future. Effective strategic planning articulates not only where an organization is headed, and the actions needed to make progress, but also how it will know if it is successful.

The National City Police Department is in the process of developing a five-year strategic plan and has contracted with PMW Associates to develop a strategic plan. Unfortunately, the department was derailed in some of this effort, such as with Team Building Workshops, due to COVID restrictions. The department intends is to get back on track in 2022, COVID conditions permitting. The development of the strategic plan will involve completion of workshops with command staff, supervisors, the National City Police Officers Association (NCPOA), and the department's professional staff members.

With the Chief moving forward on the development of a strategic plan, it is clear the department understands the importance of such a plan. Therefore, the department should continue working toward completion of its five-year plan.

SUCCESSION PLANNING

As noted above, the department has contracted PMW Associates to complete a strategic plan. According to the Chief, an important component of the strategic plan will be a succession plan for the department. Undoubtedly, within the next five years the department will see the retirement of a number of its command staff, down through the rank of sergeant, along with civilian command-level personnel. It is imperative that the focus of PMW's succession plan work not be limited to ranking officers; it must also look at how the department can prepare the next generation of both command staff and first-line supervisors, both sworn and civilian.

Finally, this must be a formal process, and must be carefully developed and written by PMW Associates to ensure a usable succession plan.

MISSION STATEMENT/VISION STATEMENT

Mission Statement

In partnership with our community, the National City Police Department is committed to providing the highest level of service and public safety. We will pursue this commitment with an unwavering resolve while always respecting the rights and dignity of those we serve.

Vision Statement

We, the National City Police Department, are an organization that values our employees and the community we serve.

We are committed to working together, hand-in-hand, with the community, in a problem solving partnership, in order to fight crime and improve the quality of life for its residents, visitors and others conducting business or working in National City.

A mission and vision statement can provide a common theme around which members of the agency can base their day-to-day public interactions, tactical decision-making, and long-term strategic planning. When they are properly integrated within the organization, mission and vision statements can create a sense of unity, direction, and opportunity. Mission and vision statements also will provide the foundation for an organization's strategic planning efforts. It is incumbent upon the leadership of the agency to ensure its employees reflect the mission and vision statements of the organization in daily interactions in the community.

Strategic Goals

- Community Safety.
- Community Partnerships.
- Customer Service.
- Technology.
- On-going Professional Development of Employees.

Administrative Recommendations:

- Continue to develop and complete the strategic plan, which should include a succession plan. (Recommendation No. 1.)
- Improve internal communications, both top to bottom, and bottom to top, to ensure members of the organization are aware of the department's work plan, and that they feel valued and considered. (Recommendation No. 2.)

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SECTION 5. INVESTIGATIONS

CORE INVESTIGATIONS DIVISION

The Core Investigations Division consists of 12 employees. There are eight sworn detectives (one out on long-term injury), one civilian investigator, an administrative assistant, a sergeant, and a lieutenant. The ten line-level employees all report to the sergeant. The sergeant reports to the lieutenant, who also has other direct reports and collateral duties.

Staffing, Workload, and Clearance Rates

The detectives divide investigative work by function but often come together to work on major cases. Four detectives are assigned to crimes of violence, two are assigned to robbery, one to adult sex crimes/domestic violence, and one is assigned to child sex crimes/child neglect. The civilian investigator is assigned to a caseload handling mainly property crimes and lower-level crimes with follow-up information. She also assists all other detectives with gathering videos and doing other routine case follow-ups. The following table is a snapshot of the current open cases assigned to the detectives in National City.

TABLE 5-1: Snapshot of Current Open Cases, by Detective

Detective	Current Open Cases
DV/Adult Sex/Arson (currently out with injury)	21
Crimes of Violence	15
Crimes of Violence	69
Crimes of Violence	68
Crimes of Violence	63
Robbery	81
Robbery	153
Child Sex Crimes	78
Civilian Det. (Property)	174
Total Open Cases	722
<i>Average open cases (caseload) per detective (nine detectives): 80.2</i>	

There is not a hard-and-fast standard for an appropriate caseload for a police investigator. One murder investigation could occupy the time of several detectives for months, and on the other hand, one detective might be able to handle hundreds of theft cases in a similar period. Nonetheless, the International Association of Chiefs of Police (IACP) suggests that a detective caseload of between 120 and 180 cases per year (10 to 15 new cases per month) is manageable. Other sources indicate that departments should staff one detective for every 300 UCR Part I Index Crimes recorded each year.

The NCPD has always had ten detective positions; however, due to staffing issues the department has not been able to reach that number and currently operates with nine positions.

CPSM recommends that, based on this standard noted above, the NCPD should have a total of eleven sworn detectives, which would include filling the vacant position.

During our site visit, it was learned the department does not routinely follow up on property crime cases. The property cases assigned to the civilian investigator are typically priority cases where a victim or interested third party has called in and demanded a follow-up. The high caseload listed in the table for the civilian investigator includes many open cases requiring follow-up to search for video evidence or another type of follow-up that can be handled by a civilian instead of a sworn detective.

The landscape for detectives has changed significantly over the last five to ten years due to the explosion in mobile devices and use of social media. Criminals utilize these tools daily just like most law-abiding people in society, so smartphones often contain evidence of crimes. Today, a typical felony case may require from one to four search warrants to access a phone and social media accounts. These search warrants are time-consuming and often need expert data analysis for interpreting results. Previously, most such cases did not require a search warrant, and this type of evidence did not exist. Current prosecution standards now require this type of evidence in many cases.

The unit does not have anybody dedicated to digital evidence analysis. One of the detectives assigned to crimes of violence handles digital evidence downloads and analysis as a collateral duty. The process of obtaining and extracting the data in useable form is very technical and requires specialized software and weeks of training. This collateral duty arrangement does not provide enough time to keep up with the ever-increasing demand to analyze digital evidence in most serious crimes. CPSM recommends the addition of one civilian investigator to focus on obtaining and analyzing digital evidence.

The number of open child sex crime cases is excessive for one detective to work. Child sex crime cases require much more labor-intensive follow-up than other violent crime cases. Whenever digital evidence is seized in one of these cases, the evidence must be watched (every second of every tape, every photo, etc.) and cataloged. Interviews with children require special training, off-site facilities, advance scheduling, take extra time, and often include third parties (social workers, prosecutors, etc.). Child sex criminals are difficult to prosecute and build cases against as the witnesses against them are children. Thus, the investigations require additional evidence that is difficult to gather. The crimes are among the most heinous in society, and the offenders often repeat and victimize multiple children. CPSM recommends adding a sworn detective as soon as possible to work sex crimes, particularly child sex crimes, to ensure the cases get adequate follow-up and prosecution.

The NCPD case clearance rates can be seen in the following table. The NCPD clearance rates overall are near average compared to other California agencies. NCPD has higher or the same clearance rates compared to other California agencies in robbery, aggravated assault, burglary, and larceny. It has lower clearance rates in murder, rape, and vehicle theft. The most significant variance by percentage is in the rape category with an 11 percent clearance rate in National City and a 37 percent clearance rate overall in California.

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TABLE 5-2: Reported National City, California, and National Crime Clearance Rates

Crime	National City			California			National*		
	Crimes	Clearances	Rate	Crimes	Clearances	Rate	Crimes	Clearances	Rate
Murder Manslaughter	4	2	50%	2,202	1,296	59%	18,109	9,851	54%
Rape	19	2	11%	12,641	4,673	37%	110,095	33,689	31%
Robbery	99	40	40%	44,684	14,816	33%	209,643	60,377	29%
Aggravated Assault	229	118	52%	113,539	57,868	51%	799,678	371,051	46%
Burglary	139	17	12%	145,377	17,229	12%	898,176	125,745	14%
Larceny	760	85	11%	527,748	45,114	9%	4,004,124	604,623	15%
Vehicle Theft	261	22	8%	168,046	15,800	9%	727,045	89,427	12%

Note: *National clearance percentages were calculated from crimes and clearance rates, as these numbers are not directly available from the FBI.

The process for case assignment and case management in the NCPD is archaic and needs to be modernized.

The only supervisor in Investigations reviews every case to make assignments. This responsibility requires the sergeant to spend most of his time reading and assigning cases, many of which are not assigned because they lack follow-up leads. After the field supervisors approve reports, they are then reviewed in Records. The cases could all be assigned electronically during the Records approval process if the department had in place additional training, protocols, and software. Adding the assignment step to the Records review would take very little extra time once the proper automation steps are in place. Most current RMS systems can be configured to assign cases automatically. This recommendation also relates to the recommendation for mapping the report approval process in this report's section on the Records Unit.

The case management system also needs to be improved.

Currently, decisions on which cases to work, hold open, or close out are up to individual detectives. This process leads to inconsistent outcomes and lacks accountability. The inconsistency was evident when we searched for an explanation as to why one Crimes of Violence detective's open case numbers were so much lower than the other detectives. The answer was that the detective with lower numbers receives the same number of cases but manages his follow-ups and close-outs differently. The more we examined the issue, the more inconsistency we found for when a case gets priority, when a case gets certain types of follow-up, and when a case gets closed when no additional follow-up is possible.

Further, there is a lack of supervision over specific cases after they are assigned. Detectives are permitted to work, pend, or close cases based on individual preferences. The discretion is likely because the supervisor in the Unit spends the majority of his day reviewing all of the cases that get approved by Records, even the non-workable or no criminal cases.

CPSM recommends the department research other agency case management protocols and establish a simple and straightforward priority system and criteria for working, pending, and closing cases. It is also recommended that the protocols include at least bi-monthly meetings between the supervisor and each detective to go over all open cases in each detective's queue to ensure cases are being worked following department-established protocols.

Gang Enforcement Team

The Gang Enforcement Team or Unit currently operates with consists of three officers and one supervisor. The unit has one vacant position which should be filled to fully staff the unit with four officers and one supervisor. The unit is responsible for investigating gang-related crimes, conducting proactive gang enforcement, and gathering gang intelligence. It is estimated there are approximately 500 active gang members in National City.

There is a lack of statistical data available on the unit's activity as a whole. They have seized many guns, participated in numerous investigations, and provided ongoing intelligence on gang activity and crimes occurring in the city. The unit is the only purely proactive unit in the field, and therefore they get pulled in many directions to support other teams, such as detectives. Due to the many and varied responsibilities of the unit, it is recommended the supervisor create a system to track productivity and where officers' time is being spent. Without data, it is difficult to determine the value of the unit when balanced against staffing shortages in patrol.

Task Forces

The National City Police Department participates in the following task forces, with one officer assigned to each task force:

- Drug Enforcement Administration (DEA) Task Force.
- Federal Bureau of Investigation (FBI) Violent Crimes Task Force.
- Department of Justice (DOJ) Human Trafficking Task Force.
- County Auto Theft Task Force.
- Federal Bureau of Investigation (FBI) East County Gang Task Force.

Each task force provides some type of funding back to the department to help offset a portion of the personnel costs in exchange for the staffing. There is also some equipment provided for the officers assigned to each task force. The funding and equipment vary by task force.

Each task force operates regionally on investigations that include cases in National City and cases outside of National City. Each task force brings additional resources to National City when working on National City cases. There is also the benefit of professional development for NCPD officers, as the task force officers from National City get training and experience to bring back to National City when they rotate back into patrol.

There are benefits to NCPD participating in these task forces by dedicating its personnel. Some of those benefits are tangible and can be measured with data, and other benefits are more subtle or political but still need to be considered. There was no reliable data readily available to conduct a cost-benefit analysis of each position. Given the current strains on staffing, CPSM recommends each task force assignment be thoroughly evaluated by the Department for continued participation.

Investigations Recommendations:

- CPSM recommends the addition of one civilian investigator to handle digital forensic evidence and property crimes cases when available. (Recommendation No. 3.)
- Based on the number of Part I Crimes in National City, the number of budgeted detectives, and the high number of child sex crimes cases, it is highly recommended that at least one

sworn detective be added to Investigations to assist in handling child sex crimes. (Recommendation No. 4.)

- CPSM recommends a comprehensive review, reorganization, and modernization of how cases are reviewed, assigned, and managed. (Recommendation No. 5.)
- CPSM recommends the department research other agency case management protocols and establish a priority system and criteria for guiding the working and closing of cases. (Recommendation No. 6.)
- CPSM recommends filling the vacant officer position in the Gang Unit. (Recommendation No. 7.)
- The Gang Enforcement Team should develop a system for tracking its productivity and how officers spend their time related to gang issues and non-gang issues. (Recommendation No. 8.)
- CPSM recommends the Department review and evaluate the need for each task force officer position and determine the actual need versus the cost and demand for staffing in patrol. (Recommendation No. 9.)

PROPERTY/EVIDENCE UNIT

The Property and Evidence Unit is staffed by a full-time supervisor, one full-time property technician, two part-time property technicians, and one full-time employee who splits her duties between Property and Evidence and Crime Scene Investigations. One of the part-time positions was vacant during our site visit. The unit's supervisor reports to the Investigations lieutenant.

CPSM recommends changing the reporting structure for this unit from the Investigations lieutenant to the Support Services Manager for various reasons we observed during the site visit. Some previous data issues arose due to conflicts with the Records Unit purging processes and the Property and Evidence Unit purging process and data retention requirements. Having Records and Property and Evidence in the same division would help align priorities and avoid conflicts. The Investigations lieutenant also manages many operational functions that pull him into the field (Investigations, SWAT, Gangs, and five separate task force officers) and limit interaction between him and the Property Evidence supervisor. Further, alignment with Support Services would allow for more cross-training and employee development for the civilian employees in the department.

Facility Security

The Property and Evidence Unit is located in the basement of the building. There was an expansion of the unit into a garage area several years ago to provide additional space. During this expansion, moveable storage shelves, intake lockers, and other areas within the unit were updated. The security systems are mostly adequate with separate mechanical locks, biometric systems, and cameras in high-risk areas. The area is alarmed separately from the rest of the PD system, and keys appear to be tightly controlled by Property and Evidence staff. The general entry to the Property Room is by card reader access and every person entering must also sign in.

The overall security is excellent and meets all industry standards in all but one area; the narcotics room entrance does not have a dedicated camera monitoring it. There is a general entrance camera near the area of the narcotics room, but a camera focused on the entrance to the

room is considered a best practice. The department should evaluate the feasibility of installing a camera to cover the narcotics room entrance.

Property is stored in separate areas throughout the facility; these areas all appear to be organized and well-maintained. Some of the areas are different rooms, and some are simply areas within rooms to segregate evidence by type. The areas are arranged by the following types:

- General storage.
- Narcotics.
- Firearms.
- Money.
- Bulk property.
- Cold and frozen storage.
- Homicide.
- Bicycles.

The property room is open for the public to retrieve property Monday through Thursday from 8:00 a.m. until 4:00 p.m. Officers may obtain assistance during the same hours or utilize the intake lockers. The intake area for officers provides a clean, secure place to package, label, and store evidence for processing by property technicians. There is an eyewash station and Narcan available in case of an emergency while handling drugs and hazardous materials.

The unit has several units for cold storage of biological evidence. The units have thermometers that are checked by staff on a rotation basis. There are no electronic temperature monitors with alarms to alert staff when units malfunction. There is a backup power system for the station, and the cold storage units are supposed to be powered by the generator in case of a power outage. During the site visit, we could not determine if the backup power had been tested to ensure the cold storage units would function in the event of a power outage. Electronic temperature monitoring systems for the cold storage units should be installed to avoid any mechanical failure that could lead to the destruction of DNA evidence.

Property Tracking System

The property and evidence records are managed by an older legacy version of the department's records management system (RMS), not the current system used by the rest of the department. There was a processing error in 2004 where records were accidentally deleted by personnel in another unit. After the unintentional deletion of records, the Property Unit completed a comprehensive inventory, updated the system, and then maintained parallel hard-copy paper records. After the inventory was completed and the data had been re-entered into the system, there was another data problem in 2013 where records of property and evidence were again lost.

The employees have been entering data back into the system from the paper files when they have time for the last several years. However, there are still items remaining that are not in the electronic system and have to be located in the paper files when being pulled for court or release. To track incoming property the staff is entering the data both electronically and by hand in the paper system.

In addition to the challenge of tracking property and evidence in both a digital and manual system, the bar code system does not function properly. It is not currently possible to use the bar code scanner to read labels and enter them into the tracking system electronically. For example, let's use an example of a piece of property that is checked out or moved to another shelf. In that case, the staff has to hand enter the numbers found along the bottom of the bar code label into a computer instead of simply scanning the bar code (they have the handheld scanners, but they do not work). This process is in addition to entering the information by hand on paper in a file.

While it is understandable after the data loss that duplicate efforts are being employed, there should be a reliable electronic system to track the property and evidence with a scanning system so the paper records can be eliminated. The current system is incredibly inefficient. The department needs to put a priority on solving the tracking system and scanning issues so as to eliminate these duplicative efforts and increase the efficiency and effectiveness of the Property and Evidence Unit.

The data security issues pose several concerns. Although there is no indication of lost or missing property, the integrity of property and evidence seized by the police department is integral to the integrity of the department and is essential to maintaining public trust. A police department's ability to produce evidence, return the property to rightful owners, and be accountable for these processes is critical.

NCPD is in the process of upgrading to a new RMS system under a County agreement. This system may fix some of the challenges with data security if adequately implemented. CPSM recommends that NCPD hire a technology consultant to determine if the new system will meet the needs of the Property and Evidence Unit or if a stand-alone property and evidence management system would be more appropriate. We also recommend that NCPD hire a firm to conduct an independent property and evidence audit to ensure items being seized are being correctly handled. The last audit was in 2013, and there have been several problems with data since that time.

Physical Environment

Despite additions and updates to the property and evidence area, continuing environmental concerns should be addressed soon as possible. Over the past two years employees have complained of poor air quality. The city has been working through environmental testing problems and equipment installation to improve the air quality, but the complaints have persisted. It appears the city's Public Works Department is responsible and has conducted testing and explored various solutions. One of the solutions attempted has been the installation of air purifying equipment. However, employees complained about constant, excessive noise from the equipment; they were then provided ear protection as a solution. After repeated complaints about the noise, the Property and Evidence Unit staff were provided an office upstairs to work in, which is impractical. They continuously work with property throughout the day in the warehouse and working in a physically separate office means extra time spent going up and down the stairs.

The employees believe the air purifying equipment is too loud and that the equipment has not fixed the air quality issue. Employees have filed ongoing and even more recent formal complaints about the working environment. CPSM does not have a specific recommendation or solution, which is beyond the scope of our assessment. The city reports that it has been unable to verify a specific air quality issue. It seems both the unit employees and the city staff (including PD management) responsible for facilities have become frustrated with the problem. During the site visit we found from personal observation the noise level was loud and constant. We did not

attempt to evaluate the noise or air quality with any equipment. CPSM recommends a renewed effort to evaluate the property room work environment and implement an effective, permanent solution.

Workload and Staffing

An essential component of having a well-managed Property and Evidence Unit is maintaining a robust purge and destruction process. Without it, facilities can become messy, unorganized, and chaotic. The department currently has an excessive amount of property that could be purged but has not been. The technicians could not provide a specific number of backlogged items that needed purging.

While reliable data is not available because of the past data losses, it is evident the unit takes in more property than it releases or purges on an annual basis. The unit was expanded in 2013 after the storage areas became full and ran out of room. The unit appears to be keeping up with safekeeping and found property purging but has fallen significantly behind in evidence purging. The expanded evidence storage area is nearly full now. It will be over capacity in a few short years absent a significant effort to catch up on purging property eligible for release, destruction, or auction.

The lack of staff time to purge property could indicate a need to add staffing. In this case, it is difficult to adequately evaluate and make a recommendation in the area of staffing levels for the Property and Evidence Unit given the current circumstances (e.g., the extra work caused by an unreliable RMS). At first glance, we could reasonably assume the unit could use more staff. They are clearly behind in the purging of property and getting more and more behind every week. However, the electronic processing and storage issues have created so many inefficiencies it is challenging to determine if more staffing would be needed if these problems were resolved. If we assume a reliable evidence tracking system and bar code scanning capability were in place, the paper process could be eliminated and the hand entry of every move of every piece of evidence would be eliminated. This solution alone would free up time for purging and other duties currently going undone. Such an increase in efficiency may mitigate the need for additional staff.

It is recommended the department solve the inefficiency problems first, then evaluate staffing needs based on the unit's ability to purge property. In the meantime, it is suggested the department implement a task force approach to purging property. A group of employees could be formed from other areas, such as detectives and records. The group could be temporarily assigned for intermittent days, a week at a time, or assemble on overtime, depending upon the department's needs. After some brief training on the requirements for purging, the task force members could do the needed research and could physically pull property with final approval of items by the Property and Evidence Unit staff. This effort can be carried out on an as-needed basis until the inefficiencies are corrected. After the inefficiencies are resolved, an adequate evaluation can be done to determine if additional staffing is necessary. Without such an intervention the unit will again run out of room to store property and evidence.

Property and Evidence Unit Recommendations:

- CPSM recommends changing the division the Property and Evidence Unit reports to from Investigations to Support Services. (Recommendation No. 10.)
- Evaluate the feasibility of adding a dedicated security camera to the entrance of the narcotics room. (Recommendation No. 11.)

- Install an electronic temperature monitoring system on DNA cold storage equipment to avoid accidental losses of DNA evidence. (Recommendation No. 12.)
- Working with the technology staff in the city and private vendors (if necessary) the department should find a solution to the bar code scanning issue and fix it as soon as practical. (Recommendation No. 13.)
- CPSM recommends that NCPD hire a technology consultant to determine if the planned new RMS system will meet the needs of the Property and Evidence Unit or if a stand-alone property and evidence management system would be more appropriate. (Recommendation No. 14.)
- CPSM recommends the department develop a formal plan to complete the digitization of all property and evidence records with progress benchmarks outlined and prioritized. (Recommendation No. 15.)
- It is recommended that the city prioritize a renewed effort to find a permanent solution to the environmental issues in the Property Room. (Recommendation No. 16.)
- CPSM recommends the department formulate a plan of action to increase the rate at which the volume of property purged exceeds the volume brought in annually. (Recommendation No. 17.)

CRISIS NEGOTIATION TEAM (CNT)

The NCPD Crisis Negotiation Team (CNT) is a program run somewhat independently but in conjunction with the SWAT team. The program consists of a lieutenant, two sergeants, and eight officers. The team responds to situations requiring the need for a trained negotiator. Individual team members will respond, when working, to tactical scenes as they develop and offer their assistance. Often, this initial response can have a rapid positive outcome and eliminate the need for calling in a SWAT team. This practice can be effective if the individual members do not get too far into a tactical scenario without the rest of the team responding. Based on the examples provided, it appears NCPD has a successful program that maintains the balance of immediate individual help where it can be effective while utilizing the whole team when necessary.

In our review of team equipment with one of the CNT team sergeants, we found the team appears to be well-equipped. The team has the necessary equipment to respond and handle routine barricade situations, including individual technical pieces of equipment and a new CNT command vehicle. The equipment is all serviceable; the department regularly invests in equipment replacement and upgrades.

The CNT team trains two times per year for 20 hours total. The officers are sent to a negotiations school after selection and train for two days every year, one day with SWAT. This level of training is short of the NTOA recommended standard. It is recommended each CNT officer attend a 40-hour school upon assignment with 40 hours of proficiency training annually. A portion of the 40 annual training should be with the SWAT team to integrate into realistic scenario-based training.

CNT Recommendations:

- Increase CNT officer training to 40 hours annually. (Recommendation No. 18.)
- Track each CNT officer's training and document into an annual evaluation process for each team member. (Recommendation No. 19.)

SECTION 6. OPERATIONS DIVISION

When examining options for the department's direction, the city and the department face the choices of a) continue to police the community as they do now, or b) take steps to restructure how to respond to demand, still promote order and safety, but free up additional time for officers to engage in proactive patrol and community engagement. That is, the department must decide whether to sustain its comprehensive level of police service or take the steps necessary to manage public demand. Essentially, this is a political decision regarding how services are allocated to the National City community. But quality doesn't need to suffer. The recommendations offered regarding operations, if implemented, will permit NCPD to continue its full-service model of policing yet run the agency more efficiently.

As was stated previously in the *Methodology* section of this report, the following analysis of the operations division is based solely upon the calls for service handled only by patrol officers (26,043), understanding that there are many more calls not included that are handled by non-patrol members of the department.

The analysis here explores these issues in the context of workload demands and the supply of personnel resources to meet those demands. There are opportunities to structure the patrol function in different ways that could result in a more efficient allocation of resources to meet demand and improve the overall quality of life for the community and the officers working patrol. The following discussion explores these issues.

The following table shows the number of calls for service received from the public that the department handled in 2019; these are grouped by category. In total, department officers were dispatched to approximately 26,000 calls over the course of 12 months, or approximately 71 calls per day.

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TABLE 6-1: Events per Day, by Category

Category	No. of Events	Events per Day
Accident	1,147	3.1
Alarm	1,145	3.1
Animal	186	0.5
Assist other agency	639	1.8
Check	2,796	7.7
Crime–person	1,691	4.6
Crime–property	2,646	7.2
Directed patrol	1,311	3.6
Disturbance	4,130	11.3
Follow-up	1,102	3.0
Investigation	1,422	3.9
Miscellaneous	2,034	5.6
Out of service–administrative	8	0.0
Suspicious incident	1,597	4.4
Traffic enforcement	756	2.1
Traffic stop	2,947	8.1
Violation	486	1.3
Total	26,043	71.4

PATROL ALLOCATION, DEPLOYMENT, AND STAFFING

Uniformed patrol is considered the “backbone” of American policing. The Bureau of Justice Statistics indicates that more than 95 percent of police departments in the U.S. in the same size category as the National City Police Department provide uniformed patrol. Officers assigned to this important function are the most visible members of the department and command the largest share of resources committed by the department. Proper allocation of these resources is critical in order to have officers available to respond to calls for service and provide law enforcement services to the public.

Allocation

Staffing decisions, particularly for patrol, must be based on actual workload. Once the actual workload is determined the amount of discretionary time is determined and then staffing decisions can be made consistent with the department's policing philosophy and the community's ability to fund it. The NCPD is a full-service police department, and its philosophy is to address essentially all requests for service in a community policing style. With this in mind, it is necessary to look at workload to understand the impact of this style of policing in the context of community demand.

At the time that deployment workload was examined (eight weeks in winter, January 4 through February 28, 2019, and eight weeks in summer, July 7 through August 31, 2019) the department's main patrol force operated on 10-hour shifts starting at 6:00 a.m., 2:00 p.m., and 9:00 p.m. The police department's main patrol force deployed an average of 7.9 units per hour during the 24-hour day in winter 2019 and an average of 7.7 units per hour in summer 2019.

To understand *actual workload* (the time required to complete certain activities) it is critical to review total reported events within the context of how the events originated, such as through directed patrol, administrative tasks, officer-initiated activities, and citizen-initiated activities. Analysis of this type allows for identification of activities that are really “calls” from those activities that are some other event. Understanding the difference between the various types of police department events and the resulting staffing implications is critical to determining deployment needs. This portion of the study looks at the total deployed hours of the police department with a comparison to current time spent to provide services.

In general, a “Rule of 60” can be applied to evaluate patrol staffing. This rule has two parts. The first part states that 60 percent of the sworn officers in a department should be dedicated to the patrol function (patrol staffing) and the second part states that no more than 60 percent of their time should be committed to calls for service. This commitment of 60 percent of their time is referred to as the *Patrol Saturation Index*.

The Rule of 60 is not a hard-and-fast rule, but rather a starting point for discussion on patrol deployment. Resource allocation decisions must be made from a policy and/or managerial perspective through which costs and benefits of competing demands are considered. The patrol saturation index indicates the percentage of time dedicated by police officers to public demands for service and administrative duties related to their jobs. Effective patrol deployment would exist at amounts where the saturation index was less than 60.

This Rule of 60 for patrol deployment does *not* mean the remaining 40 percent of time is downtime or break time. It reflects the extent that patrol officer time is saturated by calls for service. The time when police personnel are not responding to calls should be committed to management-directed operations. This is a more focused use of time and can include supervised allocation of patrol officer activities toward proactive enforcement, crime prevention, community policing, and citizen safety initiatives. It will also provide ready and available resources in the event of a large-scale emergency.

From an organizational standpoint, it is important to have uniformed patrol resources available at all times of the day to deal with issues such as proactive enforcement, community policing, and emergency response. Patrol is generally the most visible and available resource in policing, and the ability to harness this resource is critical for successful operations.

From an officer’s standpoint, once a certain level of CFS activity is reached, the officer’s focus shifts to a CFS-based reactionary mode. Once a threshold is reached, the patrol officer’s mindset begins to shift from one that looks for ways to deal with crime and quality-of-life conditions in the community to one that continually prepares for the next call. After saturation, officers cease proactive policing and engage in a reactionary style of policing. The outlook becomes “Why act proactively when my actions are only going to be interrupted by a call?” Any uncommitted time is spent waiting for the next call. Sixty percent of time spent responding to calls for service is believed to be the saturation threshold.

Rule of 60 – Part 1

According to the department personnel data, patrol was staffed in 2019 by 40 sworn police officers, a total that included watch commanders and sergeants. These 40 of the 76 sworn officers (in 2019) represented 52.6 percent of the sworn officers in the NCPD. Accordingly, there were fewer officers assigned to patrol than what the “Rule of 60” calls for; however, the Chief indicates that by mid-year 2022 the department should be fully staffed and all nine newly filled positions will be going to patrol. That will bring the total sworn officers in patrol to 3 watch commanders, 6 sergeants, and 40 police officers. It is important to note that although there were 49 sworn officers assigned to patrol, the majority of the CFS were handled by the 40 police

officers. The sergeants and watch commanders are supervisory and not responsible for handling CFS. When the nine positions are added to patrol the NCPD will then have 49 sworn officers in patrol, which will equate to about 58.3 percent of all sworn officers, thus meeting Part 1 of the "Rule of 60."

This part of the "rule" is not hard-and-fast. Taken on its face, however, this part of the "rule" must be considered when examining the operational elements of the department when staffing recommendations are taken into consideration.

Rule of 60 – Part 2

The second part of the "Rule of 60" examines workload and discretionary time and suggests that no more than 60 percent of deployed time should be committed to calls for service. In other words, CPSM suggests that no more than 60 percent of available patrol officer time be spent responding to the service demands of the community. The remaining 40 percent of the time is the "discretionary time" for officers to be available to address community problems and be available for serious emergencies. This Rule of 60 for patrol deployment does not mean the remaining 40 percent of time is downtime or break time. It is simply a reflection of the point at which patrol officer time is "saturated" by CFS.

It is CPSM's contention that patrol staffing is optimally deployed when the SI is in the 60 percent range. An SI greater than 60 percent indicates that the patrol manpower is largely reactive and overburdened with CFS and workload demands. An SI of somewhat less than 60 percent indicates that patrol manpower is optimally staffed. SI levels much lower than 60 percent, however, indicate patrol resources that are underutilized, and signals an opportunity for a reduction in patrol resources or reallocation of police personnel.

Departments must be cautious in interpreting the SI too narrowly. For example, one should not conclude that SI can never exceed 60 percent at any time during the day, or that in any given hour no more than 60 percent of any officer's time be committed to CFS. The SI at 60 percent is intended to be a benchmark to evaluate overall service demands on patrol staffing. When SI levels exceed 60 percent for substantial periods of a given shift, or at isolated and specific times during the day, then decisions should be made to reallocate or realign personnel to reduce the SI to levels below 60. Resource allocation decisions must be made from a policy and/or managerial perspective through which costs and benefits of competing demands are considered. The patrol saturation index indicates the percentage of time dedicated by police officers to public demands for service and administrative duties related to their jobs.

The CPSM data analysis in the second part of this report provides a rich overview of CFS and staffing demands experienced by the department. The analysis here looks specifically at patrol deployment and how to maximize the personnel resources of the department to meet the demands of calls for service while also engaging in proactive policing.

The following figures represent workload, staffing, and the "saturation" of patrol resources during the seasons on which we focused our workload analysis. By "saturation" we mean the amount of time officers spend on patrol handling service demands from the community. In other words, how much of the day is "saturated" with workload demands. This "saturation" is the comparison of workload with available manpower over the course of an average day during the months selected. The figures represent the manpower and demand during weekdays and weekends during the winter and summer of 2019. Examination of these figures permits exploration of the second part of the Rule of 60. Again, the Rule of 60 examines the relationship between total work and total patrol, and to comply with this rule, total work should be less than 60 percent of total patrol.

FIGURE 6-1: Deployment and All Workload, Weekdays, Winter 2019

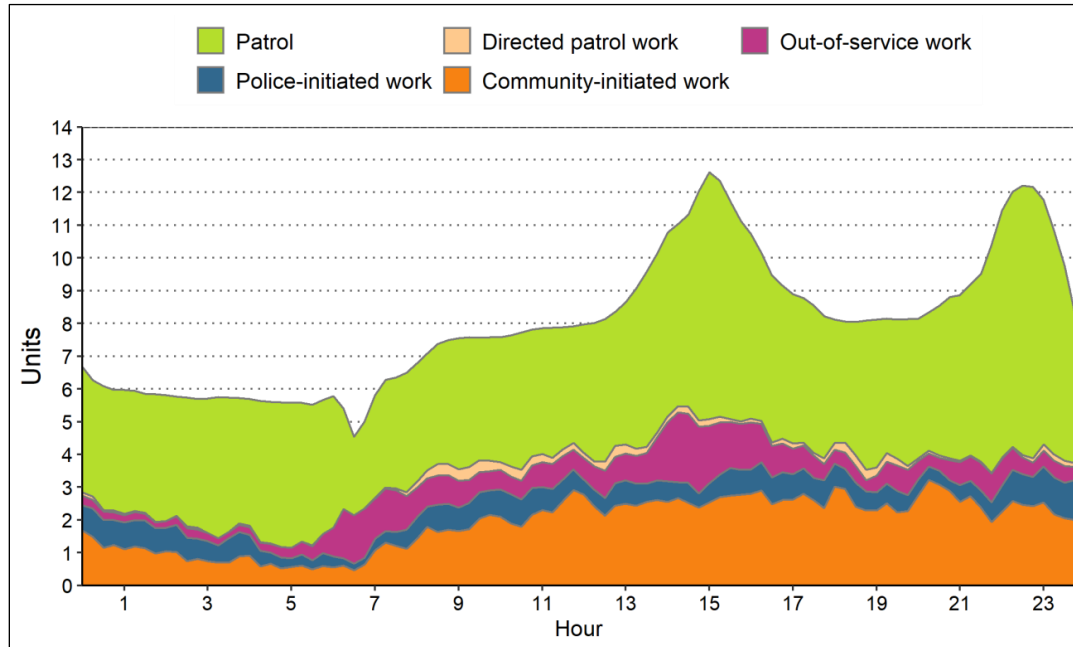
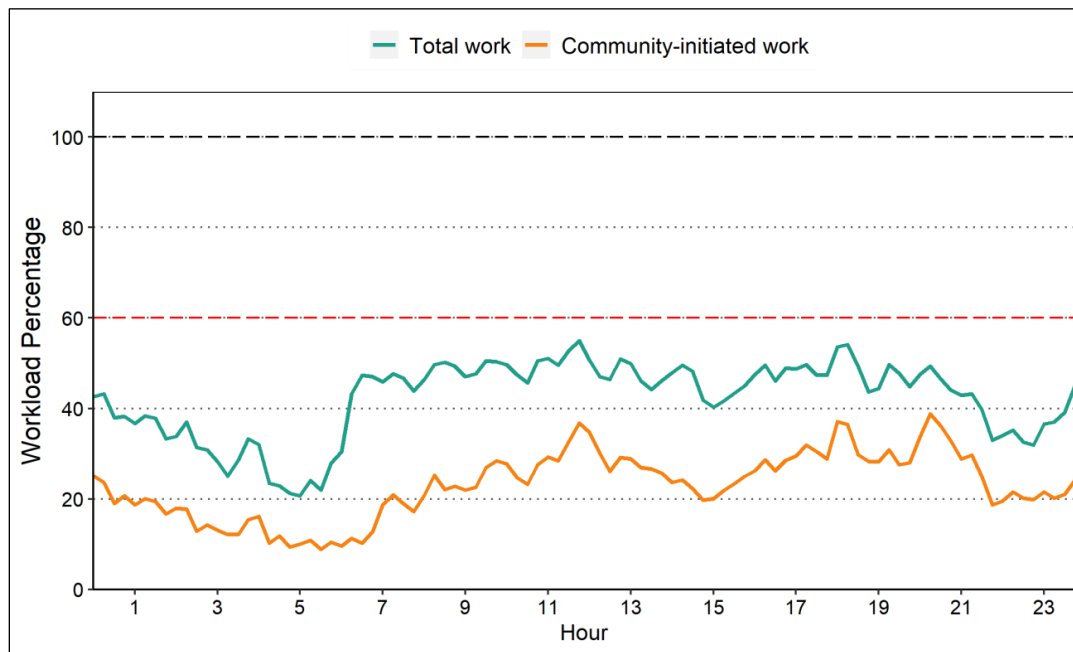


FIGURE 6-2: Percentage of Workload, Weekdays, Winter 2019



Workload v. Deployment – Weekdays, Winter

Avg. Deployment: 8.0 officers per hour
 Avg. Workload: 3.4 officers per hour
 Avg. % Deployed (SI): 43 percent
 Peak SI: 55 percent
 Peak SI Time: 11:45 p.m.

FIGURE 6-3: Deployment and All Workload, Weekends, Winter 2019

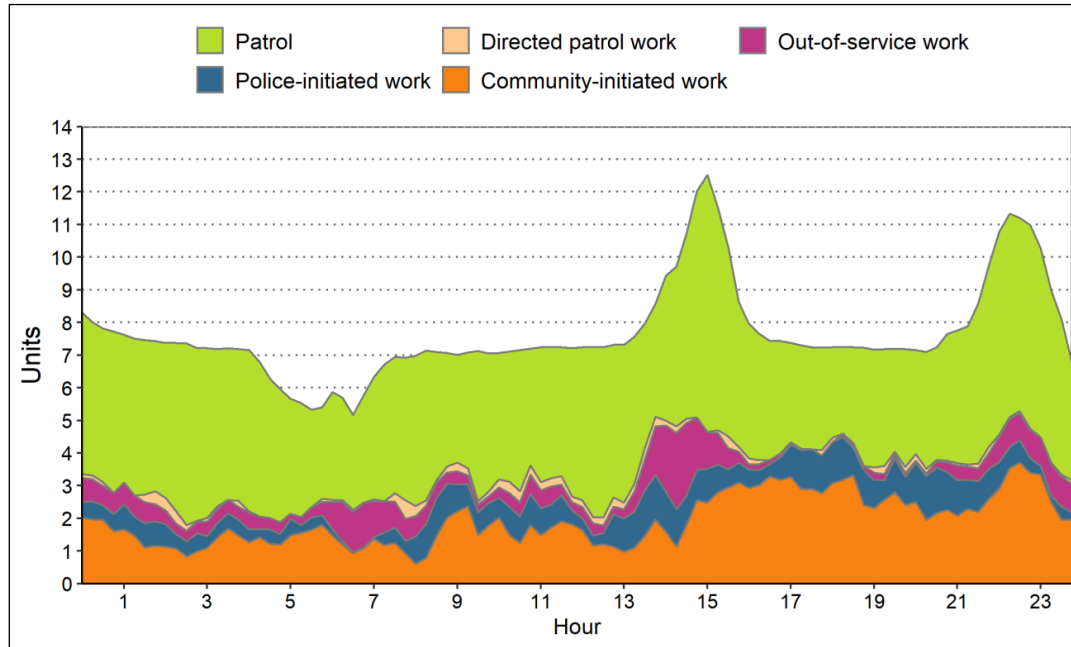
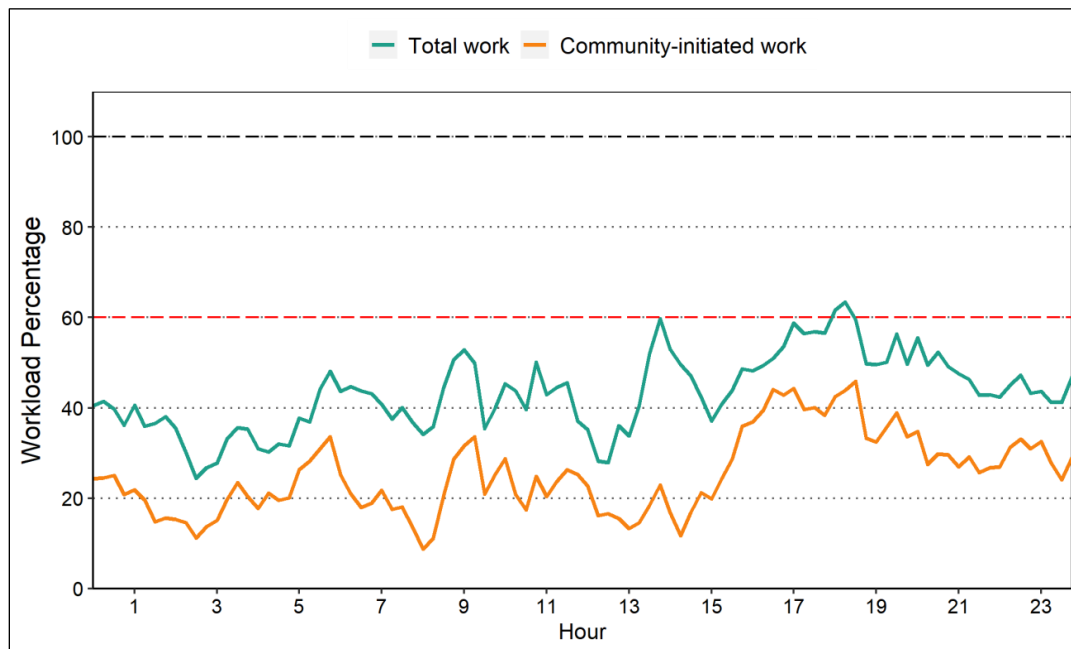


FIGURE 6-4: Percentage of Workload, Weekends, Winter 2019



Workload v. Deployment – Weekends, Winter

Avg. Deployment: 7.7 officers per hour
 Avg. Workload: 3.3 officers per hour
 Avg. % Deployed (SI): 43 percent
 Peak SI: 63 percent
 Peak SI Time: 6:15 p.m.

FIGURE 6-5: Deployment and All Workload, Weekdays, Summer 2019

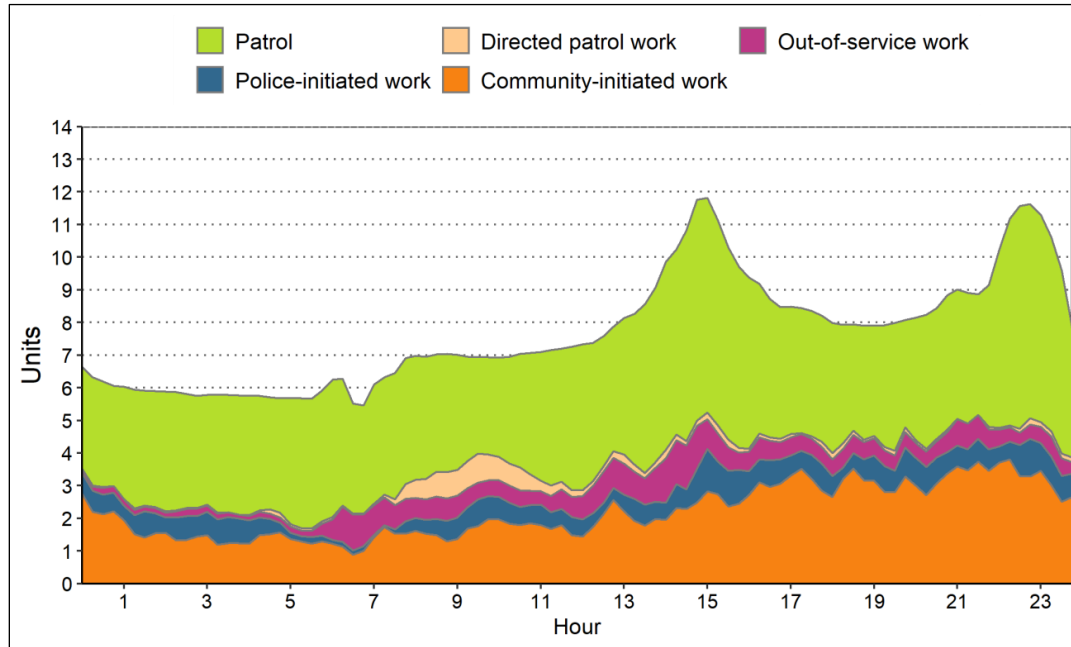
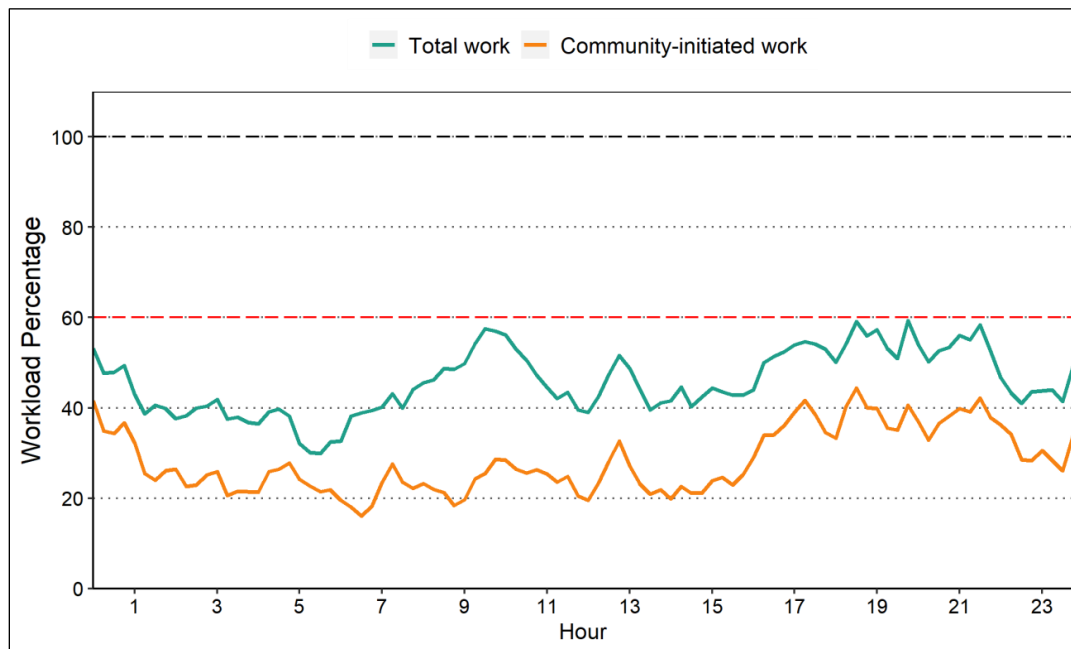


FIGURE 6-6: Percentage of Workload, Weekdays, Summer 2019



Workload v. Deployment – Weekdays, Summer

Avg. Deployment: 7.7 officers per hour
 Avg. Workload: 3.6 officers per hour
 Avg. % Deployed (SI): 46 percent
 Peak SI: 59 percent
 Peak SI Time: 7:45 p.m.

FIGURE 6-7: Deployment and All Workload, Weekends, Summer 2019

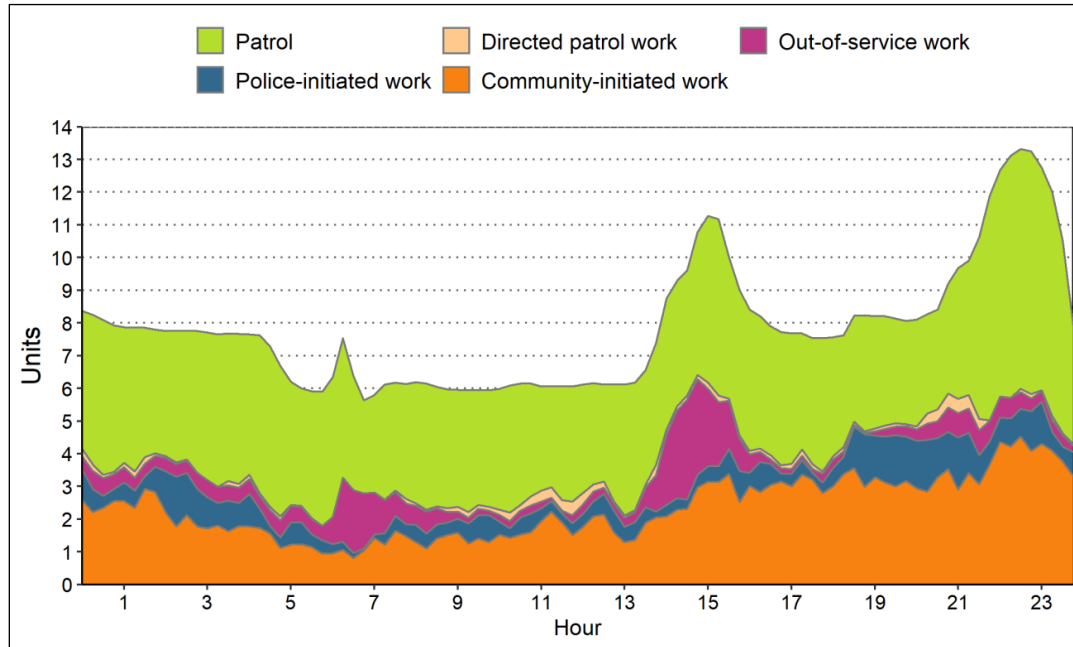
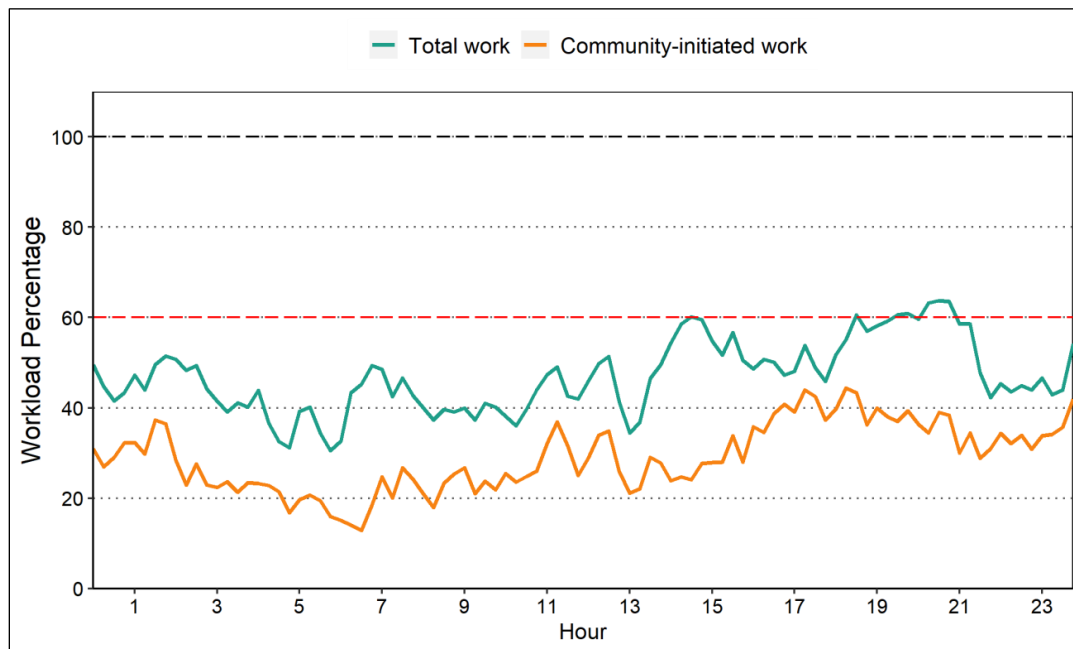


FIGURE 6-8: Percentage of Workload, Weekends, Summer 2019



Workload v. Deployment – Weekends, Summer

Avg. Deployment: 7.9 officers per hour
 Avg. Workload: 3.7 officers per hour
 Avg. % Deployed (SI): 48 percent
 Peak SI: 64 percent
 Peak SI Time: 8:15 p.m.

FIGURE 6-9: Percentage Events per Day, by Initiator

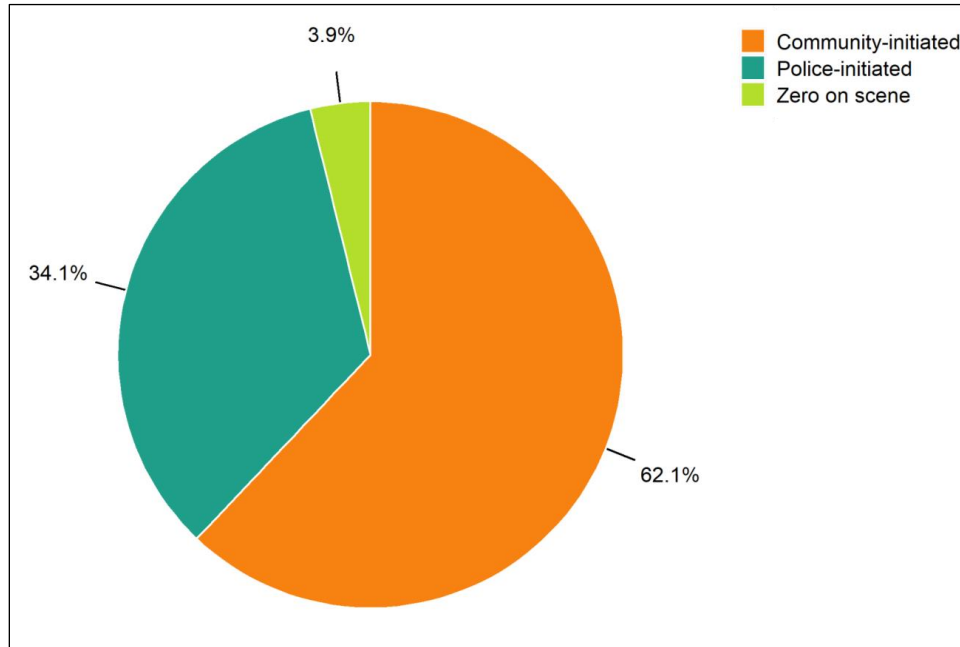


TABLE 6-2: Events per Day, by Initiator

Initiator	No. of Events	Events per Day
Community-initiated	16,163	44.3
Police-initiated	8,877	24.3
Zero on scene	1,003	2.7
Total	26,043*	71.4

Note: *The 26,043 CFS are calls handled only by officers assigned to patrol.

The following table summarizes the workload and deployment in the four periods observed:

TABLE 6-3: Summary of Workload and Deployment

	Winter Weekdays	Winter Weekends	Summer Weekdays	Summer Weekends
Avg. Deployed:	8.0	7.7	7.7	7.9
Avg. Workload:	3.4	3.3	3.6	3.7
Avg. % Deployed (SI):	43%	43%	46%	48%
Peak SI:	55%	63%	59%	64%
Peak SI Time:	11:45 p.m.	6:15 p.m.	7:45 p.m.	8:15 p.m.

The information in the eight deployment and workload figures reveals several important findings and recommendations about the workload demands and patrol function in the NCPD.

The workload demands from the National City community present a typical distribution. Call volume is low in the early morning hours and increases throughout the day, generally peaking in the evening. The supply of officers also fits an expected pattern consistent with the 10-hour shifts working throughout the day.

The average deployment appears sound. There is no sharp drop off in available personnel from weekday to weekends. This suggests that time-off requests are managed judiciously.

Overall, the workload demands faced by patrol officers is high. On average, demand is approximately in the 40 percent to 50 percent range during each of the time periods measured. However, since there is a lengthy period of steady workload at 50 percent or more of deployment, this could point to patrol resources being under stress. At the same time, it is important to note that the 60 percent threshold is only breached once during the four periods observed. This indicates that patrol personnel are deployed effectively to meet demands.

Meeting workload demands, however, is not a constant feature on patrol. The eight figures show that workload is relatively high throughout the day. Demand does wane somewhat in the early morning hours but begins to rise early in the morning and stays high most of the day.

On one hand it is good that the 60 percent threshold is only breached once during these periods, but on the other hand the steady workload in the 50 percent range would indicate that patrol resources could be under stress. The stress is not so high to foreclose on all proactive patrol, but officers would likely report an experience of going from call to call without much break in between during these times. Anecdotal accounts from the officers during the interviews and focus groups were articulated to support this assessment.

In examining Figure 6-9, above, one can see that community-initiated calls on average are responsible for 62 percent of all calls each day, while police-initiated activity such as traffic stops, suspicious person stops, etc. account for only 34 percent of the calls each day. This tends to further support the officers' claims that during certain times of the day, they are going from call-to-call handling activity that is dispatched.

It is also very important to point out that the workload and staffing models presented here are based upon 2019 levels. Obviously, 2020 or 2021 were not representative years for National City, which is why 2019 levels were examined for this study. The social disruptions caused by the COVID-19 pandemic make 2020 and 2021 unacceptable to use for this discussion. Since 2019, the Patrol Division has seen six police officer positions frozen.

At the time of our site visit the department was operating with the same number of officers in patrol as it did in 2019 when the calls for service were examined. With 40 officers in patrol in 2019, it has been shown that officers were likely under stress at that time. Although 2020 and 2021 calls for service were not examined for this study, it is probable that the calls for service have increased at least incrementally since 2019. That would mean that in 2021 patrol operations would most likely be even more stressed than in 2019. With that being said, the Chief's commitment to put all new officers hired back into patrol will bring the total patrol numbers up to 49. This should reduce substantially the stress on patrol officers. With the addition of these nine positions to patrol, it is our view that no additional resources would be needed at the present time. However, as always, as the city continues to revitalize itself and the population increases, consideration must be given in the future to increasing the number of sworn personnel to meet increasing CFS demands.

§ § §

EXAMINING CALLS FOR SERVICE

TABLE 6-4: Primary Unit's Average Occupied Times, by Category and Initiator

Category	Community-initiated			Police-initiated		
	Minutes	Units per call	Calls	Minutes	Units per call	Calls
Accident	40.0	2.7	913	31.1	2.8	212
Alarm	13.8	2.4	1,098	9.8	2.2	26
Animal	26.0	1.9	157	23.0	1.3	20
Assist other agency	30.0	2.9	428	28.1	2.6	197
Check	27.6	2.5	1,936	17.5	2.0	650
Crime-person	54.5	3.0	1,565	51.2	3.2	93
Crime-property	40.8	1.8	2,408	48.6	1.8	199
Disturbance	33.4	2.6	3,706	38.6	2.7	168
Follow-up	29.5	1.4	182	23.7	1.1	884
Investigation	47.2	2.1	540	31.8	2.2	851
Miscellaneous	29.6	1.9	607	26.6	2.0	1,340
Suspicious incident	30.3	2.9	1,363	52.1	3.2	169
Traffic enforcement	16.9	1.5	504	18.4	1.6	167
Traffic stop	NA	NA	0	16.1	2.0	2,936
Violation	24.9	2.4	378	26.8	1.3	85
Weighted Average/Total Calls	34.1	2.4	15,785	23.8	2.0	7,997

Note: For this table, we removed one call with an inaccurate busy time. The information in the table is limited to calls and excludes all events that show zero time on scene. A unit's occupied time is measured as the time from when the unit was dispatched until the unit becomes available again. The times shown are the average occupied minutes per call for the primary unit, rather than the total occupied minutes for all units assigned to a call.

In general, CFS volume is within expected bounds. To evaluate the workload demands placed on the department, it is useful to examine the number of CFS received from the public in relation to the population. With a service population estimated to be approximately 61,000, the total of 26,000 CFS translates to about 426 CFS per 1,000 residents. While there is no accepted standard ratio between calls for service and population, CPSM studies of other communities show a CFS-to-population ratio ranging between 400 and 1,000 CFS per year. Lower ratios typically suggest a fairly well-managed approach to CFS. Although the figure of 426 CFS per thousand is on the lower end of the accepted ratio, there is still room for improvement to provide more pro-active time available to police officers. Carving out more pro-active time would require some of the below listed options to be implemented to free up officers' time.

Although patrol operations will be sufficiently staffed once all the new personnel are **hired and** assigned, NCPD could also consider being more aggressive at triaging some types of CFS. Certain types of calls do not necessarily require the response of a sworn police officer. One such type of call is responding to alarms, most of which turn out to be false. Another type is motor vehicle accidents involving only property damage, where the police role is largely administrative, that is, preparing and filing a report. The bottom line here is that a substantial number of CFS dispatches to officers could be eliminated. This would free officers' time to address other conditions present in the community as opposed to spending time at CFS at which their services are not essential. This is particularly important given the small number of officers

assigned on patrol during any given shift. Sparing these officers from responding to non-emergency CFS would enable them to remain available and on patrol in the community.

Alarms

False alarms are a source of inefficiency for police operations. The alarm industry is a strong advocate of developing ordinances and procedures to address police response to false alarms and will work closely with any agency exploring this issue. The 98 percent of alarm calls that are false are caused by user error, and this can be addressed by alarm management programs. During our study period, NCPD responded to about 1,100 alarm calls, or about 7 percent of all community-initiated CFS. Based upon data provided, NCPD responds to an average of 3.1 alarms each day. Each alarm call, on average, takes officers 13.8 minutes to handle, and each call is handled by an average of 2.4 officers. Thus, those alarm calls take up about 1 hour and 40 minutes of time each day for NCPD officers during which they could be performing proactive enforcement. The response to the overwhelming majority of these calls is undoubtedly unnecessary and is an inefficient use of police resources.

National City has a robust false alarm ordinance in its municipal code under 10.45 NCMC (Security and Fire Alarm Systems) to manage alarms. Businesses and residences must obtain an alarm user's permit in order to install, use, or possess an alarm system. Most false alarm codes typically feature an annual registration fee for the alarm, as well as a fine schedule as a disincentive for false alarms. National City has a code that states, "In the event the police department responds to a false alarm at a business or residence," the following penalties apply for alarms received in a 12-month period:

- 3rd false alarm: \$100.00.
- 4th false alarm: \$150.00.
- 5th false alarm: \$200.00.
- 6th false alarm: \$300.00.
- 7 or more false alarms: \$400.00.

Most false alarm codes typically feature a fine schedule (above) as a disincentive for false alarms. However, as can be seen with National City's fines, the city doesn't begin to charge until the third false alarm. Communities around the country that impose higher fee schedules experience greater results. Ordinances with nominal fines, such as \$100 per false alarm (as is the case in National City) do not reduce false alarms significantly; however, fees of \$500 to \$1,000 for repeated false alarms appear to have a dramatic effect.

Some communities in the U.S. impose fees of more than \$1,000 for repeated false alarms. At that level there is a strong incentive to ensure that an alarm is working properly. This can save hundreds of hours of wasted time spent on these types of CFS. Similarly, the NCPD should analyze the data on false alarm activations. Undoubtedly, a greater level of analysis might reveal useful information. The NCPD might be able to identify problematic locations and/or alarm installation companies that are generating a large number of false alarms and work with them to reduce or eliminate future occurrences. Analysis of the data could reveal certain companies that have a poor record of installation. High-frequency alarm violators could be identified and visited by sworn personnel to identify reasons behind the false alarms. CPSM recommends that National City update its alarm program to "best practices through a model ordinance."

Lastly, some communities are enacting a double-call verification protocol. Under such a program an alarm CFS is verified by the 911 dispatcher with the alarm company before an officer is dispatched to respond. Also, the city should consider making greater use of the data it collects on the false alarms already recorded.

Automobile Accidents

Automobile accidents are another category of call for which the response by a sworn officer is questionable. In the period under observation the NCPD responded to more than 900 motor vehicle accident calls that were community-initiated. Thus, about 6 percent of community-initiated CFS during the study period were traffic accidents. Those 900-plus accident calls required on average 2.7 officers and took approximately 40 minutes of deployed time. This equates to about 1,640 officer/hours to handle accidents, most of which were probably routine “fender-benders.” Arguably, most of these calls were administrative in nature and probably did not warrant the response of a sworn police officer.

Traffic Stops

Traffic safety is part of the core mission of any police department. Similarly, complaints about traffic are generally the most frequent kind of complaint that the police receive from the public. Therefore, managing traffic conditions, reducing traffic crashes, and preventing injuries from those crashes are important responsibilities for the police.

During the period studied, NCPD engaged in nearly 2,936 traffic stops. These stops accounted for approximately 34 percent of police-initiated activity. This is a large share of the department’s police-initiated activity, in both sheer numbers and in context of total work, and signifies a robust approach to traffic enforcement. However, it is not clear if this enforcement is contributing to any improvement in overall traffic safety in the community. This conclusion was supported later in the report where the Traffic Division is discussed.

A full discussion about traffic safety is presented later in this report; however, CPSM recommends that patrol officers in the NCPD minimize, or discontinue altogether, routine traffic-related stops. Instead, NCPD should leverage traffic crash data to focus enforcement efforts on the locations deemed most prone to accidents and on drivers deemed to be at the highest risk of causing them. Routine, or random, motor vehicle stops should be discontinued or drastically reduced. Without any direction about where to focus or for what types of violations officers are left to conduct this enforcement as their time permits. It is this type of unfocused traffic enforcement that should be discontinued.

Calls for Service Committee

It is recommended that the NCPD establish a committee that includes all the principal stakeholders in this process, and which has the responsibility of evaluating the CFS workload with an eye toward recommendations for ways to reduce response to non-emergency CFS. This committee should begin with the categories of CFS discussed here and formulate updated protocols for these assignments.

CFS EFFICIENCY

Further examination of various elements of the CFS and patrol response data also warrants discussion. Data from various tables and charts in the data analysis section of this report provide

a wealth of information about demand, workload, and deployment in National City. Several key pieces of information need to be highlighted to demonstrate the effective use of patrol resources in the city. These statistics are found in the data analysis section under Figure 11-3, Percentage Events per Day, by Category; Table 11-6, Primary Unit's Average Occupied Time, by Category and Initiative; Table 11-8, Number of Responding Units, by Category, Community-Initiated Calls; and Table 11-16, Average Response Time Components, by Category. Taken together these statistics provide an excellent lens through which to view the efficiency of patrol operations.

According to the data in Table 11-6, National City patrol units on average take 28.5 minutes to handle a call for service. This figure is on par with the benchmark time of about 28.7 minutes for a CFS, based on our experience. Also, the department, according to Table 11-8, dispatches 2.2 officers per CFS. The number of officers dispatched (like occupied time) varies by category of call, but is higher in NCPD than policing norms of about 1.6 officers per CFS. In other words, the NCPD uses about the same amount of time but about 35 percent more officers to handle a CFS than the average police response of other agencies studied by CPSM.¹

Response time also appears high. According to Table 11-16, response time for CFS in National City averages 20.2 minutes per call in the winter and 20.4 minutes per call during the summer. This is an unacceptable response time, which is usually benchmarked at about 15 minutes per call. Response time to “high-priority” CFS is higher than CPSM's benchmark. NCPD averaged 5.3 minutes to respond to a high-priority CFS. This is just slightly higher than the benchmark of 5.0 minutes.

TABLE 6-5: CFS Efficiency, National City PD Compared to CPSM Benchmarks

Variable Description	Mean	Minimum	Maximum	National City	NCPD vs. CPSM Comps
Population	67,745.7	5,417.0	833,024.0	61710	LOWER
Avg. Service Time, Police CFS	17.7	8.1	47.7	23.8	HIGHER
Avg. Service Time, Public CFS	28.7	16.0	42.9	34.1	HIGHER
Avg. # of Responding Units, Police CFS	1.2	1.0	1.6	2.0	HIGHER
Avg. # of Responding Units, Public CFS	1.6	1.2	2.2	2.4	HIGHER
Total Service Time, Police CFS (officer-min.)	22.1	9.7	75.7	23.8	HIGHER
Total Service Time, Public CFS (officer-min.)	48.0	23.6	84.0	34.1	LOWER
Workload Percent Weekdays Winter	26.6	5.0	65.0	43%	HIGHER
Workload Percent Weekends Winter	28.4	4.0	68.0	43%	HIGHER
Workload Percent Weekdays Summer	28.7	6.0	67.0	46%	HIGHER
Workload Percent Weekends Summer	31.8	5.0	69.0	48%	HIGHER
Average Response Time Winter	11.0	3.1	32.2	20.2	HIGHER
Average Response Time Summer	11.2	2.4	33.3	20.4	HIGHER
High-priority Call Response Time	5.0	3.2	13.9	5.3	HIGHER

1. CPSM benchmarks are derived from data analyses of police agencies similar to the NCPD.

WEB-BASED OR DEFERRED RESPONSE

Communities around the country have had good success with directing members of the public to file police reports via the internet. Nonserious incidents and minor crimes can be reported through a department's website without the need for officer response. Currently, the NCPD has no website to support this function; however, a citizen can come into the lobby to file a report in lieu of having an officer respond to their residence. NCPD should consider implementing an online crime reporting system.

That said, industry experience suggests that citizens still prefer the response of a "live" officer to lodge their complaints. Web-based reporting is not a panacea for substantially reducing non-emergency responses, but an excellent tool, nonetheless. As the public becomes more "tech-savvy" this feature could be used more rigorously.

Most departments utilizing an online crime reporting platform will take nonserious crime reports via the internet such as theft, hit and run, lost property, harassing phone calls, vandalism, vehicle burglary, credit card fraud, and identity theft. Many have added an option to report EDD fraud. Many departments the size of NCPD report taking several hundred online crime reports each year. That translates into hundreds of hours that officers can spend doing proactive police work instead of taking nonserious crime reports.

Recommendations:

- Ensure the new positions hired by NCPD are assigned to patrol operations. (Recommendation No. 20.)
- CPSM recommends that National City update its alarm program to "best practices through a model ordinance." (Recommendation No. 21.)
- Create a CFS working group to explore potential ways of eliminating workload demands and non-emergency CFS from patrol workload. (Recommendation No. 22.)
- Explore web-based reporting for nonserious crime reports. (Recommendation No. 23.)

PATROL SCHEDULING

The department's main patrol force is scheduled on 10-hour shifts. Officers on patrol work four consecutive shifts and then have three consecutive days off. There are three shifts in which officers work. Day shift is from 6:00 a.m. to 4:00 p.m. with the overlap day being Tuesday. Swing shift is from 2:00 p.m. to midnight, and graveyard shift is from 9:00 p.m. to 7:00 p.m. Although this configuration meets the department's current CFS demand, the department is considering moving to a 12-hour shift schedule. Many departments have moved to 12-hour shift configurations to provide better coverage with fewer officers and to provide a better life/work balance for employees.

The available literature on shift length provides no definitive conclusions on an appropriate shift length. A recent study published by the Police Foundation examined 8-hour, 10-hour, and 12-hour shifts and found positive and negative characteristics associated with all three options.² The length of the shift is secondary to the application of that shift to meet service demands.

2. Karen L. Amendola, et al, *The Shift Length Experiment: What We Know about 8-, 10-, and 12-hour Shifts in Policing* (Washington, DC: Police Foundation, 2012).

The 12-hour shift poses advantages and disadvantages. On the positive side, the 12-hour shift requires fewer work appearances for officers and supervisors. Presumably, fewer appearances translates into a higher quality of life away from work. From an operational perspective, the 12-hour shift results in a greater percentage of officers working on any given day, thus more officers to deploy toward crime, traffic, disorder, and community issues at any one time. This shift also affords a tight unity of command with supervisors and officers working together each shift. This promotes better supervision and better esprit de corps among employees.

On the negative side, a 12-hour shift configuration with four equally staffed squads results in a constant and fixed level of patrol staffing throughout the day. However, service demands vary, peaking in the evening hours and waning in the early morning hours. With a constant supply of personnel and a variable demand for their services, there will be a continual cycle of either a surplus or shortage of resources. Also, with a four-squad configuration a "silo" effect is often created. The natural rotation of this shift configuration creates four separate squads that do not interact often; this creates personnel "silos." Similarly, it is difficult to communicate between the "silos" and between the squads and the executive management of the department. Lastly, shifts configured with two 12-hour shifts do not have any overlap. This can create issues in the evening when CFS volume is high. One shift may stop taking CFS near the end of their deployment and the oncoming shift may delay taking CFS on the start of theirs. This can result in a spike in service demands after the evening shift change.

Despite some of the drawbacks, CPSM recommends that consideration be given to altering the patrol schedule to a 12-hour shift schedule. This recommended adjustment will help the department improve CFS responses and structure patrol staffing in a way that can be more effective at implementing a strategic approach to community conditions.

For example, a shift model with considerable potential for the NCPD features six 12-hour shifts. There would be six main patrol shifts that would be primarily responsible for handling CFS. Essentially, there would be three shifts as in the current 4-10 schedule; however, the midwatch shift would have additional officers while the graveyard shift would have fewer officers. This would accomplish having more officers on duty during the busy hours and fewer officers on duty during the less busy times.

During the site visit to NCPD, and in subsequent conversations with the Chief and city leadership, several configurations of the 12-hour work schedule were discussed. A recommendation on the type or configuration of the 12-hour schedule will not be made in this report because of the numerous variations that call for a collaborative discussion between the city and the department's bargaining unit.

Recommendation:

- Consider the implementation of a 12-hour shift schedule for patrol. (Recommendation No. 24.)

AREAS REPRESENTING HIGH DEMAND

The goal in this section is to illustrate problematic locations in the community and the need to develop specific strategies around those locations.

There are several distinct incident "hot spots" in the community, as there are in most cities studied by CPSM. It is clear that several of the commercial and retail areas dominate the responses by officers to both crime CFS and other CFS. This comes as no surprise, as these areas are vibrant parts of the community and presumably would demand a large share of attention

from the police department. The department's crime analyst can easily identify those "hot spot" areas generating the highest number of CFS.

Each one of the actual "hot spots" in the community should be the focus of a specific and targeted strategy that aims to eliminate, or drastically reduce, the conditions present at those locations. Undoubtedly, these locations receive the lion's share of attention from patrol officers in the department, and consideration should be given to formulating a deliberate plan to deal with these locations in a proactive fashion.

CPSM recommends taking a more strategic approach to crime at these locations. The department should create a strategic plan for these general locations. All of the operational resources—patrol, investigative, etc.—should be brought to bear on crime and disorder at the identified locations. Shoplifting could just be a simple juvenile prank, or it could be part of an organized ring of retail and identity theft. Police departments across the country are seeing a growing trend of gang involvement in retail and identity theft, as well as auto larceny in the vicinity of commercial hubs. A more coordinated and strategic approach to this condition is warranted. It will have an impact on reducing crime and be a better use of scarce patrol resources. The same approach should be taken for traffic safety. A strategic approach is necessary to deal with the myriad number of issues generated in these areas.

In the area of strategic crime prevention, analysis, and prevention, "hot spot" mapping is generally considered a crude or unartful approach. There are more sophisticated and advanced methods that rely on algorithms and machine learning techniques. Predictive analytic techniques, such as PredPol,³ are used in police departments around the country to drive operations. However, in a community the size of National City, predictive analytic approaches might not be required. The size and scope of crime and criminal offenders are such that officers already have a good working knowledge of the conditions in the community. It's not necessary to have an algorithm predict that crime will occur at a big box store, for example. The "hot spot" maps illustrate the location and now what's needed is a plan to address problems at that location.

High-frequency traffic accident locations should be where the highest frequency of motor vehicle stops should occur. As mentioned in the Traffic section of this report, the focus of the Traffic Unit needs to change to a philosophy of stopping traffic accidents as opposed to piling up traffic stops to generate justification for receiving grants.

Making vehicle stops at the hot spots is a good start. Applying visible patrol and traffic enforcement at hot spots is essential. But that is only part of the solution. If officers continue to check the areas and make the stops and the conditions persist, then the effort is somewhat wasted. CPSM recommends that the NCPD take a more strategic approach to these issues and enlist resources from the entire department to bring to bear on the problems.

Once patrol is fully staffed, no additional patrol personnel resources would be required to accomplish the mission described above. An impactful proactive enforcement strategy can be accomplished by leveraging the shift supervisor's authority. Strong consideration should be given to developing a more robust intelligence function that would analyze both crime and traffic data to support patrol and investigative efforts. This function should be responsible for both crime prevention and traffic safety strategies by working closely with the community AND targeting the "hot spots" and "hot people" identified through a robust intelligence function.

3. <https://www.predpol.com/>

TRAFFIC UNIT

NCPD has a dedicated Traffic Unit. The unit falls within the Patrol Operations Division and is staffed by a full-time motorcycle sergeant and two full-time motorcycle officers. Additional staffing includes a full-time administrative secretary. There is currently one vacant traffic officer position, CPSM recommends that position be filled when possible.

Schedule

All personnel in the Traffic Unit work a 4/10 schedule from 6:00 a.m. to 3:30 p.m. The Traffic sergeant and one of the officers work Tuesday through Friday, while the other officer works Monday through Thursday. Neither officer is assigned a specific beat and has the freedom to go anywhere in the city.

As it stands with the schedule the unit is working, it can cover the busy morning traffic hours but not busy afternoon traffic hours. In order to cover a portion of both the busy morning traffic and the busy afternoon traffic times, CPSM recommends that the unit's hours be modified to 8:00 a.m. to 6:00 p.m., which would enable the traffic officers to work traffic-related issues during the busiest traffic hours of the day. Optimally, a schedule would have one of the officers working day shift, and the other officer working an evening shift; however, it was learned that there is no department in the county that has motorcycle officers working after dark. There is an opportunity during the summer months when it stays light later for one of the officers to have a later shift.

Sergeant's Workload

The Traffic sergeant has many additional responsibilities beyond supervising his subordinates in the unit. He writes, submits, manages, and administers the California Office of Traffic Safety grant that the city receives.

His responsibilities also include review and release of stored vehicles, review of contested parking violations, vehicle storage hearings, and review of parking citations. Although the city's parking control is operated out of city hall, he still must be responsible for some of the managing of the unit. Anecdotally, the sergeant admitted that he spends much more time in the office working on those items than he does out supervising and issuing citations. It is recommended the sergeant delegate more of the administrative responsibilities he is now handling to the administrative secretary in the unit to free up his time.

Training

The motor officers train quarterly to retain their riding proficiency rating.

Only one of the traffic officers assigned to traffic has been to any traffic accident-related training and that was the Basic Accident Investigation course; however, it was learned that he is slated to attend Advanced Accident Investigation and Accident Reconstruction. Although these officers have no traffic-related advanced training, they are involved in investigations involving serious injury and death and which are sometimes criminal in nature. Traffic investigations involving serious injury and death require a great deal of experience along with advanced training in order to conduct the investigations properly to ensure filings are obtained on accidents involving criminal intent. It is recommended that all officers assigned to traffic, at minimum, attend a POST-approved Basic and Advanced Accident Investigation class.

As well, patrol officers are assigned to handle all injury traffic accidents. Most patrol officers undoubtedly have had only the bare minimum accident investigation training that they received in the academy. If the department is going to continue to have patrol officers conduct

injury accident investigations, it should be sending them to some additional advanced accident investigation training.

Accident Investigations

As mentioned above, patrol officers handle traffic collision investigations, including those involving serious injury and death. In serious injury and fatal investigations the motor officers will assist patrol officers with doing the Total Station and the collection of evidence. A detective is also assigned to each investigation along with the motor officers to file the case. Thus, patrol officers must also respond to and take the accident investigations along with all of their other patrol-related calls. While many of the investigations that patrol responds to are non-injury accidents, they still respond to ensure the drivers involved have exchanged information.

As was discussed earlier, it is apparent that patrol officers' time is stressed due to workload. Since traffic officers do not respond to patrol-related calls to assist patrol, it is recommended that when they are working, the traffic officers be assigned to all traffic accident calls for service in lieu of patrol officers. At all other times, the accident calls for service would fall back onto the patrol officers to handle.

Traffic Accident Response

NCPD responds to all traffic accident calls for service if requested, regardless of whether it is injury or non-injury. In fact, NCPD responded to a total of 1,171 traffic accident calls for service. In 2021, only 216 of those involved injury or death. That means that NCPD responded to 955 non-injury traffic accidents. On average, according to NCPD data, officers are spending 35 minutes on each traffic accident call for service, to include non-injury.

Most, if not all non-injury traffic accidents are not criminal in nature and are essentially an insurance issue. At NCPD it was learned that when officers respond, they are ensuring drivers are exchanging CDL and insurance information, but take no other police-related action. CPSM would recommend that NCPD cease responding to non-injury traffic accident calls for service unless there are some identified police-related issues involved.

OTS Grant

Each year the department applies for, and receives, a grant from the California Office of Traffic Safety, which provides monies to be used for Driving Under the Influence (DUI) checkpoints, DUI saturation patrol, motorcycle safety, and bicycle safety. However, to receive the grant, the department must be able to show statistics that the city would reduce accidents if it received the grant. It appears that much of the Traffic Unit's focus is writing tickets to show need to receive the grant.

Accident Locations

The following table shows the top 10 traffic accident locations in National City for 2018, 2019, and 2020 combined.

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TABLE 6-6: Top Ten Traffic Accident Locations, 2018–2020

Location	# of accidents
1200 Highland Ave.	16
Highland/Plaza	15
E. 24th/Highland	13
E. 4th Steet/Euclid	9
500 Mile of Cars Way	9
2100 Plaza Blvd.	9
3100 Plaza Blvd.	8
2200 Plaza Blvd.	8
E. 16th Street/Euclid	7
Grove St./Plaza Blvd.	6

Source: National City PD

The top three factors that were the cause of these accidents were:

- Unsafe turning movements.
- Unsafe speed.
- DUI.

Although the numbers in the table above seem relatively small, it must be noted that NCPD only takes reports on injury accidents (represented above), and it is possible that there could have been at least a hundred or more non-injury traffic accidents that officers responded to at those same locations.

It is obvious by the data provided by NCPD that statistical data is available to the Traffic Unit on the high-frequency traffic accident locations in the city; however, in discussions with the traffic sergeant, we found there is no directed enforcement conducted to reduce traffic accidents at those high-frequency locations. NCPD should constantly review traffic accident data for locations where a large number of traffic accidents are occurring, and after identifying the primary collision factors involved in those accidents, engage in conducting directed enforcement to reduce the number of accidents at those locations.

The department must undergo a paradigm shift to begin operating to reduce the number of traffic accidents in the city.

“Three E’s”

Every accident that can be prevented can save the community thousands of dollars in damages and liability. The department should embrace the mission of reducing accidents, reducing injuries, and saving lives through enforcement, education, and roadway improvement through engineering. Collectively, these are referred to as the “Three E’s” of traffic safety.

An opportunity exists to leverage the enforcement already being conducted in National City towards a more focused approach to traffic safety. CPSM recommends that traffic safety become an integral part of the strategic plan for all patrol officers, not only the traffic officers. The Traffic Unit, under the leadership of the sergeant, should coordinate the efforts in this area and leverage the efforts of the entire patrol function. Using personal injury accidents as the outcome measure, the NCPD should embrace a comprehensive approach focusing on the “Three E’s”: Enforcement, Education, and Engineering.

Enforcement should continue to be focused at high-frequency crash locations. In addition, the EPD should maintain a list of high-risk drivers (repeat DUI, etc.) and target these individuals for enforcement.

Traffic safety education and accident awareness should be developed more strategically by NCPD. Again, if the department were to target at-risk drivers (high school students for example), safe driving courses could be developed and delivered to these individuals. The NCPD could also consider deploying variable message signs at high-frequency crash locations to warn motorists about the dangers present in the area. Communities around the country are benefiting from offering such educational programs to reduce accidents and injuries.

Traffic safety could be a good opportunity for NCPD personnel to engage the organized community by attending meetings to deliver traffic safety information. As the NCPD embraces community engagement as part of its strategic approach to public safety, traffic education and safety should be a natural part of that approach.

Lastly, the city's Public Works Engineering Department could work with NCPD to explore roadway redesign and signage. Making engineering changes to existing roadways is a challenge. Many roads may be controlled by the state and making changes to county and city roads can be expensive and take a lengthy amount of planning. However, sometimes simple adjustments such as signage can be effective.

CPSM is not an advocate of one method over another. The point is that traffic accidents need to be looked at from a strategic perspective with goals and plans identified and communicated throughout the department.

Traffic Enforcement

During the period studied, NCPD engaged in more than 3,600 traffic stops. These stops accounted for approximately 15.3 percent of all CFS handled by the department and about 38 percent of all police-initiated activities. This is a large amount of activity in both raw numbers and in the context of total work; the activity signifies a robust approach to traffic enforcement. It is not clear, however, if this enforcement is contributing to any improvement in overall traffic safety in the community.

From an enforcement perspective NCPD appears to be doing an excellent job, with more than 3,600 traffic stops per year. Interestingly though, data from 2019 through 2021 show that the stops do not appear to have had an impact on the frequency and prevalence of traffic crashes. In 2020, the volume of traffic was reduced because of COVID-19 restrictions, therefore data from that year should be interpreted with caution. However, from 2019 to 2021 there were about the same number of accidents year-over-year, and almost no reduction from 2019 to 2021. It seems that enforcement alone will not improve traffic safety and a more focused approach could be taken in which at-risk drivers and at-risk locations are the targets.

As can be seen in the following table, the city had three traffic fatalities in both 2019 and 2020; however, that total nearly tripled in 2021. Data analysis must be conducted to see if 2021 was an anomaly or if there is a significant reason for the dramatic increase in fatality accidents.

TABLE 6-7: Traffic Crashes in National City, 2018 Through 2020

	2019	2020	2021
Fatalities	3	3	8
Injuries	223	216	220

Source: National City PD.

TABLE 6-8: Citations (Traffic Unit only)

	2019	2020	2021
Moving violation	346	1,076	795
Equipment violation	1,136	870	795
Parking	186	2,721	2,014

Source: National City PD.

As evidenced when examining the number of citations issued by the Traffic Unit officers, they are issuing almost twice as many equipment violation citations than moving violation citations. A moving violation is oftentimes the primary factor in traffic accidents. The traffic team should embrace a paradigm shift regarding their issuance of citations to focus more on issuing moving violation citations as opposed to equipment violation citations.

The unit also issued an unusually high number of parking tickets, especially considering that the city has its own parking control unit. It was learned that, oftentimes, the traffic officers when working areas around schools will issue parking citations in lieu of a moving violation citation. However, it was also learned that when a call comes into the department regarding a parking issue, instead of transferring the call to the city's parking control unit the traffic officers will respond and handle the call and issue a parking citation if appropriate. Having traffic motorcycle officers responding to parking issues and issuing parking citations is not the best use of their time, especially since the city has a parking control unit. Consideration should be given to altering the Traffic Unit's approach to responding to parking calls for service as well as the issuance of a parking citation in lieu of issuing a moving violation citation.

Traffic Unit Recommendations:

- CPSM recommends filling the vacant traffic officer position when possible. (Recommendation No. 25.)
- CPSM recommends that the Traffic Unit's hours be modified to 8:00 a.m. to 6:00 p.m., which would enable the traffic officers to work traffic-related issues during the busiest traffic hours of the day. (Recommendation No. 26.)
- It is recommended the sergeant delegate more of the administrative responsibilities he is now handling to the administrative secretary in the unit to free up his time. (Recommendation No. 27.)
- It is recommended that all officers assigned to traffic, at a minimum, attend a POST-approved Basic and Advanced Accident Investigation class. (Recommendation No. 28.)
- Since traffic officers do not respond to patrol-related calls to assist patrol, it is recommended that when they are working the traffic officers be assigned to all traffic accident calls for service. (Recommendation No. 29.)

- CPSM would recommend that NCPD cease responding to non-injury traffic accident calls for service unless there are some identified police-related issues involved. (Recommendation No. 30.)
- NCPD should review traffic accident data for locations where a large number of traffic accidents are occurring and after identifying primary collision factors, conduct directed enforcement to reduce the number of accidents at those locations. (Recommendation No. 31.)
- Employ the Three E's of traffic safety throughout the department. (Recommendation No. 32.)
- Consideration should be given to altering the Traffic Unit's approach to responding to parking calls for service as well as the issuance of parking citations in lieu of issuing a moving violation citation. (Recommendation No. 33.)
- The Traffic Unit must undergo a paradigm shift away from its focus of receiving the OTS grant to one of reducing the number of traffic accidents in the city. (Recommendation No. 34.)

COMMUNITY SERVICES/VOLUNTEER SERVICES

The Community Services Unit and the Volunteer Services Unit are supervised by a sergeant who reports directly to the dayshift patrol lieutenant. Within the unit, there is one officer who reports to the sergeant.

NCPD Community Events

It was learned that the sergeant and officer spend much of their time organizing and conducting the department's community events. The following are the events sponsored by NCPD:

- School Supply Giveaway.
- National Night Out.
- Special Olympics Torch Run.
- Gifts for Kids.
- Thanksgiving Giveaway.
- Shop with a Cop
- Christmas Giveaway.

These programs are meant to encourage partnerships between local police and first response teams, local government, non-profits and other organizations, small businesses, and most important of all, citizens. Almost all of the department's programs are designed to assist underprivileged families who reside in the city.

Homeless Outreach Team (HOT)

HOT operates with two police officers; however, at the current time, one of the positions is vacant. It is expected that the position will be filled sometime in 2022. The team works Tuesday through Fridays, 7:00 a.m. to 5:00 p.m. It was learned that on Wednesdays the officers do no enforcement but only conduct outreach to the unhoused persons in the city.

The unit is complaint-driven and almost all of its efforts are spent responding to those complaints. Unfortunately, the unit does not keep good statistical data on the work it does. Anecdotally, it was learned the two officers know all of the unhoused persons in the city by sight and by name. As the unhoused population appears to be increasing in almost every urban city across the U.S., NCPD is wise to have officers who deal specifically with the issues involving the unhoused population and know the availability of resources and where to access them. Officers in HOT can handle calls for service with the unhoused population more efficiently and effectively than can the regular patrol officer. The team also works closely with PERT to obtain services for those unhoused persons who have mental health issues. CPSM recommends the vacant position be filled as soon as practicable.

Psychological Evaluation Response Team (PERT)

PERT is a program funded by the County of San Diego. It provides emergency assessment and referral for individuals in behavioral health crisis who come to the attention of law enforcement through phone calls from community members or in-field law enforcement requests for emergency assistance. The program pairs licensed mental health clinicians with uniformed law enforcement officers. Clinicians also partner with law enforcement homeless outreach teams to provide proactive, preventive connections to services.

Advantages of the PERT Program include:

- Rapid response for mental health emergencies.
- Use of therapeutic crisis intervention techniques.
- Comprehensive understanding and management of individuals with mental illness.
- Transport to various facilities based on continuity of care.

Until recently, the county had two PERT members assigned to NCPD; however, both individuals left, and the positions have not been refilled by the county. Having a clinician respond with officers to calls for service involving mental health issues is beneficial because oftentimes these professionals are more responsive, more caring, and more helpful when persons are in the midst of a psychotic episode. Having a trained clinician can reduce the amount of time involved in calls for service involving mental health issues, thus allowing officers to concentrate on other responses. Most departments studied by CPSM in the last two years have recognized that the traditional approach to mental health-related calls for service of just sending police officers needs to be reassessed; departments have moved toward a PERT-type response. It is critical that the city encourage, and work with, the county to replace the two PERT positions that had been assigned to NCPD.

School Resource Officers (SRO)

School resource officers are law enforcement officers who teach, counsel, and protect the school community. When SROs are integrated into a school system, the benefits go beyond reduced violence in schools. The officers often build relationships with students while serving as a resource to students, teachers, and administrators to help solve problems.

NCPD has two school resource officers (one of them is on medical leave and will soon be retiring) who service all the schools in the city. CPSM recommends that the soon-to-be-vacant position be filled as soon as practical. The SROs are responsible for responding to all calls for service the department receives from the schools. One SRO works Monday through Thursday, 6:00 a.m. to 4:00 p.m., while the other SRO works Tuesday through Friday, 6:00 a.m. to 4:00 p.m.,

allowing for coverage every day of the school week. The SROs also teach a Star Pal curriculum in the schools. Star Pal is six- to eight-week life skills course meant to assist youth with becoming a responsible adult by providing direction in getting a driver's license, managing money responsibly, applying for job, and interviewing for a job.

Currently, many educational communities around the country are wrestling with whether to keep SROs on the school campuses or remove them from schools. There are pros and cons regarding the SROs being on the campuses of educational institutions. CPSM is not making a recommendation whether the SROs should remain or not remain on school campuses, but only suggests that a discussion occur with the schools and wider community to determine the support for retaining the SROs' presence.

Senior Volunteer Patrol (SVP)

Senior volunteers perform a variety of duties to enhance community safety and security through programs of crime prevention and education, coupled with active citizen involvement. SVPs perform non-hazardous duties which were previously handled by sworn police officers, including:

- Patrolling the city in a marked SVP vehicle and on foot to serve as the "eyes and ears" of the Police Department.
- Vacation house checks.
- Traffic control.
- Neighborhood and Business Watch.

To become a member of SVP, a prospective volunteer must be 50 years old or older, have a valid driver's license, be law abiding, and be able to pass a police background check. SVPs are not required to live in National City.

The department's website provides the SVP pamphlet in both English and Spanish, and provides a phone number and e-mail address to obtain additional information about the program. However, the volunteer application on the department's webpage is provided only in English. The department should consider providing this application in Spanish.

At the current time, the department has only one active senior volunteer. The department has not actively recruited for SVP members and thus is missing out on an outstanding opportunity to involve citizens who have the time to donate and want to make a difference by helping their police department and community. CPSM recommends the department emphasize recruitment for that segment of the community who would qualify for the program.

Police Reserve Program

NCPD reserve officers are people from the community who volunteer their time to work as a reserve police officer. As a general rule, reserve officers have full time jobs, own small businesses, are students, or are in the military. These officers have full police officer powers while on duty. NCPD reserve officers supplement the patrol division as a solo or second officer in the field. Most reserve officers work patrol, but may also work in Investigations, SWAT, and Color Guard. Reserve officers also work special events such as parades, community events, mutual aid, search and rescue, and crime scene preservation.

Reserve officers must attend and complete a California POST-approved police academy, which can take up to one year. An applicant cannot apply to be a NCPD reserve officer until they

have completed at least half of the police academy. Upon passing the interview process, the applicant will be subjected to the same complete thorough background investigation that a regular police officer applicant goes through.

The California Legislature has established three levels of reserve peace officer in order to provide flexibility and guidance to law enforcement agencies. The duties of the different levels of reserve officer are as follows:

- Level I reserves have the full powers and duties of a peace officer as provided by Penal Code section 830.1. Level I reserves can operate as a one-officer car.
- Level II reserve officers operate as a regular peace officer with the exception that they must be under the immediate supervision of a regular police officer.
- Level III reserve officers may perform specified limited support duties, and other duties that are not likely to result in physical arrests, while supervised in the accessible vicinity by a Level I reserve officer or a full-time regular officer. Additionally, Level III reserve officers may transport prisoners without immediate supervision.

Police reserves must meet the same POST-mandated training required of a regular, full-time officer. As such, they attend all training the department provides to its sworn officers. At NCPD, the reserves are paid quarterly up to \$800 per year for their time worked.

The department currently has two Level I reserves who most times will work together during a shift to provide cover for other officers or to handle minor calls for service. The department does not actively recruit for reserve officers. It was learned that the two reserve officers work approximately 20 to 30 hours per month.

Cadet Program

The National City Police Department Cadet Post (#2859) has been authorized by the Learning for Life program. Cadets work under direct supervision and participate in a variety of law enforcement training and community service activities. The purpose of the Cadet Post is to give young men and women the opportunity to learn firsthand the duties and responsibilities of a police officer, and to introduce them to a potential future career in the field of law enforcement. Although it isn't the primary objective, using the Cadet Program to recruit new officers is advantageous for the NCPD. The cadet already knows the department, knows its personnel, has proven themselves as someone who is disciplined, and is a "proven commodity." A member of the program will most likely pass the background investigation because they have had to follow strict requirements to remain in the program.

Cadets must be between 14 and 20 years of age. High school-age cadets must attend school on a full-time basis. Cadets are required to maintain a minimum grade point average of 2.0 for all courses taken and must be in good standing with their school.

The program is governed by the department's policy manual section 1024. The policy is thorough, concise, and well-written. However, the department's policy has not been updated and still refers to the Cadet Program as the Explorer Program.

According to policy, the program must have a coordinator position who is either a lieutenant or sergeant, and program advisors who are individual officers who serve with the approval of the Chief of Police. The advisors serve as mentors for each cadet.

Duties of the advisors are as follows:

- Provide a meaningful work experience for all cadets.
- Maintain a complete file on current and former cadets.
- Provide on-the-job training for cadet supervisors within the post.
- Investigate and impose disciplinary action necessary on any cadet.
- Be present at all cadet meetings and activities or have an authorized department representative approved by the post coordinator present.
- Review and approve all reports submitted by cadet personnel within the post.
- Adhere to the policies and procedures of the Cadet Post.
- Provide effective speaking engagements to those organizations requesting information about the Cadet Post

Currently, the department has a senior advisor, five additional advisors, and eight cadets. It was learned during the site visit that COVID had severely decreased the number of active cadets. The unit meets on the third Tuesday of the month; cadets are provided some type of training by the advisors or members of the department. The cadets are involved in working at community events, assisting with traffic control, etc.

CPSM recommends the department make a concerted effort to bring new cadets into the program. As mentioned earlier, the department should use the cadet program for the recruitment of future officers.

Community Police Academy

The department does not hold a Community Police Academy. A Community Police Academy (CPA) provides community and civic leaders with an inside look at the internal workings of the department. During the academy, students can be introduced to community policing and how this form of policing can help build partnerships and solve problems that arise in the community. Additionally, students can be introduced to National City's policing philosophy. Other curriculum topics include police communication, criminal law and procedures (laws of arrest), street crime enforcement, firearms training, and the citizen complaint process.

The typical eight-week academy is designed to give citizens an overview of department policies and procedures. However, the program is not designed to make a participant a police officer.

Law enforcement professionals and veteran officers teach the academy classes. Participants have an opportunity to interact with the staff from all the levels of the police department.

The department should consider offering a Community Police Academy at least twice a year to the residents and business owners in the city. Those who attend the academy would then most likely be interested in volunteering with the agency.

Animal Control

The department has one animal regulation officer (ARO) who handles all complaints by citizens regarding animals. The ARO enforces state statutes and city animal control ordinances that regulate animal care and welfare; investigates citizens' complaints of animal neglect or nuisance; and responds to loose, injured, or dead animals on public property and city roads. Animal control also inspects all commercial animal establishments. The officer has attended an

animal control academy; however, hasn't attended any updated training. The ARO uses a completely outfitted animal control vehicle.

Although it is oftentimes not popular to give up a city program and contract it out, the city, if it hasn't already at some point done it, should assess contracting out the city's animal control issues to the County of San Diego.

Crime Scene Specialists

NCPD currently has two CSSs who supplement Investigations and the Property and Evidence Unit. The primary duties of a crime scene specialist include photographing crime scenes and evidence; identifying, collecting, documenting, and preserving evidence at crime scenes; processing evidence using chemicals, equipment, and techniques such as cyanoacrylate fuming, physical and chemical latent fingerprint development, and forensic light sources; photographing and processing suspects for evidence; writing reports; testifying in court; attending off-site training programs to develop and maintain necessary technical knowledge and skills; and performing any necessary back-up related functions.

Community Service Officers

Civilian CSOs are used by many agencies studied by CPSM as a cost-saving and more efficient way to get work completed that is oftentimes handled by a sworn officer. NCPD currently has two CSO positions. If the opportunity arises to increase the department's complement of FTE employees, consideration should be given to including several more CSO positions.

Community Services Recommendations

- CPSM recommends the vacant HOT position be filled as soon as practicable. (Recommendation No. 35.)
- It is critical that the city encourage and work with the county to replace the two PERT positions that had been assigned to NCPD. (Recommendation No. 36.)
- CPSM recommends filling the soon-to-be-vacant SRO position as soon as practical. (Recommendation No. 37.)
- It is recommended that the department have a discussion with the school district and the community to determine the support for having the SROs in the schools. (Recommendation No. 38.)
- The department should consider providing the volunteer application on its website in Spanish as well. (Recommendation No. 39.)
- CPSM recommends the department emphasize recruitment for that segment of the community who would qualify for the Senior Volunteer Program. (Recommendation No. 40.)
- The department needs to update its policy which still refers to the Cadet Program as the Explorer Program. (Recommendation No. 41.)
- CPSM recommends the department make a concerted effort to bring new cadets into the department's Cadet Program. (Recommendation No. 42.)
- The department should consider offering a Community Police Academy at least twice a year to residents and business owners in the city. (Recommendation No. 43.)

- Assess whether it is viable to contract out the city's animal control activities to San Diego County. (Recommendation No. 44.)
- If the opportunity arises to increase the department's complement of full-time employees, consideration should be given to including several more CSO positions. (Recommendation No. 45.)

SPECIAL WEAPONS AND TACTICS (SWAT)

The NCPD Special Weapons and Tactics (SWAT) team consists of personnel from throughout the department assigned to SWAT as a collateral duty, sometimes referred to as a “part-time team.” The team is led by a commanding officer, the lieutenant in Investigations. Another lieutenant is also assigned as a backup and who regularly provides managerial and operational input. When the primary lieutenant is unavailable, the backup lieutenant fills in as the commanding officer and also trains with the team regularly. The SWAT team also has two sergeants and 14 officers as team members.

There is an established process to become a SWAT operator or supervisor. After selection from a competitive process, operators attend a primary SWAT school hosted by one of the larger agencies in the region. Once operators complete their basic operator training, they train every month with the team. The team trains 10 hours per month, with the five snipers having an additional half-day of training at the firearms range. There is a well-thought-out training plan that covers critical skill areas throughout the year. There are no set standards for a minimum number of hours of training for individuals or the unit as a whole. Due to staffing concerns, operators are sometimes told by their full-time supervisors they cannot attend training.

The National Tactical Officers Association (NTOA) recommends 16 hours per month or 192 hours per year of training. NTOA recommends the same training for part-time teams as they do full-time teams. Currently, the NCPD falls substantially short of this recommendation. In 2020, the department planned 100 hours of training for the team. One operator attended only 60 hours of training, and only two operators attended the full 100 hours. Patrol staffing needs and a dual reporting structure creates a conflict that needs to be addressed as part of any solution to the training issue. If the department is to have a SWAT team, there must be a commitment and direction from department leadership that attendance at SWAT training is mandatory. Patrol staffing and other shortages need to be overcome in a different manner than having operators skip training, especially when the department is well short of providing the recommended hours, even if there were perfect attendance.

There are various ways to address the shortage of training requirements. With an agency the size of NCPD, one solution could be to explore a regional SWAT team concept. The training time, equipment needs, and other expenses associated with a team can be shared between one or more other departments in the region. Many departments across the country operate successful regional teams. Individual agency contributions to the team can all be negotiated and worked out depending upon the size and needs of each agency.

Whether the solution is a regional team or not, the number of hours for planned training needs to be increased. The additional needed hours can be met by increasing monthly training to 16 hours. It can also be accomplished by adding a block or two of multiday training every year. For example, adding one or two three-day training sessions every year can quickly help meet the annual goal of 192 hours per year. Any combination will work. The multiday training blocks are beneficial for building repetitions into new concepts or working on ideas where the team needs to improve. The NTOA recommends one annual 40-hour training block in addition to monthly

proficiency training. In addition to adding hours, making training mandatory is also an essential part of any solution. Training hours should be tracked and part of every operator's SWAT evaluation annually.

As well, the department should invest in NTOA or California Tactical Officers Association (CATOA) memberships for each team member. There are many in-person and online training opportunities offered through both organizations for each member's professional development as a SWAT operator.

In general, the department appears to have adequate tactical equipment for the SWAT team. The weapons platforms for operators are current and functioning well. The team has an armored vehicle purchased in 2013 and which is in good working order. The team has five snipers operating from different platforms of sniper rifles. It is recommended the department invest in adding two new rifles and equipment to standardize the weapons systems for the sniper teams.

SWAT Recommendations:

- Provide an organizational commitment from the Police Chief that SWAT training is essential and mandatory. (Recommendation No. 46.)
- Explore partnering with other agencies to create a regional SWAT Team to share expenses, liability, and workload. (Recommendation No. 47.)
- Devise a model that meets the needs of NCPD in order to increase the number of training hours for SWAT members to 192 hours per year. (Recommendation No. 48.)
- Develop a tracking system for SWAT training; include the hours per officer per year in an annual evaluation for each SWAT team member. (Recommendation No. 49.)
- Provide NTOA or CATOA membership for each operator on the SWAT team to provide access career development training, education classes, and materials. (Recommendation No. 50.)
- The department should invest in two new sniper rifles and associated equipment to standardize all five sniper platforms. (Recommendation No. 51.)

CANINE UNIT

The Canine Unit consists of three handlers and three canines assigned to patrol squads on different days and shifts so as to provide maximum coverage. Each canine team has a dual reporting relationship with the Canine Coordinator (Traffic sergeant) and their Patrol sergeant for day-to-day operations. When not on canine calls, the handlers answer calls for service, take reports, etc. Outside of transporting prisoners, the handlers perform most patrol functions and get another officer to free them up if they have a canine call. The dual reporting relationship is common in small- to mid-size departments.

The purpose of canine teams varies from agency to agency. Agencies most commonly use their canine teams for one or more of the following reasons:

- Apprehension (searching and apprehending people).
- Odor detection (mainly drugs or explosives, not both).
- Dual-purpose (both apprehension and odor detection).
- Community relations.

- Therapeutic work (with the public and employees).

The purpose, capability, and workload of canine teams vary from agency to agency. Canine teams also have a significant liability exposure. The NCPD, with three canine teams, has an adequate to a high level of staffing compared to similar agencies, particularly with NCPD having single-purpose canines (apprehension only). The staffing issue is mitigated with the teams assigned to patrol and carrying a patrol officer workload when not training the dogs. However, it is recommended the department evaluate the program from a cost-benefit perspective to determine the feasibility of reducing the size of the unit from three canine teams to two canine teams. If reducing to two teams is feasible, the third officer could be reassigned to help with the staffing issues being felt by the patrol division.

The canines are purchased from a reliable vendor, including the dog's basic training. The teams train weekly with core training provided by a vendor and master trainer. Each handler conducts daily routine training. All of the training is overseen by the Canine Unit sergeant, who regularly attends training and reviews documentation. Outside of the vendor training, there is no independent certification of the department's training, such as by the National Police Canine Association (NPCA). Having an outside certification process, such as NPCA's, independent of the department's training vendor, ensures standards are consistent with industry practices annually. The department Canine Coordinator has not attended a canine manager course. Due to the specific technical aspects and liability exposure of a police canine program, the Canine Coordinator and the lieutenant should attend a canine manager course. The courses are available from several police canine industry vendors.

The NCPD canines are single-purpose trained dogs, working exclusively for searching and apprehending suspects. In the unit, there is no odor detection capability such as narcotics or explosives. The Canine Coordinator reviews all bite reports and responds to the scene of an apprehension when he is working. The Canine Coordinator does not respond when off duty to locations where a person is apprehended and injured by one of the canines. CPSM recommends a supervisor or manager specifically responsible for the Canine Unit respond to the scene of incidents where a canine apprehends and injures a suspect.

The Canine Unit policy is part of the Lexipol department policy, Section 308. The policy in the manual is current and covers the general parameters of the program, including many industry-standard practices. However, specific policies and procedures are not included regarding canine standards and handler expectations. It is recommended that the department create a unit manual or standard operating procedure to detail canine standards and handler expectations more thoroughly.

Canine Unit Recommendations:

- Use a cost-benefit approach to evaluate the need for three canine teams versus two canine teams. (Recommendation No. 52.)
- Send the sergeant and lieutenant assigned to the Canine Unit to a recognized canine manager's course. (Recommendation No. 53.)
- Change department policy to require the Canine Coordinator or lieutenant to respond to all situations where a canine apprehends and injures a suspect. (Recommendation No. 54.)
- Create a Canine Unit Manual or set of Standard Operating Procedures to have in place more detailed canine standards and handler expectations. (Recommendation No. 55.)

SECTION 7. OPERATIONS SUPPORT

FACILITIES

The department's main police facility is a standalone building located at 1200 National City Blvd.; the building is approximately 25 years old. The department also has a satellite warehouse that is used to store the mobile command vehicle, prisoner transport van, crisis negotiation van, and other assorted department equipment.

Most police facilities are built to last in the range of 30 to 40 years, and as the police facility was constructed approximately 30 years ago it is now requiring upgrades to many areas to make it usable and to meet today's needs. It was obvious while touring the facility that the department over the last several years has been upgrading many of the areas within the building. For example, both the male and female locker rooms have been remodeled and new, spacious lockers added, the communications center underwent a remodel approximately one year ago, and the department remodeled the gym and installed state-of-the-art equipment. The records unit, detective division, and the technology unit are currently undergoing remodeling. The building is, however, beginning to suffer from maintenance issues such as old cast iron plumbing and old technology infrastructure. Although the facility meets the department's current needs for space, if the city experiences any large-scale future growth the current facility could need an expansion.

The Operations Support corporal is responsible for handling facility needs. The corporal works closely with the city maintenance crews to ensure the maintenance issues are handled. Unless the repairs or maintenance require the use of outside contractors, the city's maintenance staff handles most facility issues. The city's janitorial staff is responsible for the day-to-day cleaning of the facility.

A major concern voiced by employees of most police departments studied by CPSM is the lack of a secure parking lot for the police vehicles, and most importantly, a secure parking lot for their personal vehicles. However, employees at NCPD are allowed to park their personal vehicles in the same secure parking areas as the department's police vehicles.

The lobby and front desk area of most police departments is one of the most important areas of the department. It is where citizens come to conduct business and where officers may meet them to conduct that business. In today's climate, as unfortunate as it may be, those areas must offer safety and security for those employees who must interact with the public. The lobby area is large and has bullet-resistant glass to help protect employees. This was obviously given high priority when the building was constructed.

As was mentioned earlier, the department remodeled both the female and male locker rooms with new, more spacious lockers for employee's uniforms and equipment. The locker rooms are sufficient for today's number of officers; however, if the city experiences growth requiring the addition of personnel, then some additional remodeling would be required.

Facility Recommendation:

- CPSM recommends the department continue to move forward with needed remodeling and renovations to improve the facility. (Recommendation No. 56.)

FLEET

The National City Police Department operates a fleet that includes patrol vehicles, K-9 vehicles, motorcycles, an animal control vehicle, detective vehicles, and specialty tactical vehicles.

A corporal assigned to the Operations Support Division is responsible for the department's fleet, and works with the city's Public Works Equipment Maintenance Division for the maintenance of all vehicles and the ordering of new vehicles. Major work needed on any police vehicle outside of normal maintenance is contracted out to a dealership, tire shop, etc. The Public Works Department handles all maintenance records and files on all department vehicles. When new vehicles are to be purchased, the department uses a purchasing review committee that elicits input from the command staff and line officers regarding the type of vehicle to be ordered. The department is currently using Ford Interceptors as its patrol vehicle of choice and those range in years from 2014 to 2021 models. A review of the vehicle inventory data (September 2021) shows that as police departments go, the fleet as a whole, is relatively low in mileage.

The department's vehicle fleet includes:

- 26 patrol vehicles.
- 4 patrol supervisor vehicles.
- 3 K-9 patrol vehicles.
- 3 patrol motorcycles.
- 1 animal control truck.
- 2 community service officer trucks.
- 1 BATT Ford F-550 armored truck.
- 1 Prisoner transport van.
- 1 crisis negotiation van.
- 1 mobile command vehicle.
- 1 F-250 truck with trailer (Traffic).
- 1 surveillance van.
- 9 command vehicles.
- 16 detective vehicles.
- 1 crime scene van.

When new patrol vehicles are purchased, the build-out of those vehicles is contracted out to American Emergency Products (AEP) in Santee, Calif. At times, the department has also used LEHR and 911 Vehicle for this.

Take-Home Vehicles

The department has a take-home vehicle program for patrol officers if they live in within the city limits. Although there are several patrol officers who are eligible to take their vehicles home, none are doing so. Command staff, detectives, and K-9 officers can all take their vehicles home, and in total about 31 vehicles are taken home. The department does not have a mileage

restriction on how far an employee can live from the city limits and still take a car home. At the current time, all the take-home vehicles are leased vehicles and the lease for each car has unlimited mileage. In the future if the city moves away from a leased vehicle plan, a mileage restriction of 30 miles should be considered by the city.

Vehicle Maintenance

The city's Public Works shop handles routine maintenance on city vehicles and follows a monthly maintenance schedule for the vehicles. Major work needed on any police vehicle outside of normal maintenance is contracted out to a dealership, tire shop, etc. It was learned that the police department has a very good working relationship with the shop and the shop is responsive to the needs of the PD. The shop will also give priority over other city vehicles when the need arises to get the vehicle back on the street in a timely manner.

Vehicle Replacement

When new vehicles are to be purchased, the department uses a purchasing review committee that elicits input from the command staff and line officers regarding the type of vehicle to be ordered. In consultation with the Public Works Department the committee makes a decision on which vehicles to ultimately purchase.

The department's philosophy and practice are to keep patrol vehicles for six years; however, that can change based upon repair and maintenance costs for each vehicle. Most departments studied by CPSM have either a policy or adhere to a philosophy of replacing patrol vehicles every five years or after racking up 100,000 miles. Although some patrol vehicles may still be serviceable after more miles than the 100,000 miles, some may require replacement at less than 100,000 miles based upon ongoing necessary repairs. However, the five years or 100,000 miles replacement practice is in essence industry standard.

The department's philosophy is to purchase new vehicles. Often, when it comes time to purchase detective vehicles, undercover vehicles, or command level vehicles, some departments have had success at purchasing lease returns that have low mileage and extra features at less cost than can be purchased new. That may not be feasible for NCPD, but it is an option to examine.

The department has just begun leasing detective and command-level vehicles; the leases will adhere to a five-year or 100,000 miles replacement schedule.

Vehicles to be purchased by the department are budgeted through the Capital Improvement Projects (CIP) funds and after review by the CIP Committee are added to the annual budget.

Fleet Miscellaneous

Detective division vehicles are assigned to individual detectives at the discretion of the commander. Patrol vehicles are not assigned in any way and officers can select any vehicle they want if it is available; however, it was learned that most officers prefer to drive the same vehicle during their shifts if it is available. In order to ensure that all vehicles (including the older vehicles in the fleet) are being driven an equal number of miles, it is recommended that there be some oversight for the vehicles that are assigned on each shift. If the department implements a 12-hour work schedule, it is recommended patrol vehicles be assigned according to night shift or day shift so that there is some consistency with vehicle mileage.

Fleet Recommendations:

- As standard practice, replace patrol vehicles at five years or 100,000 miles. (Recommendation No. 57.)
- Examine the feasibility and potential cost savings of purchasing lease return vehicles at auctions for detective, undercover, or command vehicles. (Recommendation No. 58.)
- It is recommended that the department assess each year the practicality of leasing its patrol vehicles. (Recommendation No. 59.)
- If the department implements a 12-hour work schedule, it is recommended patrol vehicles be assigned according to night shift or day shift so that there is some consistency with vehicle mileage. (Recommendation No. 60.)

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SECTION 8. ADMINISTRATIVE DIVISION

INTERNAL AFFAIRS

Ensuring the department has the public's trust is vital to the law enforcement mission, and this trust rests on departmental responsiveness to community needs and expectations. The department must receive commendations and complaints with equal professional interest and courtesy and give both the appropriate supervisory and management attention that fosters public confidence and promotes constructive communication. In fact, in the department's Personnel Complaint policy, it states *"The National City Police Department takes seriously all complaints regarding the service provided by the department and the conduct of its members."* It also states, *"It is also the policy of this department to ensure that the community can report misconduct without concern for reprisal or retaliation."*

NCPD will accept and address all complaints of misconduct in accordance with its policy and applicable federal, state, and local law; municipal and county rules; and the requirements of any collective bargaining agreements.

It was learned that over the last several years the department has been required to adhere to California Senate Bill 1421, which has demanded an inordinate amount of the unit's time and efforts. Senate Bill 1421 requires, notwithstanding any other law, certain peace officer or custodial officer personnel records and records relating to specified incidents, complaints, and investigations involving peace officers and custodial officers to be made available for public inspection pursuant to the California Public Records Act (CPRA). In order to complete the requests, the department had to form a team of members from other areas of the department to assist in the redaction of information. Moving into the future, Senate Bill 16 expands the California Public Records Act to include a sustained finding involving force that is unreasonable or excessive, and any sustained finding that an officer failed to intervene against another officer using unreasonable or excessive force, subject to disclosure. Combined, the two bills will greatly increase the amount of work the Internal Affairs Unit must perform. Since there is no administrative assistance in the I/A Unit, it is recommended the department create an administrative assistant position to assist with those CPRA requests as well as to assist with other administrative work.

Staffing

The Internal Affairs Unit operates within the Administrative Division. A lieutenant who reports directly to the captain manages the unit. The lieutenant has a staff of one sergeant who reports directly to him and who conducts or coordinates investigations.

The lieutenant and sergeant in the unit are assigned for two years, and can receive a third year option if approved by the Chief of Police.

The sergeant is responsible for:

- Recording, registering, and coordinating the investigation of complaints regarding either policy or personnel (both sworn and non-sworn).
- Posting and submission of complaint statistics to the DOJ, Bureau of Criminal Statistics, (pursuant to CPC 13012(d)) annually in January.

- Supervising, controlling, and/or conducting the investigation of alleged or suspected misconduct within the agency.
- Maintaining the confidentiality of all Internal Affairs and background investigations records.
- Acting as a liaison to the Community and Police Relations Commission's (CPRC) Complaint Review Subcommittee (CRS).

Community and Police Relations Commission

The National City Community and Police Relations Commission serves as an independent, unbiased, and impartial commission that strives to improve police–community relations. It provides a forum for citizens to voice their concerns and comments about police conduct, practices, and policies. A subcommittee of the commission is the Complaint Review Subcommittee (CRS), which is empowered to receive and review complaints regarding the alleged misconduct of NCPD employees. Its goal is to safeguard the rights of persons and promote higher standards of competency, efficiency, and justice in the provision of community policing services.

The city is to be commended for the establishment of the CRS and its purpose. Since most likely all members of the CRS are not trained in law enforcement, especially in conducting investigations of citizen complaints, the city should consider having a tenured command level person with experience in investigating personnel misconduct also review the investigations and liaison with the CRS.

Policy

Internal Affairs policy is covered in Sections 1010 Personnel Complaints and 1005.1 Personnel Complaints Procedures of the department's policy manual. The department's policy provides a process through which citizens and department employees can have confidence that complaints concerning department procedures, employees, and actions will be fairly investigated while meeting the public expectation of an objective investigation, and at the same time respecting employees' constitutional and statutory rights. The policy provides comprehensive, step-by-step guidelines and processes for the receipt, investigation, and disposition of such complaints.

Complaint Process

The public may make complaints in any form, including in writing, by e-mail, in person, or by telephone. Anonymous and third-party complaints are to be accepted and investigated to the extent that sufficient information is provided. The department's complaint form is available on the city's website; however, it was not easy to locate. The department's complaint form should be prominently displayed on the website and be interactive so that those who wish to file a complaint online can do so. The complaint form is also available in the lobby. Currently, the complaint form is only available in English, even though the city has a large Hispanic population. Not having the complaint form available in Spanish may limit some citizens ability to report police misconduct. It is recommended that the department make the complaint form available in Spanish.

All complaints are referred to a supervisor who may suggest appropriate remedies to resolve minor incidents; however, citizens are not discouraged from filing a complaint. The supervisor has the authority to handle the matter with discretion and make the appropriate resolution without a formal complaint. Many citizens only want to make their issue known to the department, be

listened to, and know that their incident will be handled appropriately. Although this does come with some risk that supervisors may “kiss off” complaints, if the supervisors are appropriately trained it can be an effective and efficient resolution to an incident. NCPD is to be commended for the trust it has in its supervisors in allowing them to resolve minor incidents without a formal complaint being filed.

When a minor incident is handled informally, a pattern of employee misconduct can be missed if the incident is not properly documented. It is imperative that some type of documentation occur when incidents are informally handled. Informal complaints can be documented either in a long-form format or a close-out format. The department uses the I/A Pro system for management of internal affairs investigations; however, it does not have Blue Team as a component of I/A Pro. Blue Team allows for the documentation of informal complaints which are handled to conclusion but do not rise to the level of a written complaint. The department should purchase the Blue Team option for the I/A Pro platform.

The department utilizes two classifications of complaints:

- Category I complaints include:
 - Department-initiated confidential or sensitive investigations.
 - Allegations of serious misconduct, such as excessive force, corruption, or alleged or suspected breach of integrity in a case of moral turpitude.
 - Allegations of any criminal misconduct.
 - Other investigations as assigned by the Chief of Police or a member of the command staff.
- Category II complaints include:
 - Complaints of a minor nature alleging discourtesy, disrespect, attitude, or perceived rudeness.
 - Complaints alleging abusive or foul language.
 - Complaints that, upon review of the allegations, will not require extensive interviews or lengthy complex investigations.

All Category 1 complaints are handled by the I/A sergeant, while most complaints that, upon review of the allegations, will not require extensive interviews or lengthy complex investigations will normally be investigated by supervisory personnel from the subject member’s command.

Complaint Classifications

Personnel complaints are classified in one of the following categories:

Informal: A matter in which the watch commander is satisfied that appropriate action has been taken by a supervisor of rank greater than the accused member.

Formal: A matter in which a supervisor determines that further action is warranted. Such complaints may be investigated by a supervisor of rank greater than the accused member or referred to the Internal Affairs Unit, depending on the seriousness and complexity of the investigation.

Incomplete: A matter in which the complaining party either refuses to cooperate or becomes unavailable after diligent follow-up investigation. At the discretion of the assigned supervisor or

the Internal Affairs Unit, such matters may be further investigated depending on the seriousness of the complaint and the availability of sufficient information.

Dispositions

Each personnel complaint shall be classified with one of the following dispositions:

Unfounded: When the investigation discloses that the alleged acts did not occur or did not involve department members. Complaints that are determined to be frivolous will fall within the classification of unfounded (Penal Code § 832.8)

Exonerated: When the investigation discloses that the alleged act occurred but that the act was justified, lawful and/or proper.

Not sustained: When the investigation discloses that there is insufficient evidence to sustain the complaint or fully exonerate the member.

Sustained: A final determination by an investigating agency, commission, board, hearing officer, or arbitrator, as applicable, following an investigation and opportunity for an administrative appeal pursuant to Government Code § 3304 and Government Code § 3304.5 that the actions of an officer were found to violate law or department policy (Penal Code § 832.8)

Those complaint dispositions are most commonly used by almost all departments studied by CPSM and are the norm in the law enforcement profession.

Informal Complaints

The department allows supervisors to handle complaints informally if they can be resolved at the time to the satisfaction of the complainant. NCPD must ensure, through ongoing discussions of personnel performance, that supervisors are making these "informal" complaint decisions utilizing a full understanding of the department's mission. Allowing the informal resolution of complaints is a common and accepted practice in most law enforcement agencies.

The department does not track those complaints that are handled informally by supervisors. However, if supervisors are required to document the "informal" complaint, these can be tracked to provide opportunities to counsel officers who may not be the subject of a formal citizen's complaint but who may need additional training or remediation regarding their contact with citizens in accordance with department policy.

Training

The I/A sergeant has attended the 40-hour POST Basic Internal Affairs course as well as other related investigation courses if applicable. Most patrol sergeants have also attended the Basic Internal Affairs course, and if they are assigned an investigation prior to attending the course, they are guided during the investigation by the I/A sergeant.

Complaint Investigations

Whether the investigation remains in internal affairs or is assigned to a supervisor in the subject employee's command, the investigator will conduct a fully documented and confidential investigation. In the State of California, the Police Officer Bill of Rights requires that citizen complaints or internal misconduct complaints must be investigated within one year. The department's policy states that investigations should be completed within 60 days. When investigations take longer than 45 days for completion, there is angst created with the citizen who filed the complaint, and the subject employee who is enduring the investigation as it drags

on. It is recommended the department strive to complete the misconduct investigations in 45 calendar days and service complaint investigations in 30 days, if possible. Currently, according to the sergeant, most Category I complaints are completed within 60 days and Category II complaints are handled within 60 days.

All investigations are conducted in accordance with the Police Officer Bill of Rights (POBAR). Interviews conducted during the investigations are recorded and the recording remains a part of the investigation.

After completion of the investigation, it is forwarded to the employee's lieutenant who then must make a recommendation regarding the employee's discipline. After the lieutenant makes a recommendation, the investigation is forwarded to the captain for a final disposition.

Discipline can be applied in the following ways:

- Certification for retraining.
- Verbal counseling.
- Formal discipline, which progresses as follows:
 - Written notice of deficiency.
 - Written reprimand.
 - Suspension.
 - Step-decrease or fine.
 - Demotion.
 - Transfer.
 - Dismissal.

A method of discipline that is not discussed in the department's options is Education Based Discipline (EBD). EBD is unique to the law enforcement community and is an alternative to punitive discipline. EBD changes the interaction between employees and management and it also changes the impact of the discipline process. The premise of EBD is that it provides an alternative to unpaid suspension days and thus is beneficial to both the department and employee. It provides an opportunity for employees to voluntarily participate in an individualized, remedial plan that emphasizes education, training, and other creative interventions which promote a successful outcome. When the department is faced with an employee's discipline that rises to anything that results in monetary loss, EBD should be considered. Discipline should not be designed to debilitate the affected employee; EBD is a path to an employee having lesser negative feelings regarding their discipline.

At the start of the investigation, the complainant is notified by mail or in person regarding who is conducting the investigation and provided contact information for that person. During the course of the investigation, complainants are notified regarding the status of the investigation by the investigator handling the investigation.

There is no indication that the department utilizes a standardized progressive discipline matrix. A standardized progressive discipline matrix can assist the department's leadership in objectively and consistently delivering discipline based on the severity of the violation and the discipline record of the department member. CPSM recommends that the department consider utilizing a

progressive discipline with a standardized matrix to apply discipline in a consistent manner and for purposes of educating personnel as to potential disciplinary action for offenses. The following table provides an illustration of a progressive discipline matrix. CPSM recommends the department consider creating a matrix that reflects the rules and regulations governing discipline specific to the department.

TABLE 8-1: Example of a Standardized Progressive Discipline Matrix

Class	First Offense	Second Offense	Third Offense	Fourth Offense
1	Min: Verbal counseling	Min: Documented counseling	Min: Documented written reprimand	Min: 1-day suspension
	Max: Documented oral reprimand	Max: Documented written reprimand	Max: 3-day suspension	Max: 5-day suspension
2	Min: N/A	Min: Documented written reprimand	Min: 1-day suspension	Min: 5-day suspension
	Max: Documented written reprimand	Max: 5-day suspension	Max: 5-day suspension	Max: 10-day suspension
3	Min: Documented written reprimand	Min: Documented written reprimand	Min: 1-day suspension	Min: 30-day suspension
	Max: 1-day suspension	Max: 10-day suspension	Max: 15-day suspension	Max: Dismissal
4	Min: 1-day suspension	Min: 5-day suspension	Min: 10-day suspension	Min: Dismissal
	Max: 10-day suspension	Max: 15-day suspension	Max: 30-day suspension	Max: Dismissal
5	Min: 5-day suspension	Min: 10-day suspension	Min: 30-day suspension	Min: Dismissal
	Max: Dismissal	Max: Dismissal	Max: Dismissal	Max: Dismissal

The “class” category should clearly define specific department violations that fall within the categories. Potential discipline should be listed for the first offense through the fifth offense. This enables consistent and transparent issuance of discipline to department personnel.

All complaint data in the following tables was provided by the department. The tables summarize the number of citizen/internal complaints and adjudications for 2019, 2020, and 2021.

TABLE 8-2: Citizen/Internal Complaints, 2019–2021

Year	No. of Citizen Complaints Received	No. of Complaints Generated by Supervisors
2019	7	10
2020	2	3
2021	4*	4**

Source: National City Police Department (1/24/2022)

*1 withdrawn by citizen

** OIS investigations

TABLE 8-3: Citizen/Internal Complaint Investigation Adjudications, 2019–2021

Year	Total	Exonerated	Not Sustained	Unfounded	Sustained
2019	17	1	3	7	6
2020	5	0	1	0	4
2021	8*			2	

Source: National City Police Department (1/24/2022).

*Remainder of complaints are pending adjudication.

TABLE 8-4: Complaints vs. Police Contacts, 2021

Year	Total Police Contacts	Citizen Complaints
2021	26,043	4

Source: National City Police Department (1/24/2022).

One can see that there were just four citizen complaint investigations conducted in 2021. However, if you take into consideration the other 27,000 calls that are in some way handled by NCPD, that equates to a complaint filed for every 16,500 police contacts. NCPD is to be commended for the professionalism of department members.

Tracking and Managing of Complaints

Investigations and complaints are logged into the IAPro investigations management system which is the systems most commonly used by departments that CPSM has studied. The Chief of Police, the Administrative lieutenant, and the I/A sergeant are the only department members who have access to the database.

Data on administrative investigations and public complaints is valuable as a risk management tool to identify training needs, performance deficiencies, or patterns of misconduct. Many departments, as has NCPD, have turned to software systems to assist in this critical management responsibility, as employing specialized software is an efficient means of producing graphs and reports quickly and with relative ease. IAPro is a robust software package that is capable of tracking a variety of information, including personnel complaints, use of force incidents, traffic accidents, and personnel commendations.

Early Intervention Program

IAPro also includes an Early Intervention Program (EIP) module as a resource for supervisory personnel to identify at early stages any employee who may display symptoms of job stress or performance problems. The intent of an EIP is to proactively provide employees with the assistance and training necessary to perform their assigned duties in an effective and efficient manner. While individual incidents such as personnel complaints, traffic collisions, and uses of force are reviewed at the time of occurrence by a supervisor and the chain of command, these incidents may appear acceptable in isolation, but a pattern of less-than-optimal job performance may be developing that is more difficult to identify. Tracking the indicators detailed in this program enables supervisors to examine the totality of an individual's actions and make a more accurate assessment of the employee's well-being. Performance indicators are set by department management and can be modified as desired. It is important these indicators are reviewed annually to ensure they meet department and community expectations.

It is important to note that the notification triggered by reaching a threshold in and of itself does not suggest a definitive problem with an employee, but rather, informs supervision of a high rate of total incidents. Again, this number is determined by the department. For instance, officers

working high-crime areas are more commonly involved in arrests and uses of force, which has the potential to trigger a notification even though their actions are entirely appropriate. This applies to more proactive officers as well. Nonetheless, the department can look at the employee's pattern of conduct and determine if there may be a problem. If so, it may address the problem through counselling, training, or as otherwise called for.

Although the department has the capabilities through IPro to manage and track complaints, it is not used for this purpose. However, the sergeant does conduct a monthly audit of I/A investigations which is submitted to the Chief. This a way to detect potential problems, but the department should take the next step. CPSM recommends the department develop a standardized early warning system that includes thresholds that trigger an EIP.

The following table is an example of EIP thresholds to cover higher liability issues.

TABLE 8-5: Example of EIP Thresholds

Incident Type	Number of officer events	Monthly time period of events
Bias Complaint	2	6
Citizen Complaint	2	12
Divisional	4	12
Internal complaint	2	12
Use of Force	5	6
Vehicle Accident	3	12
Vehicle Pursuit	4	12

Internal Affairs Recommendations:

- As there is no administrative assistance in the I/A unit, it is recommended the department create an administrative assistant position to assist with CPRA requests as well as to assist with other administrative work in the unit. (Recommendation No. 61.)
- The city should consider having a tenured command level person with experience in investigating personnel misconduct also review the investigations and act as a liaison with the Complaint Review Subcommittee (CRS). (Recommendation No. 62.)
- The department complaint form should be prominently displayed on the department's website "home page" and be interactive so a complaint can be submitted online. (Recommendation No. 63.)
- Based on community demographics and identified need, NCPD should provide the complaint form in Spanish. (Recommendation No. 64.)
- It is recommended that the department purchase the BlueTeam module for the IPro system. (Recommendation No. 65.)
- It is recommended the department strive to complete misconduct investigations in 45 calendar days and service complaint investigations in 30 days, if possible. (Recommendation No. 66.)
- When the department is faced with an employee's discipline that rises to anything that results in monetary loss, Education Based Discipline (EBD) should be considered. (Recommendation No. 67.)

- CPSM recommends the department consider creating a matrix that reflects the rules and regulations governing discipline specific to the department and consider its use. (Recommendation No. 68.)
- CPSM recommends the department develop a standardized early warning system complete with thresholds that trigger an EIP. (Recommendation No. 69.)

USE OF FORCE

The necessary and appropriate use of force in carrying out a police officer's duties up to and including the taking of a human life is among the most complex and critiqued actions of law enforcement. At no time in the past has the use of force been looked at, examined, and judged as it is today. It is essential and critical that the department have and follow a comprehensive policy on the use of force. Providing relevant training for the use of force is vital for the department. The purpose of comprehensive training in the use of force is to ensure employees are using proper and reasonable applications of force in the performance of their duties. With respect to the use of deadly force, no other responsibility of the city or department has more importance. Police departments must engage in an in-depth review of uses of force by their officers. In President Obama's report on 21st Century Policing it was stated that departments must have in place a review process of uses of force by their officers.

The use of force by NCPD personnel is governed by General Order 300, Use of Force. The policy, which is twelve pages in length, provides guidelines on appropriate uses of physical force, non-lethal weapons, deadly force, the discharging of weapons, and the reporting responsibilities of those using force. Officers are authorized to use only the amount of force which is reasonably necessary to overcome the level of resistance to secure a subject, or to stop a direct threat of harm posed by a subject which is clearly defined within the policy. Officers are required to notify a supervisor immediately after they employ any use of force, other than de minimis force. The Use of Force policy is very detailed, thorough, and well-written; it was last reviewed and revised in May 2021. Most policies, more specifically and more importantly the Use of Force policy, should be reviewed annually for any changes in law or altering any way that force is used. As the NCPD uses the Lexipol service, the policy is reviewed annually.

Reporting of Uses of Force

300.5.1 defines how NCPD Officers must report any uses of force. Any use of force used by a member of the department shall be documented promptly, completely, and accurately in an appropriate report, depending on the nature of the incident. Based upon the department's policy, officers must report uses of force in the following instances:

- (a) The application caused a visible injury.
- (b) The application would lead a reasonable officer to conclude that the individual may have experienced more than momentary discomfort.
- (c) The individual subjected to the force complained of injury or continuing pain.
- (d) The individual indicates intent to pursue litigation.
- (e) Any application of a EMDT or control device.
- (f) Any application of a restraint device other than handcuffs, shackles, or belly chains.

- (g) The individual subjected to the force was rendered unconscious.
- (h) An individual was struck or kicked.
- (i) An individual alleges unreasonable force was used or that any of the above has occurred.

The Office of Internal Affairs is the central collection point via IAPro for all use of force reports.

Use of Force Review

NCPD has a robust review of use of force incidents beginning with the supervisor, who must:

- Obtain the basic facts from the involved officers.
- Ensure that any injured parties are examined and treated.
- When possible, try to obtain a statement from the subject upon whom the force was applied.
- Ensure that photographs are taken of injuries sustained by the subject.
- Identify witnesses.
- Review and approve all related reports.
- Evaluate the circumstances surrounding the incident and initiate an administrative investigation if there is a question of policy non-compliance or if for any other reason further investigation may be warranted.

After the supervisor reviews the use of force, it is the watch commander's responsibility to review each use of force for any personnel within his/her command to ensure compliance with the policy.

The watch commander then submits the use of force with recommendations to the captain of the Division for review.

However, missing in the use of force review process is a review conducted by a department use of force instructor. The purpose of having a use of force instructor review each use of force is to identify any trends in the use of force by the members of the department, training needs recommendations, equipment needs recommendations, and policy revision recommendations. The use of force instructor should not weigh in on whether the use of force is within department policy, but only for those items mentioned prior. Since the use of force instructor is the department's subject matter expert, it is wise to include them in the review process.

The Field Operations captain annually prepares an analysis report on the use of force incidents during that year. Although the department is small, and does not have a high volume of uses of force, it would still be wise that a monthly report be generated so that any trends, training issues, equipment issues, or policy revisions don't wait for a year to be identified and acted upon.

Duty to Intercede

In recent years, law enforcement agencies nationwide have begun to include duty to intercede and report provisions in their use of force policies. Duty to intercede requires an officer to intercede if they witness a department member using force that is clearly beyond that which is necessary, as determined by an objectively reasonable officer under the circumstances. A duty to report policy requires any officer who observes a law enforcement officer or an employee use force that potentially exceeds what the officer reasonably believes to be necessary to report such observation to a supervisor.

Section 300.2.1 of NCPD policy covers the Duty to Intercede and states, “Any officer present and observing another law enforcement officer or an employee using force that is clearly beyond that which is necessary, as determined by an objectively reasonable officer under the circumstances, shall, when in a position to do so, intercede to prevent the use of unreasonable force.” However, section 300.2.1 does not specify what an officer must do if they do intercede in an incident. The Duty to Intercede policy (300.2.1) should include specific directions regarding what an officer must do when interceding in a use of force incident. That said, the NCPD is to be commended for having the Duty to Intercede section in its policy.

De-escalation Provisions

De-escalation requirements should be incorporated into every department's use of force policy. Such a provision should require officers to utilize de-escalation techniques, crisis intervention tactics, and other alternatives to force when feasible. “Feasible” would be defined for policy purposes in some jurisdictions as, “Reasonably capable of being done or carried out under the circumstances to successfully achieve the arrest or lawful objective without increasing risk to the officer or another person.” NCPD's Use of Force policy covers de-escalation in section 300.3.5 (Alternative tactics – De-escalation).

Use of Lethal Force

NCPD Policy 304 contains detailed policy and procedure guidelines regarding officer-involved shootings/deaths and their review. Whenever a National City Police Officer becomes involved in an incident in which either the officer or another person is injured or killed as a result of police action and/or the use of deadly force, or whenever an officer intentionally employs deadly force, but no injury or death results, two separate investigations shall be initiated—a criminal investigation and an administrative investigation.

The policy also discusses the department conducting a critical incident/stress debriefing with all employees involved in an officer-involved shooting or death, and a tactical debriefing to identify any training areas. However, nowhere in the policy does it discuss having the affected employees be debriefed by a psychological expert. An officer-involved shooting or any kind of use of force involving a death is perhaps the most traumatic event an officer will encounter during service. Such incidents trigger complex psychological and emotional effects; all too often, the normal coping strategies employed by individuals are inadequate for such an extreme event. Law enforcement officers are human and react to such traumatic events in different ways. CPSM recommends that each officer and witnessing officers to incidents involving a death should be required to see a psychological professional soon after the incident occurs.

Use of Force Incidents

From January 1, 2020, to December 31, 2021, NCPD recorded 26,043 calls for service. With 190 reportable use of force incidents, the NCPD used force in *0.73 percent of the calls*. However, what must be considered is that 100 of those uses of force was the pointing of a firearm, and not hands-on physical force. If those 100 incidents are removed, ***the department used force in 0.34 percent of its calls for service.***

TABLE 8-6: Use of Force Incidents, 2019–2021

Force Option	# of Times Used			% of Total		
	2019	2020	2021	2019	2020	2021
Defensive Tactics	50	47	63	78%	55%	33%
12 Gauge (Bean Bag)	1	1	3	2%	1%	2%
Flashlight	0	1	1	0%	1%	1%
37/40mm(beanbag/chemical agent)	0	0	0	0%	0%	0%
Baton	2	0	0	3%	0%	0%
Firearm	0	0	1	0%	0%	1%
OC pepper spray	1	0	2	2%	0%	1%
Canine	1	6	6	2%	7%	3%
Taser	8	8	11	13%	9%	6%
LVNR (County-wide Use Ban in 2020)	0	0	0	0%	0%	0%
Pepperball	1	1	3	2%	1%	2%
Control Hold	0	2	0	0%	2%	0%
Other	0	3	0	0%	4%	0%
Pointing a Firearm* (Mandated Reporting 2021)	0	16	100*	0%	19%	53%
Total Uses	64	85	190	100%	100%	100%
Total Overall Increase/Decreases (2020 vs. 2021)*	124%					

Note: *The increase noted regarding the pointing of a firearm is mostly due to legislatively mandated tracking/reporting.

Use of Force Recommendations:

- CPSM recommends that each use of force incident be reviewed by a use of force instructor for trends that may indicate training needs, equipment upgrades, and/or policy modification. (Recommendation No. 70.)
- It is recommended a monthly, instead of an annual, report be developed to provide timely use of force analytic information for command staff review. (Recommendation No. 71.)
- The Duty to Intercede policy (300.2.1) should include specific directions regarding what an officer must do after interceding in a use of force incident. (Recommendation No. 72.)
- It is recommended that the department include a de-escalation policy in its Use of Force policy. (Recommendation No. 73.)
- CPSM recommends that each officer and witnessing officers to incidents involving a death should be required to see a psychological professional soon after the incident occurs. (Recommendation No. 74.)

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PERSONNEL AND RECRUITMENT

The law enforcement profession always faces the challenge of renewing its ranks. For nearly every agency, this is an ongoing effort. However, for some time and especially more recently, finding qualified applicants who have the desire and ability to meet the requirements of the selection process and academy training has become a more challenging proposition, adding to a growing shortage of law enforcement officers nationwide. NCPD is no different; however, it believes its sworn ranks will be fully staffed by mid-year 2022.

NCPD has the following people assigned to work Personnel and Recruitment: one lieutenant, one I/A sergeant, one police officer, and two part-time deputies who work eight hours per week on background investigations. This unit is responsible for a variety of personnel-related duties and serves as the primary contact point for the City's Human Resources Department, although its primary mission involves hiring-related activities.

Hiring Process

The California Commission on Peace Officer Standards and Training (POST) establishes both hiring and training standards for peace officers. For hiring of peace officers, these standards include a written exam, a physical agility test, a polygraph exam, an oral interview, a background investigation, a medical exam, and a psychological evaluation. The department handles all facets of the testing process, including the CVSA, but contracts out the psychological and medical exams. Applicants use NeoGov to submit an application. When hired, a recruit then attends the San Diego Regional Public Safety Academy.

Lateral testing to join the department is continuous and is the same as for a recruit except there is no written exam. While there are a variety of methodologies that can be used in complying with a POST-approved hiring process, it appears that that the processes in use by National City serve the city well.

Pre-Employment Background investigations

The pre-employment background investigation is one of the most important investigations a law enforcement agency will ever conduct. The investigations must be very comprehensive if they are to lead to informed hiring decisions. Investigations must assure compliance with all applicable minimum standards for appointment and screen out candidates who are found unsuitable for the position, based on relevant information and their past history. Background investigations are also among the most challenging investigations to conduct. The manner in which background investigations are conducted, from areas investigated to the evaluation of resulting information, must be treated consistently across all candidates. Background investigations must and do adhere to the California POST guidelines.

The department conducts background investigations of police recruits, police lateral officers, fire department recruits, fire department laterals, volunteers, dispatchers, call takers, and other contract employees working within the department. The background investigations are conducted by the one officer assigned to the unit, as well as the two part-time civilians who are retired but have a law enforcement background. All employees conducting hiring background investigations have been to the POST Background Investigators School, and have received CVSA certification.

On average, the department conducts about 175 background investigations a year.

TABLE 8-7: Background Investigations, 2019

	Recruit	Lateral	Civilians	Reserves
Police	67	56	60	3
Fire	60			

On average, the department completes hiring background investigations for recruits and lateral officers within two to three months.

Many police agencies studied by CPSM are contracting out background investigations to retired law enforcement personnel who have obtained their private investigator licenses. Some of the reasons for contracting out are that personnel currently doing background investigations can be reassigned elsewhere in the department, the investigation can be completed in a timelier manner, private investigators usually have more extensive investigator experience, reduced costs, and sometimes even a better, more thorough investigation. Although outsourcing was discussed during the site visit, the department believes that its internal investigators create a much better hiring environment than what an outside investigation company would. While we understand that view, CPSM recommends that all hiring backgrounds for sworn personnel positions (police and fire) be contracted out to a private investigation company that specializes in hiring background investigations.

If the department chooses not to contract out its pre-employment background investigations, it should consider purchasing a background investigation software system that is designed to reduce the amount of time it takes to complete backgrounds. One such program is eSOPH, which is said to reduce background investigation time by 50 percent. Considering the number of pre-employment backgrounds the NCPD conducts, this software could deliver substantial personnel time savings in the pre-employment background investigations process.

Diversity in Hiring

Public safety agencies are facing ever-increasing pressure to match the racial and ethnic diversity of their communities with the racial and ethnic diversity of their personnel. Police agencies that are rich in diversity are simply more likely to garner trust among all citizens because the agency is reflective of the community and is inclusive of officers of many backgrounds and experiences. As one can see in the following table, the share of Hispanic sworn personnel in the department closely compliments the Hispanic demographic of the City of National City. However, the department is severely under-represented by female sworn officers. The department should strive to recruit and hire for more diversity in its sworn ranks.

TABLE 8-8: City of National City and NCPD Demographics, 2021

	Male	Female	White	Asian*	African American	Hispanic
NCPD Sworn	90.5%	9.5%	44.3%	8%	2%	44.7%
NCPD Civilian	21.6%	78.3%	29.7%	13.5%	0	56.7%
City of National City	51.5%	49.5%	11.6%	18.5%	4.8%	63.5%

Note: *Asian is comprised of Chinese, Cambodian, Filipino, Japanese, Vietnamese, Korean.

Recruitment

The department does not have a recruitment team per se. The members of the Personnel Unit handle all the recruiting for the department. The department used to have a recruitment team

that could be sent to hiring fairs or other recruiting events, but the team concept has not been used lately since many of the team members moved on to other assignments. The department again should consider developing a recruitment team made up of officers who represent the demographic profile of the community.

Recruiting messages are delivered via the city's Facebook site, CPOA, Instagram, and Twitter. Today, the younger generations use the internet almost exclusively for job searches. The department should focus more of its recruitment advertising and messages on outlets such as Indeed, LinkedIn, and the like to reach a younger demographic.

Lateral Bonus Program

The department currently does not offer an incentive to attract qualified employees. Police departments across the country—large and small—are resorting to desperation-level tactics to recruit officers as the perfect storm of retirements, public scrutiny, and fear continues to affect the pool of interested candidates. A report from the Police Executive Research Forum in 2019 called the struggle to recruit officers and the sharp increase in resignations and retirements among existing ones a “workforce crisis.” Many departments have begun offering signing bonuses for experienced police officers to join their departments. In National City's case, the city to the south (Chula Vista) is offering \$20,000 for lateral officers, while the City of Oakland is considering offering \$50,000 for lateral officers. In order to remain competitive in the lateral police officer market, CPSM recommends that National City consider offering a hiring bonus to attract lateral officers.

Personnel and Recruitment Recommendations:

- CPSM recommends that all hiring backgrounds for sworn personnel positions be contracted out to a private investigation company specializing in hiring background investigations. (Recommendation No. 75.)
- Absent a switch to a private investigation company, it is recommended the department consider purchasing a background investigation software system designed to reduce the amount of time it takes to complete backgrounds. (Recommendation No. 76.)
- The department should strive to recruit and hire for diversity for sworn positions. (Recommendation No. 77.)
- The department again should consider developing a recruitment team made up of officers who represent the demographic profile of the community. (Recommendation No. 78.)
- The recruitment effort should be focus more of its attention upon websites such as Indeed, LinkedIn, and the like to reach a younger demographic. (Recommendation No. 79.)
- In order to remain competitive in the lateral police officer market, CPSM recommends that National City consider offering a hiring bonus to attract lateral officers. (Recommendation No. 80.)

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TRAINING

New police officers for the National City Police Department must complete 912 hours of training. Recruits/students attend the regional academy Monday through Friday, eight hours a day, for 25 weeks. Students attend classroom lectures and participate in technical skills training throughout this period. The recruits/students must also participate in concentrated and intense physical conditioning classes. Students must successfully pass POST examinations during the training to continue and complete the academy program. Upon graduation, recruits receive a completion certificate from the San Diego Regional Public Safety Training Institute at Miramar College.

The San Diego Regional Public Safety Training Institute (SDRPSTI) is part of the Public Safety program at Miramar College. This program follows the guidelines of the California Commission on Peace Officer Standards and Training (POST) and serves law enforcement agencies throughout San Diego County and beyond. The Regular Basic Course (RBC) provides recruits with the skills, practical training, and discipline to prepare them for a long and rewarding career in law enforcement.

Upon graduation, officers enter a Field Training Officer (FTO) program at NCPD.

Field Training Officer (FTO) Program

The Field Training Officer Program is one of the most important functions in any police department. Although an officer graduating from the academy has received a thorough introduction to basic law enforcement subjects, that officer cannot be expected to immediately assume the full responsibilities of an experienced officer. The field training program (FTP) is intended to facilitate an officer's transition from the academic setting (academy) to the performance of general patrol duties. Its purpose is to train new officers so that each is prepared to function as a solo beat officer at the conclusion of their training cycle.

Experienced officers are selected as Field Training Officers (FTOs) to train police academy graduates over a six-month program. The FTOs serve as role models for new recruits and shape their behavior and understanding of NCPD's vision, philosophy, and operational processes. Field training officers have the dual responsibility of providing police service in their assigned beats while at the same time conducting training and evaluation for a new officer. The department currently has 15 qualified FTOs. The department's Training Division sergeant supervises the program. The FTO program supervisor must successfully complete a POST-approved Field Training Administrator's Course within one year of appointment to the position.

The responsibilities of the FTO Program supervisor include the following:

- Assignment of trainees to FTOs.
- Conduct FTO meetings.
- Maintain and ensure FTO/trainee performance evaluations are completed.
- Maintain, update, and issue the Field Training Manual to each trainee.
- Monitor individual FTO performance.
- Monitor overall FTO Program.
- Maintain liaison with FTO coordinators of other agencies.

- Maintain liaison with academy staff on recruit performance during the academy.
- Develop ongoing training for FTOs.

Having the Training Unit sergeant serve as the FTO Coordinator is unusual, but not completely outside of what is considered normal operating procedures. In most agencies studied by CPSM, the FTO coordinators are patrol sergeants, which makes it easier for them to observe trainees and FTOs on calls along with having more opportunities to ensure the needs of the FTOs and trainees are met. It is important that the FTO coordinator not only can observe the trainee during their FTO training, but to observe the FTOs' training techniques as well. Since the current FTO Coordinator has attended the POST FTP/SAC course and can act as the overall FTO coordinator administratively, CPSM recommends also appointing a patrol sergeant, as a collateral duty, to handle the operational aspects of observing the trainees and FTOs and being available to handle situations or problems that arise in the field.

Selection of Field Training Officers

In order to be considered and become a Field Training Officer, the officer must have a desire to become an FTO and train new officers, have a minimum of two years of experience with NCPD, possess a POST Basic Certificate, have demonstrated the ability to be a positive role model, pass a selection process, and receive a passing score on an evaluation by supervisors and current FTOs. All corporals by virtue of their rank at NCPD are used as FTOs; however, officers having the skills and aptitude necessary to fulfill the role can also be selected at the discretion of the Chief or Police.

FTO Training

All FTOs are required to attend and successfully complete a 40-hour POST-approved FTO class. In addition to the class, FTOs are required to complete an 8-hour CERT class for handling calls involving mental illness. Every three years as required by POST the FTOs must attend 24 hours of FTO update training. All active FTOs are currently compliant with POST requirements.

All qualified FTOs receive a 5 percent pay increase while working in the capacity of an FTO. Corporals who are also used as FTOs do not receive additional compensation when training new officers due to their pay by virtue of their rank.

CPSM also recommends that the FTO coordinator attend the annual National Association of Field Officers conference. The conference provides updates and new and emerging information related to the FTO program. For example, at this year's conference, they are highlighting course topics including De-escalation, 21st Century Policing, Communication, Remedial Training, Standardization, Interpersonal Skills, Emotional Intelligence, Instructor Development, Reducing Liability, and Program Defensibility.

Recruit Academy Training

All new recruits attend the San Diego Regional Training Academy, which is a California POST Basic Academy. It provides the minimum training requirements for California, and is a full-time, 888-hour (six months) intensive course. While the recruit is in the academy, the FTO coordinator will visit the recruit at the academy when time allows to monitor recruits' progress. Many agencies select the recruit's primary FTO at the beginning of the recruit's academy and expect monthly visits with the recruit by the primary FTO. This is wise because it enables the FTO and recruit to become more comfortable with each other; from the recruit's viewpoint, he/she is not getting into a police car with a complete stranger that first night of training. It also allows the FTO to monitor the recruit's progress and begin to identify potential training issues and ponder the

proper avenues of achieving success with the recruit in the training process. NCPD utilizes this concept, except instead of a FTO, it assigns a mentor officer to the recruit.

Field Training Program

The FTP introduces a newly assigned officer to the personnel, procedures, policies, and purposes of the department. The Field Training Officer (FTO) Manual is based upon the California POST Training Guide and was approved in 2018. The POST Field Training Program (FTP) model provides comprehensive guidelines and structured learning content to facilitate newly assigned police officers transitioning from an academic setting to field training where they gain hands-on experience that forms the foundation of their career.

The POST field training program regulations and POST-approved field training programs are intended to achieve the following goals:

- To produce a competent peace officer capable of working a uniformed, solo patrol assignment in a safe, skillful, productive, and professional manner.
- To provide standardized training to all newly assigned patrol officers in the practical application of learned information.
- To provide clear standards for rating and evaluation which give all trainees every reasonable opportunity to succeed.
- To enhance the professionalism, job skills, and ethical standards of California's law enforcement community.

The FTP is a 20-week program, beginning with a two-week orientation period. Each new officer is required to successfully complete a four-phase program in which each phase lasts four weeks. Trainees are rotated through different training officers during their four phases; however, that is dependent upon the availability of the FTOs. At the end of their training, each trainee has a two-week department familiarization in the various divisions within the department. Training can be shortened if the trainee is an experienced police officer (lateral), or training can be extended if the trainee needs additional time in any specific phase.

Trainees are assigned to specific FTOs based upon the needs of the individual trainees to help them overcome a specific deficiency. For example, if the trainee is struggling with officer safety, he/she will be placed with an officer who practices strong officer safety. Of course, as much as the department would like to assign trainees to specific FTOs, sometimes it is also based upon availability.

During the training phase, Daily Observation Reports (DORs) are completed and reviewed with the trainee at the end of every shift. All documentation of the Field Training Program is retained in the officer's training files and will consist of the following:

- Daily Trainee Performance Evaluations.
- End-of-phase evaluations.
- A Certificate of Completion certifying that the trainee has successfully completed the required number of hours of field training.

Once the trainee has successfully passed the FTO program, the trainee spends an additional two weeks in Community Services, Gang Enforcement, Investigations, and Homeless Outreach. This provides an opportunity for the trainee to understand those aspects of the department.

A review of the program by CPSM shows that it is a comprehensive program designed for the success of the trainee. Since 2019, the department has trained a total of 22 new officers, and only three have not passed the required training. That success is evident by an 86 percent pass rate of new officers out of the training program. The department is to be commended for its commitment to, and success of, its FTP.

FTO Meetings

According to the FTO Coordinator, the department tries to have semi-annual meetings with the FTOs. CPSM recommends that meetings be conducted quarterly to discuss the progress of trainees, discuss problems FTOs may be having with trainees, and provide additional training to the FTOs. Collective training input is important and integral part of the trainee's success.

FTO Policy

The department's policy regarding the Field Training Officer Program is covered under Policy Section 417. The policy is well-written and covers all aspects of the training, the department's expectations, and the trainee's goals.

After completing the FTO program, officers participate in regular in-service training provided to all sworn employees in the organization. The training is coordinated through the Training Unit. The Training Unit consists of a sergeant and one civilian employee under the direction of the Administrative lieutenant and Administrative captain.

Training is delivered through a variety of means. Some training is put on by staff who are instructors certified in specific areas. These classes follow outlines that are certified by the California Peace Officer Standards and Training (POST) organization. A significant portion of training consists of proficiency skills training required by POST. This training includes Arrest and Control, Firearms Driving, etc. POST certifies the training outlines and the instructors to teach mandated and optional training. The classes are scheduled at various times throughout the year and are tracked by the civilian training coordinator. Outside entities conduct other courses that officers may attend. Some of the training classes employees are sent to are POST certified, while other training is not necessarily certified. Outside vendor training areas often include specific technical areas such as homicide or gang investigations. Another training topic that is often contracted out is leadership development training for supervisors and managers. The department meets and exceeds all minimum requirements for training its officers. In addition, the employees of the NCPD have broad access to contemporary training in all areas of policing.

The training coordinator liaises with POST to ensure that the class outlines and instructors are certified. She also tracks attendance at training and training records for each officer. The coordinator ensures each officer meets the minimum required hours of training and that all state-mandated training is completed. She tracks each officer's progress toward meeting the POST-required training and produces a yearly report to determine what required training needs to be accomplished. The Training sergeant then devises the annual training schedule based on the report to meet the minimum requirements. The training coordinator monitors each officer's progress throughout the year and, when necessary, generates a report to show who may not be on schedule. When this does occur, the sergeant ensures the officer's chain of command is aware and that the officer attends the required training. This system appears to be comprehensive, ensuring all sworn staff meet their required training hours in specific areas.

Firearms Training

During the onsite visit, we discovered the training for firearms has been impacted by the closure of the department's indoor range. The range is in the basement of the police station and has

been closed for environmental reasons related to lead contamination. It has been closed for more than a year. Currently, the lead firearms instructor schedules all employees off-site on a rented range for their training and qualification shoots. The training occurs a minimum of four times per year. Not only is the closure an inconvenience, but it is a significant drain on staff time and takes officers off of the street and/or costs overtime. It is recommended that the city and department expedite the remediation of the range so they can resume training and qualifications in the police station.

FTO Recommendations:

- CPSM recommends appointing a patrol sergeant, as a collateral duty, to handle the operational aspects of observing the trainees and FTOs and being available to handle situations or problems that arise in the field. (Recommendation No. 81.)
- It is recommended that the FTO coordinator attend the annual National Association of Field Officers conference. (Recommendation No. 82.)
- CPSM recommends that meetings be conducted quarterly to discuss the progress of trainees, discuss problems FTOs may be having with trainees, and provide additional training to the FTOs. (Recommendation No. 83.)

Training Recommendation:

- The city and department should expedite the environmental remediation of the department's indoor firearms range to save rental fees of off-site ranges and to alleviate the need for staff to be taken off the street to travel to off-site ranges. (Recommendation No. 84.)

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SECTION 9. SUPPORT SERVICES DIVISION

COMMUNICATIONS

The Communication Center operates within the Administration Division under the direction of a captain. The Support Services manager oversees the unit and reports directly to the captain. The Communication manager has been working extensively on transitioning the department to a new CAD/RMS system, so, many of the suggestions made by CPSM in this section regarding policy, training, etc., are on her list to accomplish. Unfortunately, most of her time has been spent on managing the transition and ensuring the unit is at least operating at minimums.

The dispatcher is often the first point of contact for a citizen seeking assistance, thus 911 operators play a significant role in setting the tone for the community's attitude toward the agency. The efficiency with which they collect information from callers and relay that information to responding personnel has a significant impact on the safety of citizens and officers alike. For crimes in progress, their work substantially affects the chances of apprehending criminals.

The dispatch/communications function is a vital component of an effective law enforcement department. 911/dispatch operators serve in two primary rolls: (1) answering 911 and non-emergency telephone calls, and (2) radio dispatch duties. The NCPD Communications Unit acts as the Public Safety Answering Point (PSAP) for all National City police and fire calls. Although the unit is the primary PSAP for 911 calls, when a call requires the fire department's assistance, the dispatchers transfer the call to fire dispatch.

Many jurisdictions have found that having one communications center dispatching both police and fire calls is essential to meet the challenges of public safety in today's complex environment. Almost all significant public safety events require cooperation and coordination between the police and fire departments. The combining of both police and fire dispatch should be given some consideration by the city, which would eliminate some duplication of effort. Dispatchers can be cross-trained to dispatch both police and fire calls. Obviously, if the city chooses to combine dispatch centers, additional personnel (dispatchers) would be required in the NCPD Communication Center.

Dispatcher Workload

Calls coming into the PD are routed via a phone tree; however, if the person calling presses the 0 option, they are transferred to dispatch. Dispatch then transfers those calls to the person whom the caller wishes to speak to. Also, after city hall closes a message may direct callers to the PD and thus dispatch. The department does not record quantifiable data on the number of calls received and transferred in dispatch from city hall. Having those calls rerouted to the dispatch center is problematic when the center is understaffed. The dispatch center's primary responsibility is the taking of calls for service (911/non-emergency) and dispatching of those calls to police officers. Most often due to staffing issues, the dispatch center is operating at minimum staffing, and as such, the two operators on duty must concentrate on their primary duties and should not be answering calls that need to be rerouted.

The department's phone tree does not allow a caller to leave a message for a particular officer even if the caller knows the officer's name. Those calls come to dispatch, which then must transfer the caller to the officer's voicemail. Again, with the dispatch center operating at minimum staffing the majority of the time, this becomes problematic. Most new phone systems in

local government enable the caller to identify the correct officer via the phone tree and then be transferred to that person's voicemail without ever having to speak to a live person. Although this may not be a huge problem at the NCPD, it does create additional work for the dispatchers. The department should determine if its current system can be upgraded to allow callers to identify the officer whom they want to leave a message for, and then have the call be transferred without having to speak to a live person.

Dispatch staff often serve as an important addition to the investigative effort for in-progress crimes or an active search for wanted suspects. As officers search for suspects in the field, dispatch staff may simultaneously search various computer databases and social media platforms for information that may be of value to the investigative effort. This can apply to missing persons as well.

During 2021, the department's dispatchers answered over more than 111,000 calls that came into the Communication Center, while also obtaining information to dispatch more than 67,438 calls for service. One can see that in and of itself, that is a strong workload; however, in addition to answering and dispatching those calls, the dispatchers also must enter vehicles in the system, answer requests from officers to run people for warrants, and many, many other associated duties. And while doing this work, they are operating at almost all times at minimum staffing, which is two people. The dispatchers are doing a tremendous amount of work operating in their current situation of being understaffed; this situation is not sustainable over the long term.

CAD/RMS

The department is currently using Central Square as a dispatch platform; however, in March 2022, the department will be transitioning to and going live with Tyler New World. Tyler New World is an easy-to-use dispatch platform for law enforcement, fire, and EMS. It's fully and seamlessly integrated with GIS mapping, mobile computing, records management, and provides the information and communication essential to accelerating and improving emergency responses. It prioritizes mission-critical data, which enables rapid decisions in situations where every second counts.

The Communication Center manager has done an outstanding job preparing the department for the transition to the new CAD/RMS platform, and it is expected to go live when expected.

Policies

A well-maintained, up-to-date policy manual is key to the ongoing success and safety of a law enforcement agency, its employees, and the community. Policies set expectations and procedures outline how the expectations will be met. Law enforcement is an ever-changing profession—new local, state, and federal regulations; updated case law; innovative technology; and dynamic industry standards mean that a solid law enforcement procedures manual must be updated continuously.

NCPD's Communication Center policies are covered in the department's standard operating procedures and in the unit's own policy and procedures. The unit's policies and procedures were last updated and revised in 2018. A review and revision of the policies is overdue. The department should review policies on an annual basis and revise where necessary based upon changing law or best practices. It was learned that the Communications manager will be working on updating and revising the existing manuals. CPSM recommends the updates be undertaken as expeditiously as possible.

Dispatch Staffing

Two Senior Dispatchers are supervisors in the communications unit; there are 10 dispatch positions and one part-time call taker. At present, the unit has two vacant dispatcher positions, and one dispatcher on extended medical leave. The supervisors must fill the vacant dispatcher positions.

The following table reflects all authorized (budgeted) staffing assigned to Communications as indicated above. It shows authorized positions, actual staffing, and vacancies.

TABLE 9-1: Dispatch/Communications Personnel

Position	Authorized	Actual	Vacant
Senior dispatchers	2	2	0
Recommended additional senior dispatchers	2	0	2
Dispatcher	10	8*	2
Recommended additional dispatchers	2	0	2
Part-time call taker/dispatcher	4	1	3
Total	20	11	9

Note: *Although there are currently 10 dispatchers, one is on extended medical leave with no estimated return date. There is also one dispatcher in training.

The position of 911/dispatch operator involves challenging and stressful duty. Virtually every agency studied by CPSM reports that it is a struggle to find qualified applicants who can complete the rigorous training program required to perform dispatcher duties. As in those other agencies, NCPD is not exempt from the problem as it has two vacant positions; however, those two vacancies represent 17 percent of authorized dispatcher staffing. In addition, when one considers the dispatcher who is on extended medical leave, the vacancy percentage increases to 25 percent. Now, with 25 percent of the positions unfilled, it becomes critical that the department fill the existing vacancies to avoid burning out the dispatchers.

CPSM learned that NCPD dispatch supervisors are also working supervisors, and at the time of the site visit they were actually filling two of the dispatcher positions. In many agencies, dispatch supervisors frequently and appropriately perform some routine dispatch and call-taker duties, especially during peak hours. However, oftentimes though when tasked with being a working supervisor or filling shift positions, this comes at the expense of them not being able to perform their roles as supervisors. Consideration should be given to ensuring that while the supervisors are filling shift positions, they also have adequate time allotted to perform their supervisory duties. Supervision is essential to maintain accountability and ensure responsibilities are being completed and being completed correctly.

As was discussed above, while their primary duties are to supervise operations, due to staffing shortages, supervisors are currently operating as dispatchers in order to meet minimum staffing needs. Not only does this impact their ability to perform a myriad of supervisory as well as associated administrative duties it, may undermine their supervisory authority among their subordinates who may tend to look at them as peers.

Even when the dispatch center is fully staffed, there will be no supervision on the night shift. Each of the two supervisors are assigned to either the A shift or B shift on days. Currently, the supervisor

for each shift is responsible for all dispatchers working on their shift. For example, the supervisor on A shift is responsible for all dispatchers on A shift regardless of whether they work the day or night shift.

Since there is no supervisor on the night shift, it was learned that when a supervisor is required, the Center must rely on a patrol supervisor to handle the issue or an off-duty supervisor will be called in. This situation may work well, until it doesn't. In essence, the night shift is working with only functional supervision and no direct supervision. This can become problematic in ensuring jobs are getting done correctly and in a timely manner. Although most likely the night shift personnel are excellent, trustworthy employees, there still must be someone in charge. Although there needs to be someone to provide direct supervision on the night shift, the size of NCPD's Communications Unit does not warrant adding two more supervisor positions. CPSM recommends reclassifying two of the night shift positions to a senior dispatcher position; these positions will then be able to provide direct supervision. As well, this action will create an additional career ladder position for the dispatchers.

As in other areas of the department, it is recommended the city offer a hiring bonus for lateral dispatchers who can begin work and almost immediately be effective dispatchers.

In almost all studies conducted by CPSM over the last two years, we have seen vacancies in departments' communications units because dispatching is a job that requires extensive training to become proficient. Many departments have hired back on a part-time basis retired dispatchers from their own department as well as retirees from other departments to fill the shifts that may be unfilled by vacancies. The advantage to using retired dispatchers is that they are already trained and can step in with very minimal disruption. CPSM would recommend the department build a cadre of part-time retired dispatchers to fill unfilled positions.

Work Schedules

At present, supervisors and dispatchers work a 12-hour shift schedule wherein they work three days one week and four days the next. The fourth day in that second week is a 10-hour day.

- Day Shift: 6:00 a.m.–6:00 p.m.
- Mid-watch Shift: Noon–10:00 p.m. (When overtime is signed up for).
- Night Shift: 6:00 p.m.–6:00 a.m.

The following table provides a graphic representation of the work schedule for personnel in the Communication Center.

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TABLE 9-2: Communications Unit Work Schedule

2022 SCHEDULE	NAME	TUE	WED	THUR	FRI	SAT	SUN	MON
SHIFT A-1 (B-1)	MAE	0600-1800	0600-1800	0600-1800	Team A 0600-1400	X	X	X
SHIFT B-1 (A-1)	STEVE	X	X	X	Team B 0600-1400	0600-1800	0600-1800	0600-1800
SHIFT B-2 (A-2)	YELMA	X	X	X	Team B 0600-1400	0600-1800	0600-1800	0600-1800
SHIFT A-2 (B-2)	MARIE	0600-1800	0600-1800	0600-1800	Team A 0600-1400	X	X	X
SHIFT D-1 (E-1)	EMMA	1800-0600	1800-0600	1800-0600	Team A 2200-0600	X	X	X
SHIFT E-1 (D-1)	AUDREY	X	X	X	Team B 2200-0600	1800-0600	1800-0600	1800-0600
SHIFT E-2 (D-2)	SHAWNA	X	X	X	Team B 2200-0600	1800-0600	1800-0600	1800-0600
SHIFT D-2 (E-2)	RUBEN	1800-0600	1800-0600	1800-0600	Team A 2200-0600	X	X	X
PART-TIME CALL TAKER	JENNIFER	X	X	X	X	X	1200-2200	1200-2200

In examining the data provided by the department regarding calls per hour and days of the week, it is noted that the highest call for service demand occurs from 10:00 a.m. to 8:00 p.m., Monday through Friday. Based upon that data, it is clear that the Communication Center deployment schedule (when midwatch shift is filled) in use at NCPD reasonably matches the call workload demand and call for service activity within the established shift parameters. However, CPSM would encourage the department to fill the third shift (midwatch shift) at all times. Without having the third shift (midwatch) filled, dispatchers are forced to eat their meals at the dispatch console. When they must use the restroom, they have to hurry so their counterpart is not left in dispatch alone for any extended time. In order to fill the midwatch shift to meet the call load demand, CPSM recommends an additional two dispatch positions be created for a total of 12 dispatcher positions.

Minimum Staffing

The department's minimum staffing objective is always to have two dispatchers on duty at any given time, but we suggest that during the hours of noon to 10:00 p.m. there should be three dispatchers working based upon the department's call load. However, due to the staffing shortages within the unit, the dispatchers elected to make the third shift optional to avoid the constant mandatory overtime on their days off that would be required to fill that third shift. Operating below shift minimums is a perilous road to go down for the department. It is important to note that as we discuss minimum staffing, it is just that, minimum, not optimal, as in this case.

There are two primary duties in dispatch centers; (1) radio dispatch, and (2) answering 911 emergency and general telephone calls. Best practices for a city of this size and call volume call for; (1) a dispatcher who is responsible for all radio communication between all police field units, (2) a call taker to manage all incoming calls, both 911 and general calls. However, based upon NCPD's call load, a third dispatcher is necessary between the hours of noon and 10:00 p.m. weeknights and 2:00 p.m. to midnight on the weekends. Although CPSM understands the unit's philosophy of meeting the needs and requests of the dispatchers without mandating employees work on the third shift, not doing so can affect the unit's efficiency. CPSM recommends the department reconsider filling the third shift with overtime until the unit becomes fully staffed.

Shift Rotation

Dispatchers bid shifts by department seniority and rotate shifts every six months. After the dispatcher bids a shift for the six-month deployment, on the next shift deployment that occurs they must rotate to the opposite shift (weekends on or weekends off). Every two years, the dispatcher must go to the opposite hours for one year (days to nights/nights to days), and then can return to the shift of their choosing.

In a unit of this size, the current shift rotation policy allows all dispatchers the opportunity to have weekends off (which is usually the most preferred option) and to work day shift (which is usually the most preferred option) for a period of time. If the unit didn't utilize this type of rotation policy and based shift bid entirely on seniority, the lowest dispatcher on the seniority list could be stuck always working weekends and night shifts.

911 Call Answering Efficiency

The purpose of the 911 phone line is to improve public safety by encouraging and facilitating the prompt deployment of a nationwide, seamless communications infrastructure for emergency services. According to the National Emergency Number Association (NENA), the national guideline says that 90 percent of 911 calls should be answered within 10 seconds; however, the State of California standard says that 95 percent of calls should be picked up within 15 seconds. Almost always, with some exceptions, when a person dials 911, people's lives or safety are at stake. Because of that, it is imperative that 911 centers, such as NCPD, meet the national standards for answering calls.

As can be seen in the following table, the Communication Center is well within the national standard for how quickly it answers 911 calls. With the exception of the one-hour period of 3:00 p.m. to 4:00 p.m., when the answering percentage is 94.71 percent, the call center answers the 911 line within 10 seconds more than 97 percent of the time. This is exceptional considering that NCPD communications is operating at minimum staffing most of the time. The dispatchers are to be commended for their efficiency in answering the 911 line.

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TABLE 9-3: 911 Call Answering Efficiency

Call Hour	≤ 10 Secs	≤ 15 Secs	≤ 20 Secs	≤ 40 Secs
00:00	98.73%	100.00%	100.00%	100.00%
01:00	100.00%	100.00%	100.00%	100.00%
02:00	97.83%	100.00%	100.00%	100.00%
03:00	100.00%	100.00%	100.00%	100.00%
04:00	100.00%	100.00%	100.00%	100.00%
05:00	100.00%	100.00%	100.00%	100.00%
06:00	98.67%	100.00%	100.00%	100.00%
07:00	98.86%	100.00%	100.00%	100.00%
08:00	100.00%	100.00%	100.00%	100.00%
09:00	98.44%	100.00%	100.00%	100.00%
10:00	100.00%	100.00%	100.00%	100.00%
11:00	98.62%	99.31%	99.31%	100.00%
12:00	98.73%	100.00%	100.00%	100.00%
13:00	98.81%	100.00%	100.00%	100.00%
14:00	97.24%	98.34%	98.34%	98.90%
15:00	94.71%	96.63%	98.08%	100.00%
16:00	99.44%	99.44%	99.44%	100.00%
17:00	98.29%	98.86%	99.43%	100.00%
18:00	96.45%	98.82%	99.41%	100.00%
19:00	98.82%	99.41%	99.41%	100.00%
20:00	96.63%	97.75%	97.75%	100.00%
21:00	99.25%	99.25%	100.00%	100.00%
22:00	99.03%	100.00%	100.00%	100.00%
23:00	98.61%	98.61%	98.61%	100.00%
	98.30%	99.20%	99.41%	99.93%

Source: National City PD 2019.

High-priority Calls

All police departments prioritize calls for service based upon the seriousness of the call. In the NCPD the highest priority calls are referred to as Priority 1 calls. While a department's definition of a Priority 1 call may vary from agency to agency, such calls should include those involving life safety and in-progress crimes. For such calls, citizens expect and demand that their police department be adequately staffed and prepared to respond in a timely fashion. While the data section in this report contains considerable information concerning response times to all priorities of calls for service, here we will focus on the highest priority of calls for service.

The computer-aided dispatch (CAD) system has been programed to assign priorities to calls based upon the nature of the call. The department has assigned calls as Priority 1 through Priority 5, with priority 1 as the highest priority. Best practices are to always review the assigned priorities for relevancy and community expectations.

Calls coming in from the public are assigned as Priority 1 through Priority 4, with Priority 1 being highest. The following describes those prioritizations:

Priority 1 Call:

- A life-and-death emergency. Officers respond with lights and sirens.
- Subject down and not breathing.
- Medical emergency where officer can give medical aid before paramedics can respond (gun shot or stabbing victim).
- A traffic collision where there are confirmed injuries or the caller is unsure of injuries.

Priority 2 Call:

- Calls of crimes that are in progress or have just occurred and there is a chance of catching the suspect.
- Calls of suspicious people/circumstances or disturbances.

Priority 3 Call:

- Report calls where a crime has already occurred and a police report needs to be taken.

Priority 4 Call:

- Non-emergency type call.

The following table shows the average response time to Priority 1 calls as well as all other calls (all other priorities). It must be noted that the response time to a call begins when the first keystroke is entered into the CAD (computer-aided dispatch) call screen by the 911 operator. This begins what we refer to as the “dispatch” period. The “dispatch” period ends when a patrol unit is assigned to the call, at which time the “travel” period begins. When the patrol unit arrives at the scene of the call, the “travel” period ends and the “response time” (dispatch plus travel) is calculated.

As can be seen in the table the NCPD dispatch delay for high-priority calls of 2.1 minutes represents 39.6 percent of the total response time of 5.3 minutes experienced in National City. This is very good considering the communications unit is understaffed. In life safety and in-progress crime calls, every second can count, so attempts to reduce this number are warranted. However, NCPD is to be commended for its dispatch time and response time to Priority 1 calls.

TABLE 9-4: Average and 90th Percentile Response Times, by Priority

Priority	Time in Minutes			Calls	90th Percentile, Minutes
	Dispatch	Travel	Response		
P1 EMERGENCY	2.1	3.2	5.3	693	8.4
P2 URGENT	5.0	4.3	9.3	3,768	17.0
P3 SERIOUS	15.9	5.4	21.3	6,105	49.0
P4 NON-URGENT	31.1	7.2	38.3	3,319	101.6
P5 SELF-INITIATED/OTHER	29.2	6.1	35.4	804	98.5
Total	16.6	5.5	22.1	14,689	58.3
Injury accident	5.3	3.6	9.0	126	14.8

Note: The total average is weighted according to the number of calls within each priority level.

TABLE 9-5: Average Response Time Components, by Category

Category	Winter				Summer			
	Minutes			Count	Minutes			Count
	Dispatch	Travel	Response		Dispatch	Travel	Response	
Accident	6.6	3.7	10.3	124	6.4	4.2	10.5	127
Alarm	6.0	4.4	10.4	139	7.1	4.1	11.2	177
Animal	10.3	5.2	15.4	22	16.0	5.2	21.2	28
Assist other agency	6.3	3.0	9.2	58	5.2	4.0	9.3	73
Check	12.6	4.6	17.2	206	13.5	5.1	18.6	291
Crime-person	10.0	5.3	15.3	198	13.7	5.8	19.5	256
Crime-property	21.0	7.8	28.9	358	21.5	7.9	29.4	377
Disturbance	16.3	4.5	20.8	514	16.1	4.5	20.6	620
Follow-up	23.2	3.4	26.6	18	27.2	8.0	35.1	28
Investigation	17.8	7.7	25.5	85	23.0	8.5	31.5	72
Miscellaneous	15.1	6.3	21.4	89	15.2	6.1	21.3	86
Suspicious incident	14.7	4.2	18.9	187	11.5	3.9	15.5	241
Traffic enforcement	31.7	5.0	36.7	61	25.8	7.2	33.1	69
Violation	17.7	4.0	21.8	64	16.6	4.2	20.7	57
Total Average	15.0	5.2	20.2	2,123	15.0	5.4	20.4	2,502

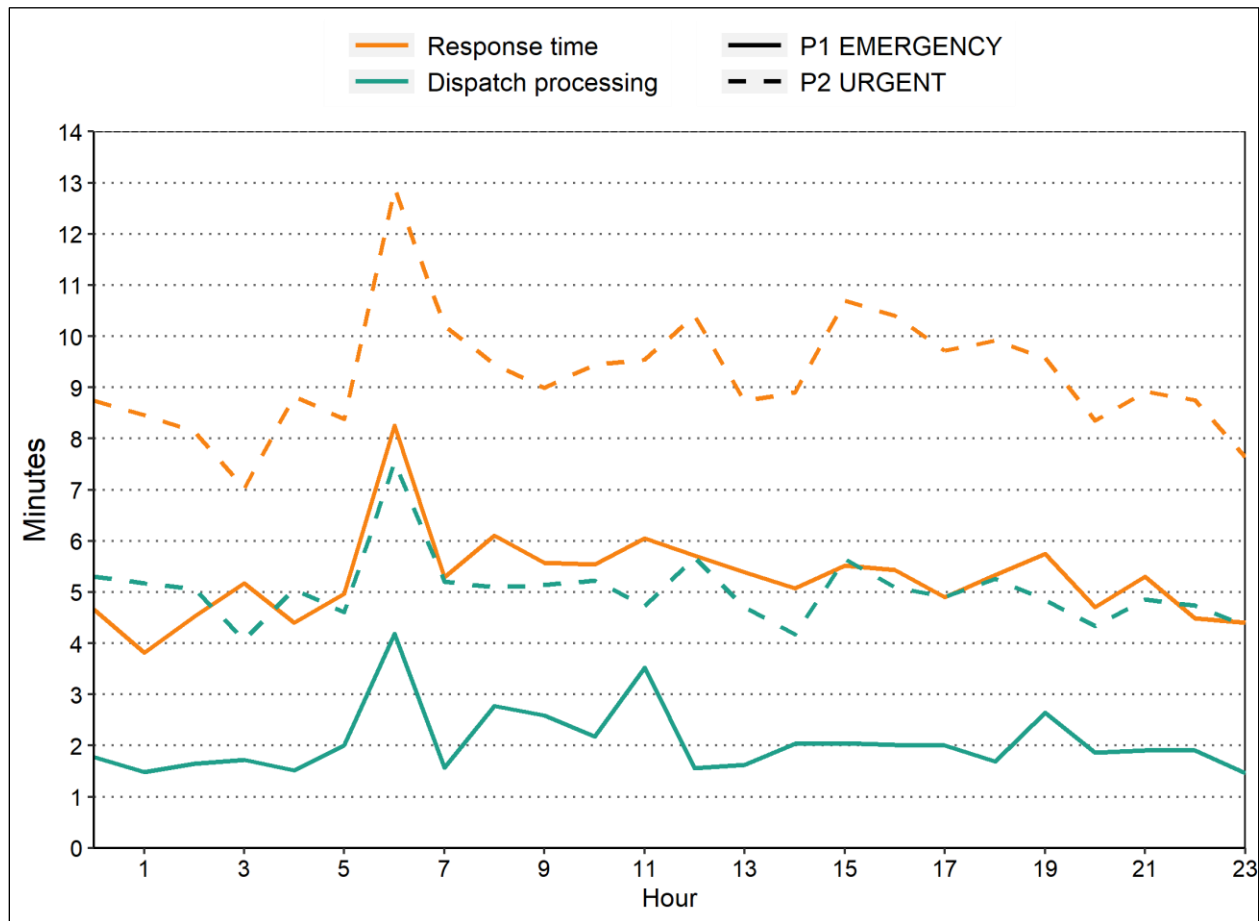
Note: The total average is weighted according to the number of calls per category.

Observations:

- In winter, the average response time for most categories was between 9 minutes and 24 minutes.
- In winter, the average response time was as short as 9 minutes (for assists) and as long as 25 minutes (for investigations).
- In summer, the average response time for most categories was between 9 minutes and 26 minutes.
- In summer, the average response time was as short as 9 minutes (for assist) and as long as 31 minutes (for investigation).
- The average response time for crimes was 24 minutes in winter and 25 minutes in summer.

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FIGURE 9-1: Average Response and Dispatch Processing Times for High-priority Calls, by Hour



Observations:

- The average response time was 5.3 minutes for P1 calls and 9.3 minutes for P2 calls. This was lower than the overall average of 22.1 minutes for all calls.
- The average dispatch delay was 2.1 minutes for P1 calls and 5.0 minutes for P2 calls. This was lower than 16.6 minutes overall.
- For P1 calls, the longest response times were between 6:00 a.m. and 7:00 a.m., with an average of 8.3 minutes.
- For P2 calls, the longest response times were between 6:00 a.m. and 7:00 a.m., with an average of 12.9 minutes.
- For P1 calls, the shortest response times were between 1:00 a.m. and 2:00 a.m., with an average of 3.8 minutes.
- For P2 calls, the shortest response times were between 3:00 a.m. and 4:00 a.m., with an average of 7.0 minutes.

Dispatcher Training

The unit has a robust training manual and training program for new hires. At the current time, NCPD has only one dispatcher trained in "tactical dispatching." A law enforcement agency may find it necessary to send a dispatcher into field situations to staff communications vehicles for a variety of events. Tactical dispatchers respond directly to the scene of critical incidents such as hostage situations, suicidal subjects, and high-risk warrants with the deployment of the SWAT and crisis negotiation teams. Tactical dispatchers are primarily responsible for providing accurate and timely documentation, tracking resource status, and handling all communications regarding the event. The tactical dispatcher is responsible for on-scene communications for SWAT or other large-scale incidents where Incident Command is being utilized. CPSM recommends sending at least several additional dispatchers to tactical dispatcher training once the unit is fully staffed. It was learned during the site visit that NCPD plans to send several dispatchers to this training as soon as staffing allows.

Quality Control Audits

Periodic reviews of random tape-recorded phone calls and radio dispatched calls handled by each 911 dispatcher or call taker is important to ensure quality control and helps to identify training and/or performance issues. An audit involves a review of tape-recorded conversations between the parties, timeliness of dispatch of the call, etc. This is an important aspect of managing a 911/dispatch operation. Monitoring communication calls for service can also assist in identifying troublesome areas that specific employees may have and provides an opportunity to correct that individual employee's deficiencies.

Every QAP should adhere to the following four principle objectives necessary for achievement of a credible quality assurance program:

- Ensure that employees understand their duties.
- Measure and evaluate employee compliance relevant to their duties.
- Thoroughly review the effects of compliance, evaluating effectiveness, accuracy, and safety.
- Make the necessary changes and assure subsequent improvements in compliance through continuing education and feedback to both the employee and the supervisor.

NCPD has a policy and procedure on Quality Assurance Monitoring which appears to be outdated; the Communication manager confirmed this status. She also said that she does not know where the policy is located within the department's policy and procedure manual. CPSM recommends that the policy be updated and included in the department's policy and procedure manual. The policy should provide clear direction regarding the purpose of the policy, the use of the policy, and specific measures to be reached. With the supervisors who are tasked with conducting the audits currently working a shift because of shortages, the quality assurance monitoring is most likely not getting done.

Psychological Debriefing

Public safety dispatchers play a vital role in the delivery of law enforcement services, functioning as a nexus between the community, law enforcement, allied agencies, and public safety field personnel. Their role is largely one of information processing, obtaining, evaluating, and disseminating information regarding crimes, emergencies, and requests for public safety services. This information is often critical to the safety of both the public and law enforcement

personnel. The conditions under which this role is carried out are often quite demanding with respect to both cognitive and noncognitive skills and qualities.

It is important to keep the unit's dispatchers mentally healthy because (1) Serious consequences of error; provide information, make decisions, and perform duties that may be critical to the safety of the public and field officers, (2) Deal with tragic and unpleasant situations, (3) Alternate between periods of high activity and low activity, and (4) Function in a reactive mode; not able to choose calls/situations to be handled or know ahead of time what the situation will be.

Dispatchers take on increasing numbers of tragic 911 calls and are just as vulnerable to PTSD as their sworn officer counterparts. According to the Association of Public Safety Communications Officers, public safety communicators suffer from mental health problems such as post-traumatic stress disorder, depression, anxiety and a raft of other conditions brought on by the horrendous things they hear over the phone and the radio.

The Communication Unit's policy describes an employee's access to either peer support or the city's Employee Assistance Program (EAP) if the employee is having personal or professional problems. However, since dispatchers may need professional counseling or support from a clinical psychologist specific to the stressors of their position, CPSM recommends that all dispatchers and call takers be required once a year to meet with a mental health professional for debriefing.

Communications Recommendations:

- The city should consider combining police and fire dispatch centers to avoid duplication of work, save costs, and provide better coordination on major incidents. (Recommendation No. 85.)
- It is recommended that lines from city hall be transferred elsewhere in the city until such time that dispatch is fully staffed. (Recommendation No. 86.)
- The department should determine if its current phone system can be upgraded to allow callers to identify the officer whom they want to leave a message for, and then be transferred to an officer's voicemail without having to speak to a dispatcher. (Recommendation No. 87.)
- As the Communication Center's policies have not been reviewed or revised since 2018, it is recommended that NCPD begin a review and revision of these policies as expeditiously as possible. (Recommendation No. 88.)
- The vacant dispatcher positions should be filled as quickly as possible. (Recommendation No. 89.)
- CPSM recommends reclassifying two of the dispatch positions to senior dispatcher in order to have direct supervision on the night shift. (Recommendation No. 90.)
- CPSM would recommend the department build a cadre of part-time retired dispatchers to fill shifts when needed. (Recommendation No. 91.)
- In order to fill the midwatch shift, which is necessary based on call load, CPSM recommends an additional two dispatcher positions be created for a total of 12 dispatcher positions. (Recommendation No. 92.)
- CPSM recommends sending at least several additional dispatchers to tactical dispatcher training once the unit is fully staffed. (Recommendation No. 93.)

- CPSM recommends that the quality assurance monitoring policy be updated and included in the department's policy and procedure manual. (Recommendation No. 94.)
- CPSM recommends that all dispatchers and call takers be required once a year to meet with a mental health professional for debriefing. (Recommendation No. 95.)

RECORDS UNIT

Records Work Schedule, Staffing, and Public Access

The Records Unit falls under the Police Services Manager, who reports to the Administrative Division captain. The unit is supervised by a supervisor and staffed by five full-time records clerks. The five clerks work a four-day 10-hour workweek schedule with four working on Mondays and one working on Friday.

The Records Unit is open to internal customers from 6:30 a.m. to 5:00 p.m., Monday through Friday. The unit is open to the public Monday through Thursday from 8:00 a.m. to 5:00 p.m. The following table reflects the Records Unit's staffing and hours of accessibility.

TABLE 9-6: Records Unit Staffing and Accessibility

	Monday	Tuesday	Wednesday	Thursday	Friday
Staffing	4 clerks	4 clerks	4 clerks	4 clerks	1 clerk
Accessibility: Internal	Open	Open	Open	Open	Open
Accessibility: Public	Open	Open	Open	Open	Closed

This schedule appears to be in line with other units throughout the department and aligns with the increased workflow for Records on Mondays following the weekend. It seems the staffing model is the reason for the public hours and the closure to the public on Fridays. CPSM has found modified work schedules have become routine in police departments we have studied. Changes often occur in these schedules over time and sometimes to the detriment of public accessibility. CPSM recommends an internal review of the workload and schedule of the Records Unit to determine if the schedule can be modified to allow for the Unit to be open and accessible to the public on Fridays.

Workload Demand

The NCPD Records Unit, like most police records units, processes a great deal of the workflow for the agency. The processes handled by the Records Unit include, but are not limited to, the following:

- Processing in-custody arrest packages for court.
- Processing all departmental reports after supervisors approve them.
- Processing subpoenas.
- Registering sex offenders.
- Registering arson offenders.

- Processing all citations (criminal, civil, traffic, and parking).
- Processing public records requests.
- Redacting for public records.
- Accepting and processing fees from the public.
- Scanning and filing vehicle inspection logs.
- Processing vehicle repossessions.
- Actin as back-up for other administrative processes throughout the department.
- Approving each RPPA entry.
- Filing all in-custody reports and evidence electronically in Evidence.Com.
- Processing and delivering all department mail, including twice-daily mail runs.
- Records checks for internal and external customers.
- Firearm system entries.
- Reviewing and processing lab reports.

Many of the processes handled by the Records Unit are normal police processes and are being conducted routinely, efficiently, and effectively. A few processes identified during our site visit could use further review or changes to maximize efficiency and effectiveness.

The Records Unit receives handwritten vehicle inspection forms daily from every officer who drives a marked unit. The clerks scan and file each paper form. These daily vehicle inspections date back many years and are designed to ensure vehicles are correctly maintained for safe and efficient operation. Many police departments have eliminated this type of form, incorporating a check-off list in their CAD system or eliminating the process. The current forms, in aggregate, take an excessive amount of time to complete and process. CPSM recommends modifying the process to a digital process requiring only one touch or eliminating the process.

Another process in need of improvement in the Records Unit is the processing of parking citations. Several years ago, the Parking Enforcement Unit was moved from the police department to a different department in the city. The Parking Enforcement Unit writes thousands of citations and processes them electronically through a third-party system. However, the NCPD traffic officers still write out paper parking tickets that are processed and filed through the Records Unit. The processing of parking citations electronically elsewhere in the city and by paper in the police department is inefficient and causes public confusion. If the police department continues to write parking tickets, the tickets should be issued using the same electronic system and processed by the same third-party vendor. Records should not be processing and filing paper copies of thousands of citations every year while a third party processes the Parking Enforcement Unit citations.

Records clerks routinely perform criminal records checks for officers and detectives. The department has in place a paper-based system for an officer or detective to request a criminal history check on a case. The officer or detective fills out the form, prints the report, attaches the request form, and sends it to Records via interoffice mail. Records processes the request, prints the results, and sends the packet back to the officer. With all of the advancements in technology and computers now available throughout the department and in patrol cars, with minimal training the officers and detectives can perform these checks.

The department-wide workflow for police reports should be evaluated in detail for process improvement. Several units visited during the CPSM site visit did not understand the workflow, and there appears to be inefficiencies and duplicated efforts built into the process. For example, the Investigations sergeant reviews reports that do not require follow-up. Reports are routinely sent to the Investigations sergeant unnecessarily by the settings in the records management system. The Investigations sergeant and records clerks spend excessive time reviewing reports that should be automatically sent or assigned elsewhere. For another example, the records clerks pull reports with suspects identified, print the reports, and send them to detectives for review. The Investigations sergeant also reviews these cases and assigns detectives electronically. There does not appear to be any need for the reports to be pulled and printed by Records.

There are some unnecessary and redundant steps in the process. It appears the overall flow was created many years ago, and small changes have taken place throughout the years for specific reasons in particular areas and implemented by unit managers for the benefit of individual units. The cumulative effect of these changes appears to be unintended system-wide inefficiencies and conflicts. CPSM recommends an internal PD committee examine each workflow step through a process mapping system. A committee member (internal employee or contract) should be experienced in process mapping to produce a system-wide map of all the workflow involved in reports from initial intake to prosecution. This process will identify steps that can be eliminated and procedures that can be automated to save significant amounts of staff time.

Records Management System

The NCPD uses a county-wide records management system, Net RMS. Net RMS is in the process of being upgraded to a new version called NICHE. NICHE will not be live until sometime in 2023. The NET RMS system is used department-wide for initial reports, investigative reports, and data collection. The new NICE system reportedly will have many valuable upgrades that enhance the user experience, improve workflow, and enhance data collection.

Records Recommendations:

- CPSM recommends an internal review of the workload and schedule of the Records Unit to determine if the schedule can be modified to allow for the Unit to be open and accessible to the public on Fridays. (Recommendation No. 96.)
- CPSM recommends an internal review of the daily patrol vehicle inspection process, form, and routing of the form. The inspection form, if necessary, should be completed electronically, and consideration should be given to not involving Records in this process. (Recommendation No. 97.)
- CPSM recommends the department and city collaborate to move the police department to the same electronic parking ticket system and vendor used by the city. Records should not be processing and filing paper copies of thousands of parking citations while a third-party electronic process is in place elsewhere in the city. (Recommendation No. 98.)
- The department should review the need for Records to be routinely running record checks and printing rap sheets for officers and detectives. With minimal training, officers and detectives can queries and print rap sheets. (Recommendation No. 99.)
- The department-wide workflow for police reports should be evaluated in detail for process improvement. If necessary, a professional experienced in process mapping can assist in

mapping the process for improvement. The current system has inefficiencies, duplication, and lack of automation. (Recommendation No. 100.)

- Consider adding a position to the Records Unit to handle the processing of PRAs. (Recommendation No. 101.)

CRIME ANALYSIS

One Crime Analyst perform the crime analysis function; the analyst processes detective, supervisor, and command staff requests. Based on our interview of the analyst, it is apparent the majority of her work is reactive. There are very few reports, queries, or other intelligence work initiated by the analyst. Also, the analyst has inherited additional administrative duties unrelated to the crime analysis function, which hinders her ability to be proactive. The primary responsibility inherited by the Crime Analyst is the processing of and coordinating many Public Records Act (PRA) requests. For example, in 2020, the analyst reviewed, coordinated, processed, and/or redacted 94 separate PRA request. Some of these PRA requests involved thousands of records that needed to be redacted. CPSM recommends reassigning the PRA function from the crime analyst and moving the responsibilities elsewhere in the department, possibly to Records.

Moving the PRA function to Records would likely require hiring an additional person for the Records Unit. However, the function is more appropriate for the Records Unit. The Records manager is the department's custodian of all records and would supervise this function, given adequate staffing. The assignment of the PRA tasks to the crime analyst has been at the expense of the department's ability to utilize modern data-driven metrics to deploy resources to fight crime.

The analyst's role is to proactively analyze crimes, review reports, look for repeat or serial offenders, and provide frequent intelligence for managers and supervisors to deploy resources effectively. The department does not hold regular meetings that focus on crime numbers, traffic collisions, or operational information that would have an impact on strategy. Sometimes police departments refer to these meetings as Compstat or crime suppression meetings. The reason there are no regular crime meetings may tie into the lack of the necessary tools to analyze crime and other data in detail. Given the proper time, a crime analyst can provide the information needed to have impactful crime reduction strategy meetings. CPSM recommends the department assign a captain to research what other agencies are doing and then develop and manage a crime reduction strategy that includes actionable intelligence and regularly scheduled meetings for the command staff to examine the data and devise solutions. Other assignments can be made, but it is essential to have consistent involvement from a department executive to get organizational buy-in.

Crime Analyst Recommendations:

- Reassign the crime analyst's administrative duties that are unrelated to a crime analysis or intelligence-related function, particularly the PRA requests. (Recommendation No. 102.)
- Assign a captain to research and develop an ongoing crime suppression strategy. The strategy should include working with the crime analyst to create meaningful reports and other data to develop strategies to reduce crime and traffic collisions in National City. (Recommendation No. 103.)

SECTION 10. SUMMARY

Throughout this report we have endeavored to provide the reader with insight into the National City Police Department, its strengths, and opportunities for improvement.

CPSM recognizes that the recommendations, especially those involving added personnel, come at a significant cost. Please be assured that these recommendations were not made lightly, but with significant consideration regarding the operational necessity associated with each position. In one case, we recommended a reduction in staffing, but only if what we believe is unnecessary workload is modified or transferred.

We further recognize that implementing many of these recommendations, should the NCPD choose to do so, may in some cases take months or perhaps much longer. We would encourage the department leadership to work with the Chief on identifying those recommendations that are most critical. As well, we would make ourselves available to consult as necessary and appropriate.

Additionally, a comprehensive data analysis report will follow. While the more pertinent aspects of that analysis are embedded in the operational assessment, readers are encouraged to review the data analysis report in its entirety.

§ § §

SECTION 11. DATA ANALYSIS

This data analysis on police patrol operations for the National City Police Department focuses on three main areas: workload, deployment, and response times. These three areas are related almost exclusively to patrol operations, which constitute a significant portion of the police department's personnel and financial commitment.

All information in this analysis was developed using data recorded by the department's computer-aided dispatch (CAD) system.

The COVID-19 pandemic and its related lockdowns affected 2020 call volumes and all law enforcement agency workloads. For this reason, CPSM collected data for 2019 and 2020, but focused its analysis on 2019's data. Appendix C displays an analysis of workloads and deployed personnel for the 2020 calendar year. The majority of the first section of the report, concluding with Table 11-11, uses call data for one year. For the detailed workload analysis, we use two eight-week sample periods. The first period is from January 4 through February 28, 2019, or winter, and the second period is from July 7 through August 31, 2019, or summer.

WORKLOAD ANALYSIS

When CPSM analyzes a set of dispatch records, we go through a series of steps:

- We first process the data to improve accuracy. For example, we remove test records that do not indicate an actual activity. We also remove incomplete data, as found in situations where there is not enough time information to evaluate the record.
- At this point, we have a series of records that we call "events." We identify these events in three ways:
 - We distinguish between patrol and nonpatrol units.
 - We assign a category to each event based upon its description.
 - We indicate whether the call is "zero time on scene" (i.e., units spent less than 30 seconds on scene), "police-initiated," or "community-initiated."
- We then remove all records that do not involve a patrol unit to get a total number of patrol-related events.
- At important points during our analysis, we focus on a smaller group of events designed to represent actual calls for service. This excludes events with no unit time spent on scene and directed patrol activities.

In this way, we first identify a total number of records, then limit ourselves to patrol events, and finally focus on calls for service.

As with similar cases around the country, we encountered several issues when analyzing National City's dispatch data. We made assumptions and decisions to address these issues.

- 1,003 events (about 4 percent) involved patrol units spending zero time on scene.
- One call lacked accurate busy times. We excluded this call when evaluating busy times and work hours.

- The computer-aided dispatch (CAD) system used approximately 205 different event descriptions, which we condensed into 20 categories for our tables and 12 categories for our figures (shown in Chart 11-1). Table 11-20 in the appendix shows how each call description was categorized.

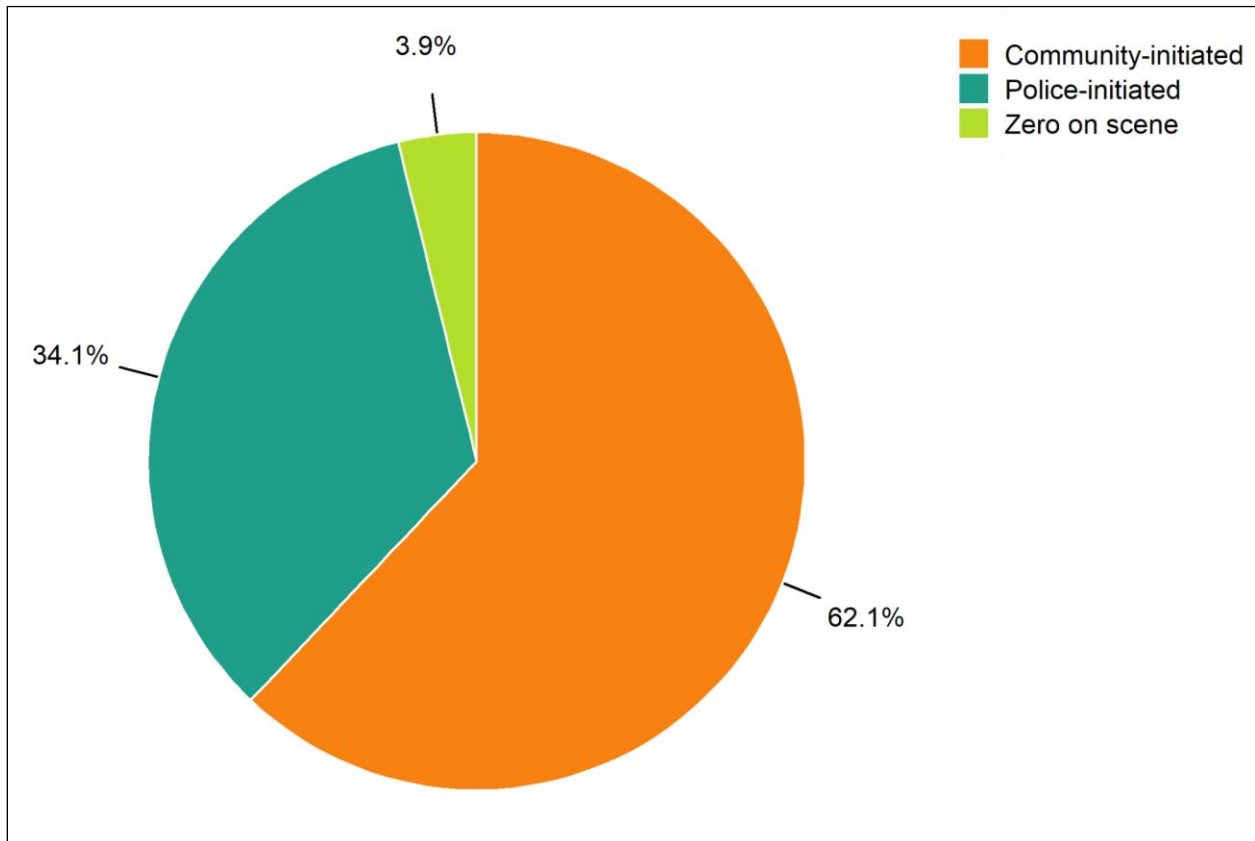
Between January 1, 2019, and December 31, 2019, the communications center recorded approximately 26,043 events involving a responding patrol unit. When measured daily, the department was dispatched to an average of 71 patrol-related events per day, approximately 4 percent of which (3 per day) had fewer than 30 seconds spent on the call.

In the following pages, we show two types of data: activity and workload. The activity levels are measured by the average number of calls per day, broken down by the type and origin of the calls, and categorized by the nature of the calls (crime, traffic, etc.). Workloads are measured in average work hours per day.

CHART 11-1: Event Descriptions for Tables and Figures

Table Category	Figure Category	Common Call Descriptions
Alarm	Alarm	459A AUDIBLE BURG ALARM; 211A ROBBERY ALARM; 459S SILENT BURG ALARM
Assist	Assist other agency	ASSIST OTHER AGENCY; MEDICAL; FIRE OTHER
Check	Check	CHECK THE WELFARE; CITIZEN FLAG
Crime	Crime-person	242 BATTERY; 415 DV-VIOLENT; 242R BATTERY REPORT
Crime	Crime-property	488R PETTY THEFT REPORT; 594R VANDALISM/MAL MISCHIEF RT; 10851 REPORT
Directed patrol	Directed patrol	EXTRA PATROL; 11-86 SPECIAL DETAIL; PRESERVE THE PEACE
Disturbance	Disturbance	415 SUBJECT; 415 REFUSING TO LEAVE; 5150 MENTAL SUBJECT
General noncriminal	Animal	ANIMAL VICIOUS/INJURED/SICK; ANIMAL ROUTINE; ANIMAL AT LARGE
General noncriminal	Follow up	FOLLOW-UP
General noncriminal	Miscellaneous	SELF INITIATED; HAZARD; MISCELLANEOUS
Investigation	Investigation	11-50 FIELD INTERVIEW; MISSING PERSON; UNKNOWN PROBLEM
Out of service	Out of service-admin.	TRAINING/TEST
Suspicious	Suspicious incident	SUSPICIOUS SUBJECT; SUSPICIOUS CIRCUMSTANCES; 11-8 PERSON DOWN
Traffic	Accident	11-82 ACCIDENT NON-INJURY; 11-83 ACCIDENT NO DETAIL; 20002R HIT & RUN NON-INJ RT
Traffic	Traffic enforcement	PARKING COMPLAINT; 11-88 STALLED VEHICLE; 23103 RECKLESS DRIVER
Traffic	Traffic stop	TRAFFIC STOP
Violation	Violation	602 TRESPASSING; IMPOUND PD; 602R TRESPASSING REPORT

FIGURE 11-1: Percentage Events per Day, by Initiator



Note: Percentages are based on a total of 26,043 events.

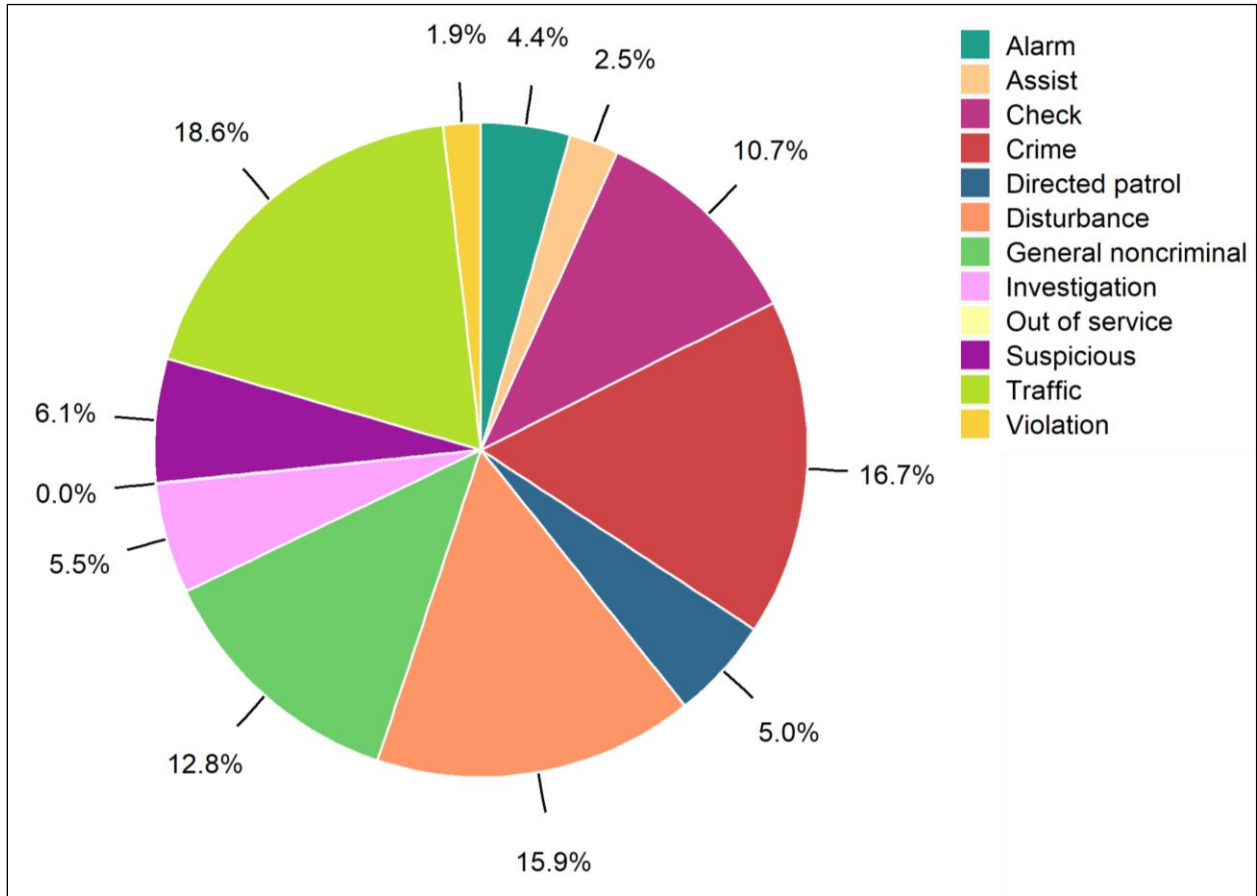
TABLE 11-1: Events per Day, by Initiator

Initiator	No. of Events	Events per Day
Community-initiated	16,163	44.3
Police-initiated	8,877	24.3
Zero on scene	1,003	2.7
Total	26,043	71.4

Observations:

- 4 percent of the events had zero time on scene.
- 34 percent of all events were police-initiated.
- 62 percent of all events were community-initiated.
- There was an average of 71 events per day or 3.0 per hour.

FIGURE 11-2: Percentage Events per Day, by Category



Note: The figure combines categories in the following table according to the description in Chart 11-1.

TABLE 11-2: Events per Day, by Category

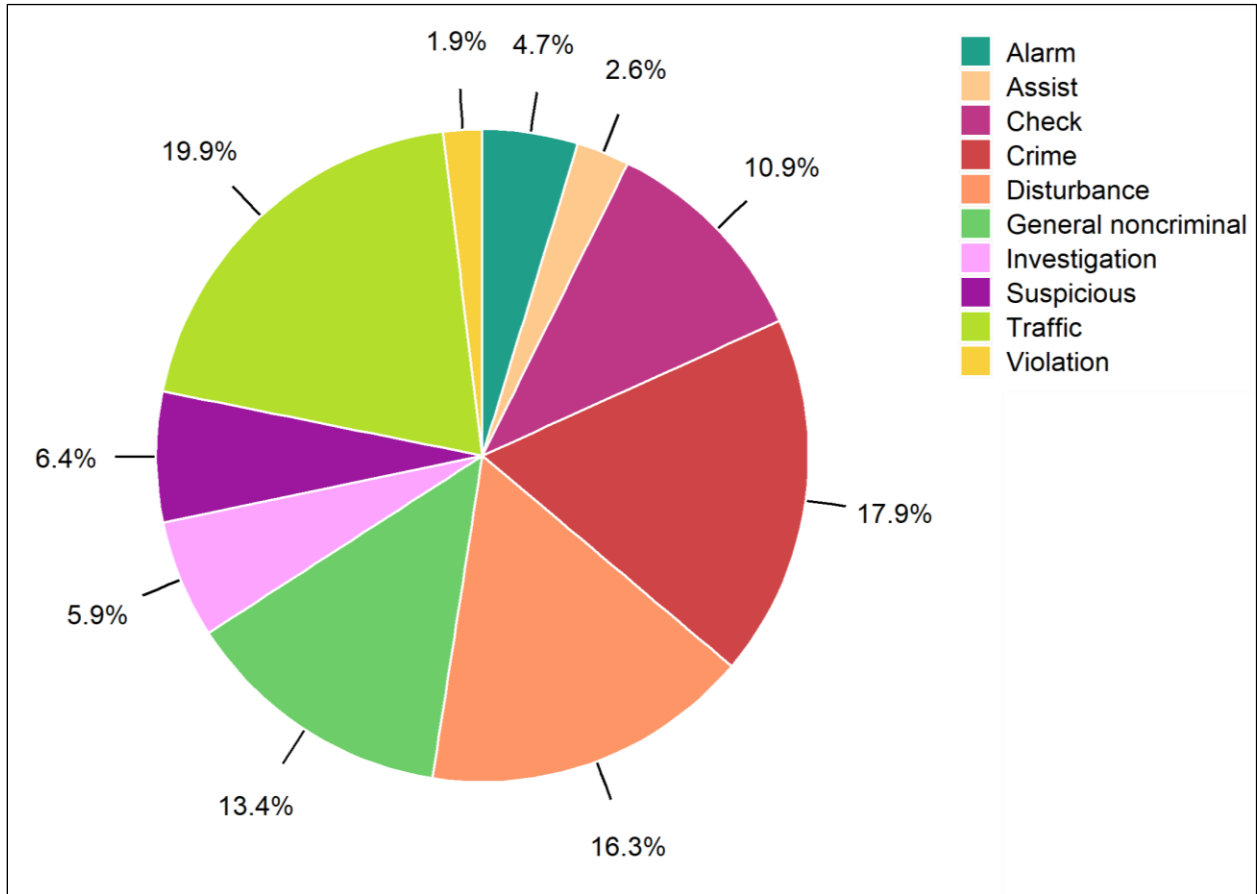
Category	No. of Events	Events per Day
Accident	1,147	3.1
Alarm	1,145	3.1
Animal	186	0.5
Assist other agency	639	1.8
Check	2,796	7.7
Crime-person	1,691	4.6
Crime-property	2,646	7.2
Directed patrol	1,311	3.6
Disturbance	4,130	11.3
Follow-up	1,102	3.0
Investigation	1,422	3.9
Miscellaneous	2,034	5.6
Out of service-administrative	8	0.0
Suspicious incident	1,597	4.4
Traffic enforcement	756	2.1
Traffic stop	2,947	8.1
Violation	486	1.3
Total	26,043	71.4

Note: Observations below refer to events shown within the figure rather than the table.

Observations:

- The top three categories accounted for 51 percent of events.
 - 19 percent of events were traffic-related.
 - 17 percent of events were crimes.
 - 16 percent of events were disturbances.

FIGURE 11-3: Percentage Calls per Day, by Category



Note: The figure combines categories in the following table according to the description in Chart 11-1.

TABLE 11-3: Calls per Day, by Category

Category	No. of Calls	Calls per Day
Accident	1,125	3.1
Alarm	1,124	3.1
Animal	177	0.5
Assist other agency	625	1.7
Check	2,586	7.1
Crime-person	1,658	4.5
Crime-property	2,607	7.1
Disturbance	3,874	10.6
Follow-up	1,066	2.9
Investigation	1,392	3.8
Miscellaneous	1,947	5.3
Suspicious incident	1,532	4.2
Traffic enforcement	671	1.8
Traffic stop	2,936	8.0
Violation	463	1.3
Total	23,783	65.2

Note: The focus here is on recorded calls rather than recorded events. We removed 1,003 events with zero time on scene, 1,250 directed patrol events, and 7 out-of-service activities.

Observations:

- On average, there were 65.2 calls per day, or 2.7 per hour.
- The top three categories accounted for 54 percent of calls:
 - 20 percent of calls were traffic-related.
 - 18 percent of calls were crimes.
 - 16 percent of calls were disturbances.

FIGURE 11-4: Calls per Day, by Initiator and Month

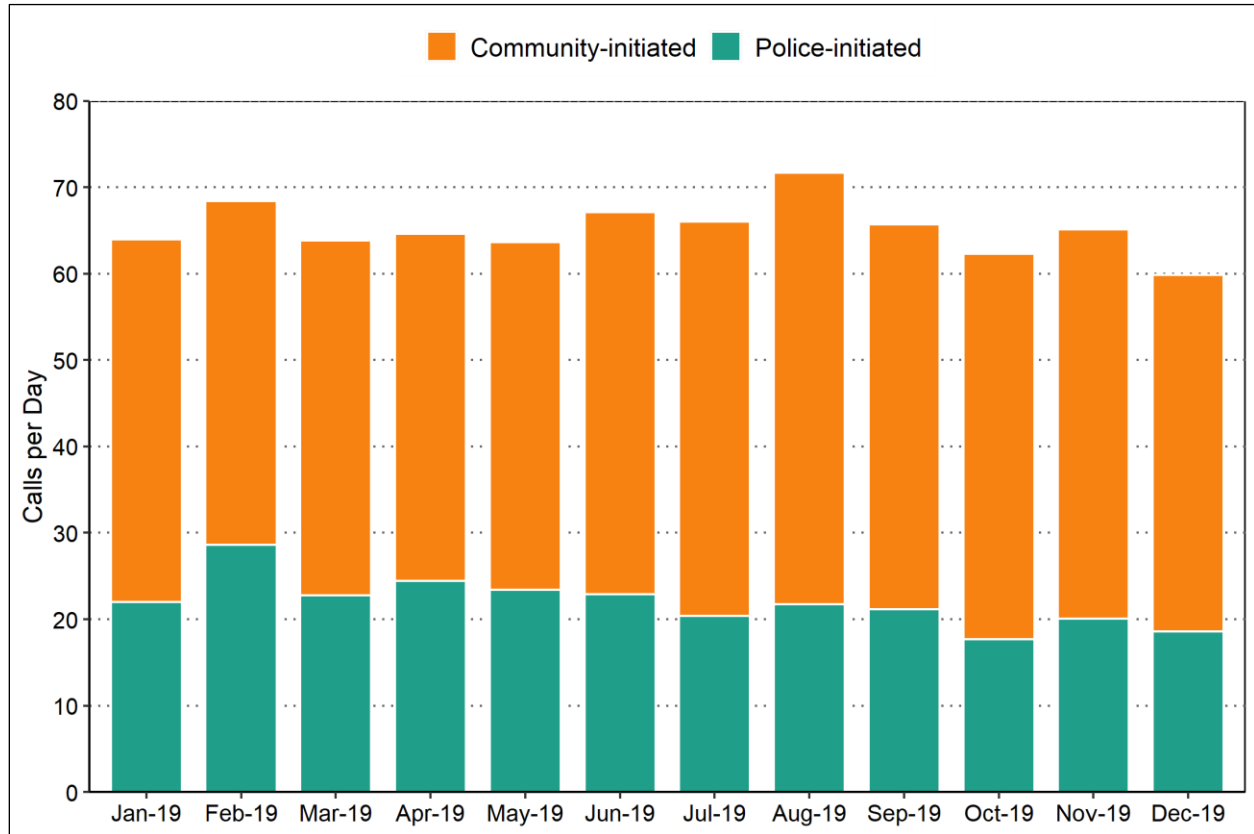


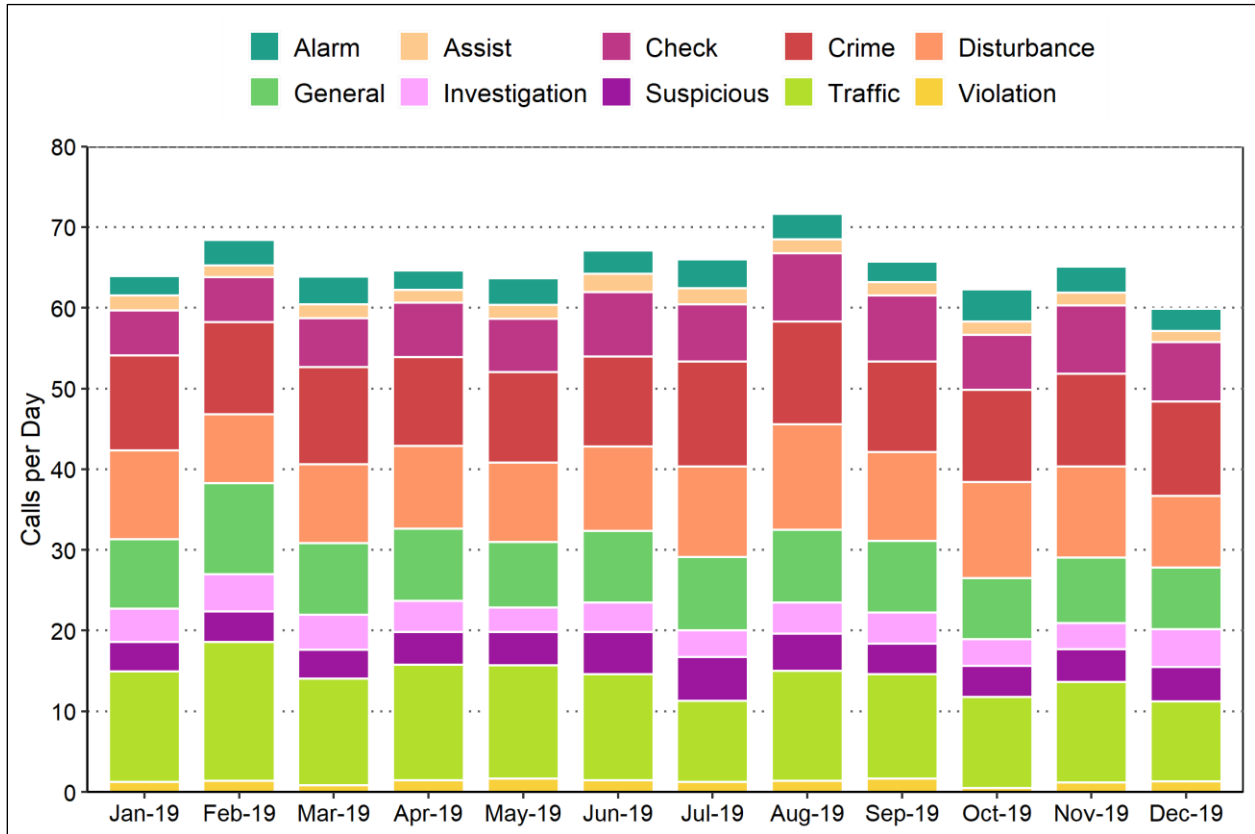
TABLE 11-4: Calls per Day, by Initiator and Months

Initiator	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Community	42.0	39.8	41.1	40.2	40.3	44.2	45.7	49.9	44.6	44.6	45.0	41.3
Police	22.0	28.6	22.7	24.4	23.4	22.9	20.4	21.7	21.1	17.7	20.1	18.6
Total	64.0	68.4	63.8	64.6	63.7	67.1	66.0	71.7	65.7	62.3	65.1	59.9

Observations:

- The number of calls per day was lowest in December.
- The number of calls per day was highest in August.
- The months with the most calls had 20 percent more calls than the months with the fewest calls.
- February had the most police-initiated calls, with 62 percent more than October, which had the fewest.
- August had the most community-initiated calls, with 26 percent more than February, which had the fewest.

FIGURE 11-5: Calls per Day, by Category and Month



Note: The figure combines categories in the following table according to the description in Chart 11-1.

TABLE 11-5: Calls per Day, by Category and Month

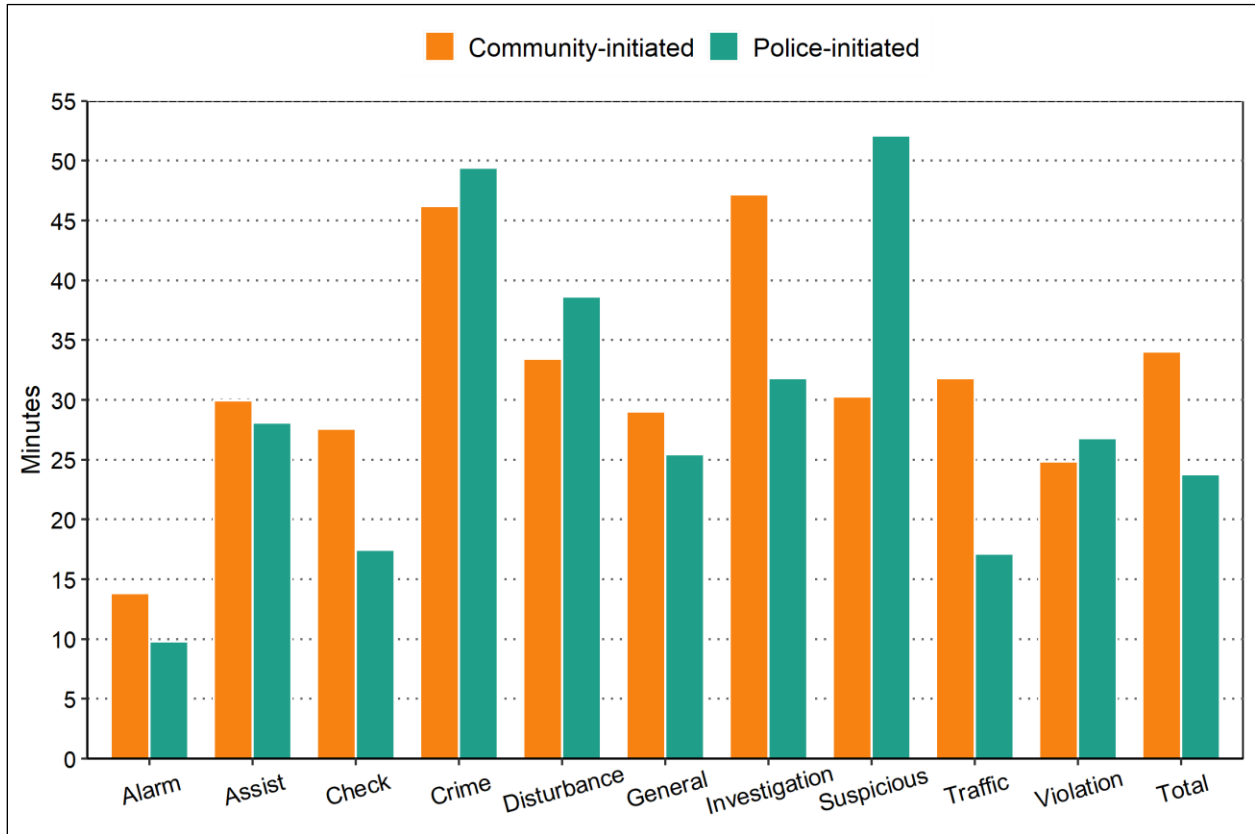
Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Accident	2.8	2.9	3.5	2.7	2.5	3.0	2.8	3.2	3.2	3.5	3.3	3.6
Alarm	2.5	3.2	3.4	2.4	3.3	2.9	3.6	3.2	2.5	4.0	3.2	2.8
Animal	0.5	0.6	0.4	0.4	0.5	0.6	0.5	0.6	0.4	0.4	0.7	0.3
Assist other agency	1.9	1.4	1.8	1.5	1.7	2.3	2.0	1.7	1.7	1.6	1.6	1.3
Check	5.5	5.6	6.0	6.8	6.6	8.0	7.1	8.5	8.2	6.8	8.5	7.4
Crime-person	4.0	3.9	4.7	4.4	4.7	4.8	5.3	5.4	4.8	4.2	4.4	3.9
Crime-property	7.7	7.5	7.4	6.5	6.5	6.4	7.7	7.4	6.5	7.2	7.1	7.8
Disturbance	11.0	8.6	9.7	10.3	9.8	10.5	11.3	13.1	11.0	11.9	11.2	8.9
Follow-up	2.1	4.0	3.5	2.8	2.8	3.0	3.3	2.9	3.1	2.3	2.9	2.4
Investigation	4.1	4.6	4.3	3.8	3.0	3.7	3.4	3.8	3.9	3.3	3.2	4.7
Miscellaneous	6.0	6.7	5.0	5.7	4.9	5.2	5.3	5.6	5.4	4.9	4.5	5.0
Suspicious incident	3.6	3.8	3.5	4.0	4.2	5.2	5.4	4.6	3.8	3.8	4.0	4.3
Traffic enforcement	1.8	2.0	1.4	1.4	1.8	1.6	1.9	2.1	2.5	2.0	2.0	1.5
Traffic stop	9.1	12.3	8.3	10.3	9.7	8.5	5.4	8.4	7.3	5.8	7.2	4.8
Violation	1.2	1.4	0.8	1.5	1.7	1.4	1.2	1.4	1.6	0.5	1.2	1.3
Total	64.0	68.4	63.8	64.6	63.7	67.1	66.0	71.7	65.7	62.3	65.1	59.9

Note: Calculations were limited to calls rather than events.

Observations:

- The top three categories averaged between 51 and 57 percent of calls throughout the year:
 - Traffic calls averaged between 9.9 and 17.2 calls per day throughout the year.
 - Crime calls averaged between 11.0 and 13.0 calls per day throughout the year.
 - Disturbance calls averaged between 8.6 and 13.1 calls per day throughout the year.
- Crime calls accounted for 17 to 20 percent of total calls.

FIGURE 11-6: Primary Unit's Average Occupied Times, by Category and Initiator



Note: The figure combines categories using weighted averages from the following table according to the description in Chart 11-1.

TABLE 11-6: Primary Unit's Average Occupied Times, by Category and Initiator

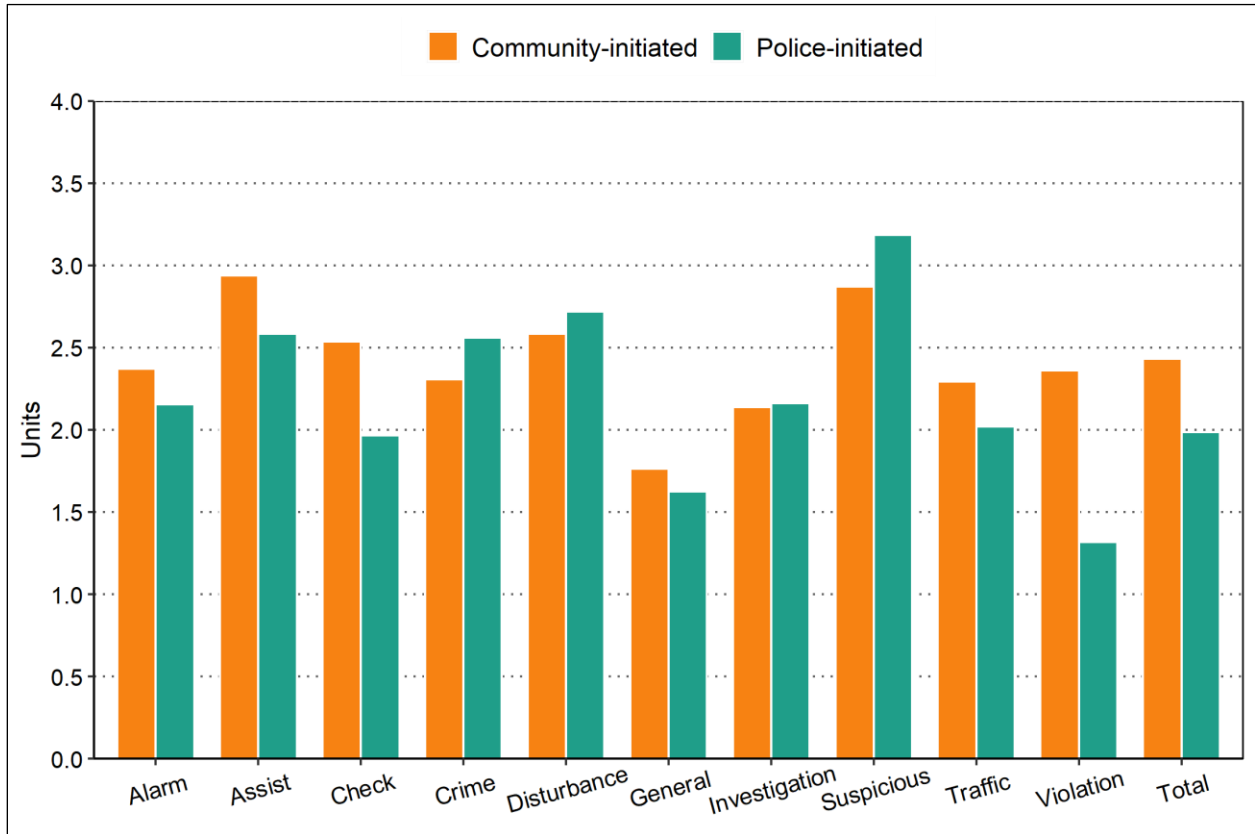
Category	Community-Initiated		Police-Initiated	
	Minutes	Calls	Minutes	Calls
Accident	40.0	913	31.1	212
Alarm	13.8	1,098	9.8	26
Animal	26.0	157	23.0	20
Assist other agency	30.0	428	28.1	197
Check	27.6	1,936	17.5	650
Crime-person	54.5	1,565	51.2	93
Crime-property	40.8	2,408	48.6	199
Disturbance	33.4	3,706	38.6	168
Follow-up	29.5	182	23.7	884
Investigation	47.2	540	31.8	851
Miscellaneous	29.6	607	26.6	1,340
Suspicious incident	30.3	1,363	52.1	169
Traffic enforcement	16.9	504	18.4	167
Traffic stop	NA	0	16.1	2,936
Violation	24.9	378	26.8	85
Weighted Average/Total Calls	34.1	15,785	23.8	7,997

Note: For this table, we removed one call with an inaccurate busy time. The information in Figure 11-6 and Table 11-6 is limited to calls and excludes all events that show zero time on scene. A unit's occupied time is measured as the time from when the unit was dispatched until the unit becomes available again. The times shown are the average occupied minutes per call for the primary unit, rather than the total occupied minutes for all units assigned to a call. Observations below refer to times shown within the figure rather than the table.

Observations:

- A unit's average time spent on a call ranged from 10 to 52 minutes overall.
- The longest average times were for police-initiated suspicious incident calls.
- The average time spent on crime calls was 46 minutes for community-initiated calls and 49 minutes for police-initiated calls.

FIGURE 11-7: Number of Responding Units, by Initiator and Category



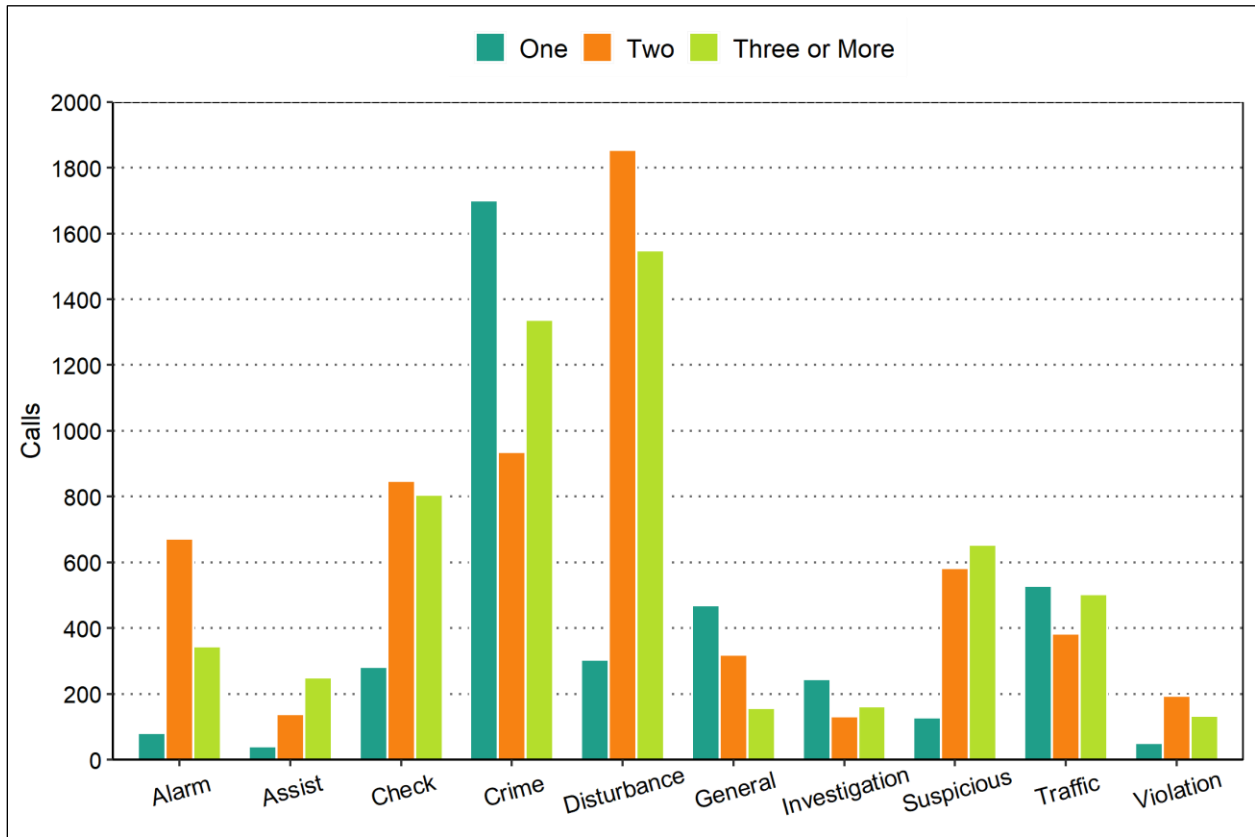
Note: The figure combines categories using weighted averages from the following table according to the description in Chart 11-1.

TABLE 11-7: Average Number of Responding Units, by Initiator and Category

Category	Community-Initiated		Police-Initiated	
	No. of Units	Calls	No. of Units	Calls
Accident	2.7	913	2.8	212
Alarm	2.4	1,098	2.2	26
Animal	1.9	157	1.3	20
Assist other agency	2.9	428	2.6	197
Check	2.5	1,936	2.0	650
Crime-person	3.0	1,565	3.2	93
Crime-property	1.8	2,408	2.3	199
Disturbance	2.6	3,706	2.7	168
Follow-up	1.4	182	1.1	884
Investigation	2.1	540	2.2	852
Miscellaneous	1.9	607	2.0	1,340
Suspicious incident	2.9	1,363	3.2	169
Traffic enforcement	1.5	504	1.6	167
Traffic stop	NA	0	2.0	2,936
Violation	2.4	378	1.3	85
Weighted Average/Total Calls	2.4	15,785	2.0	7,998

Note: The information in Figure 11-7 and Table 11-7 is limited to calls and excludes all events that show zero time on scene. Observations refer to the number of responding units shown within the figure rather than the table.

FIGURE 11-8: Number of Responding Units, by Category, Community-initiated Calls



Note: The figure combines categories using weighted averages from the following table according to the description in Chart 11-1.

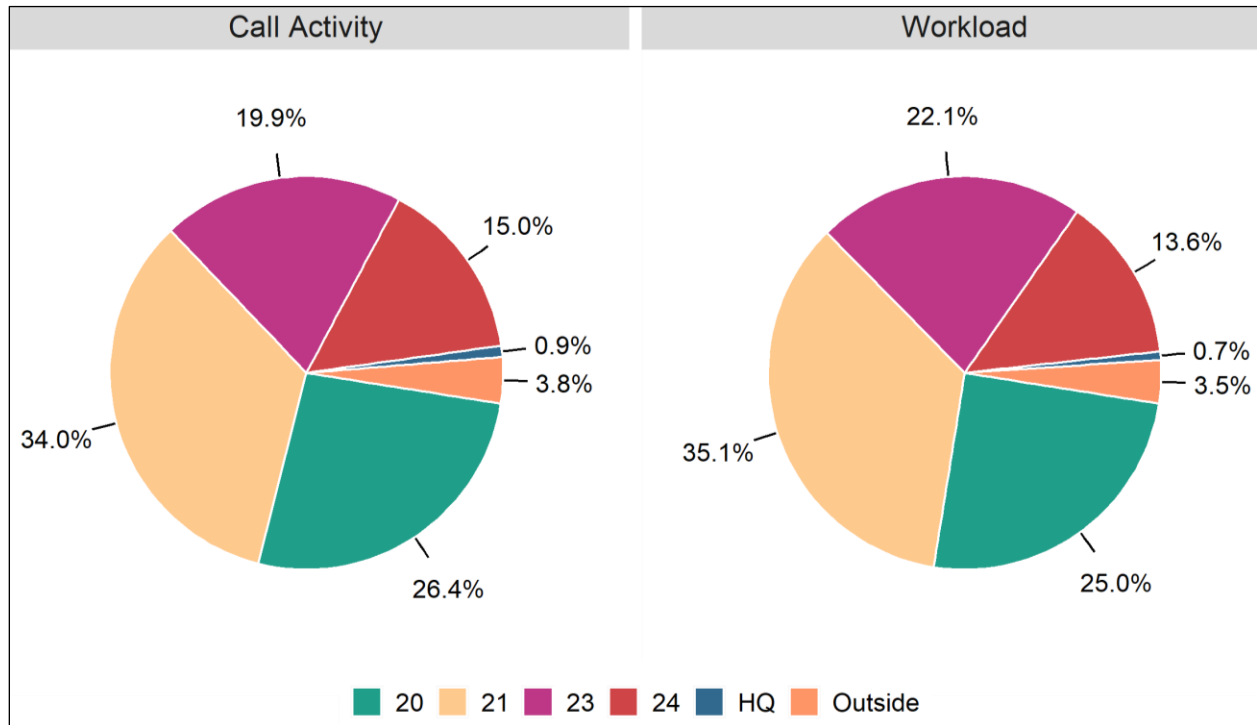
TABLE 11-8: Number of Responding Units, by Category, Community-initiated Calls

Category	Responding Units		
	One	Two	Three or More
Accident	199	269	445
Alarm	81	673	344
Animal	65	61	31
Assist other agency	40	138	250
Check	282	848	806
Crime-person	349	352	864
Crime-property	1,351	583	474
Disturbance	304	1,854	1,548
Follow-up	135	36	11
Investigation	245	132	163
Miscellaneous	270	222	115
Suspicious incident	128	582	653
Traffic enforcement	330	115	59
Violation	51	194	133
Total	3,830	6,059	5,896

Observations:

- The overall mean number of responding units was 2.0 for police-initiated calls and 2.4 for community-initiated calls.
- The mean number of responding units was as high as 3.2 for suspicious calls that were police-initiated.
- 24 percent of community-initiated calls involved one responding unit.
- 38 percent of community-initiated calls involved two responding units.
- 37 percent of community-initiated calls involved three or more responding units.
- 17 percent of community-initiated calls involved four or more responding units.
- The largest group of calls with three or more responding units involved disturbances.

FIGURE 11-9: Percentage Calls and Work Hours, by Beat



Note: The outside category included calls outside the city boundaries.

TABLE 11-9: Calls and Work Hours by Beat, per Day

Beat	Per Day		Area (Sq. Miles)	Population (2020)
	Calls	Work Hours		
20	17.2	16.0	1.1	8,786
21	22.1	22.4	2.1	24,561
23	13.0	14.1	1.8	14,751
24	9.7	8.6	1.7	7,760
HQ	0.6	0.5	NA	NA
Outside	2.5	2.3	NA	NA
Total	65.1	63.8	6.7	55,858

Observations:

- Beat 21 had the most calls (22 per day) and workload (22 hours per day), and it accounted for 34 percent of total calls and 35 percent of total workload.
- Excluding calls located at headquarter and missing beat information, an even distribution would allot 16 calls and 15 work hours per beat.

FIGURE 11-10: Percentage Calls and Work Hours, by Category, Winter 2019

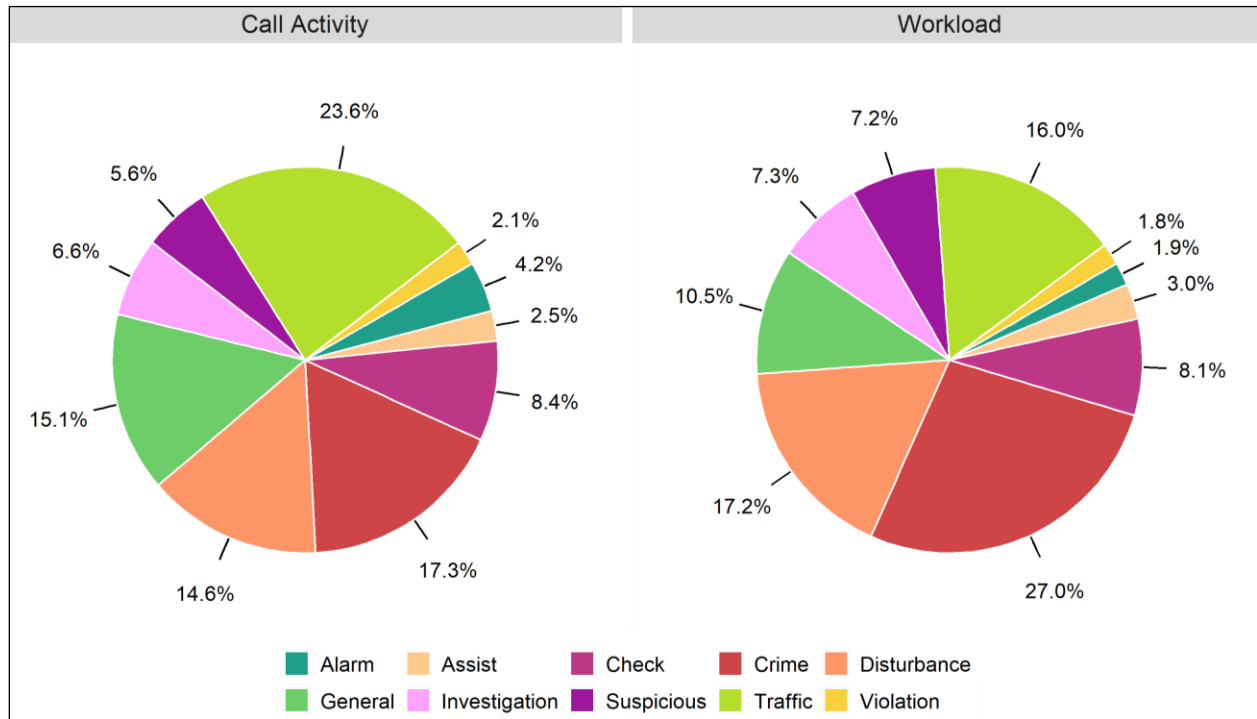


TABLE 11-10: Calls and Work Hours per Day, by Category, Winter 2019

Category	Per Day	
	Calls	Work Hours
Accident	2.8	4.3
Alarm	2.8	1.2
Animal	0.5	0.4
Assist other agency	1.7	1.8
Check	5.6	5.0
Crime-person	3.9	7.9
Crime-property	7.6	8.8
Disturbance	9.7	10.6
Follow-up	3.1	1.3
Investigation	4.4	4.5
Miscellaneous	6.3	4.8
Suspicious incident	3.7	4.4
Traffic enforcement	1.9	0.6
Traffic stop	10.9	5.0
Violation	1.4	1.1
Total	66.2	61.9

Note: Workload calculations focused on calls rather than events.

Observations, Winter:

- Total calls averaged 66 per day or 2.8 per hour.
- Total workload averaged 62 hours per day, meaning that on average 2.6 units per hour were busy responding to calls.
- Traffic calls constituted 24 percent of calls and 16 percent of workload.
- Crime calls constituted 17 percent of calls and 27 percent of workload.
- Disturbance calls constituted 15 percent of calls and 17 percent of workload.
- These top three categories constituted 56 percent of calls and 60 percent of workload.

FIGURE 11-11: Percentage Calls and Work Hours, by Category, Summer 2019

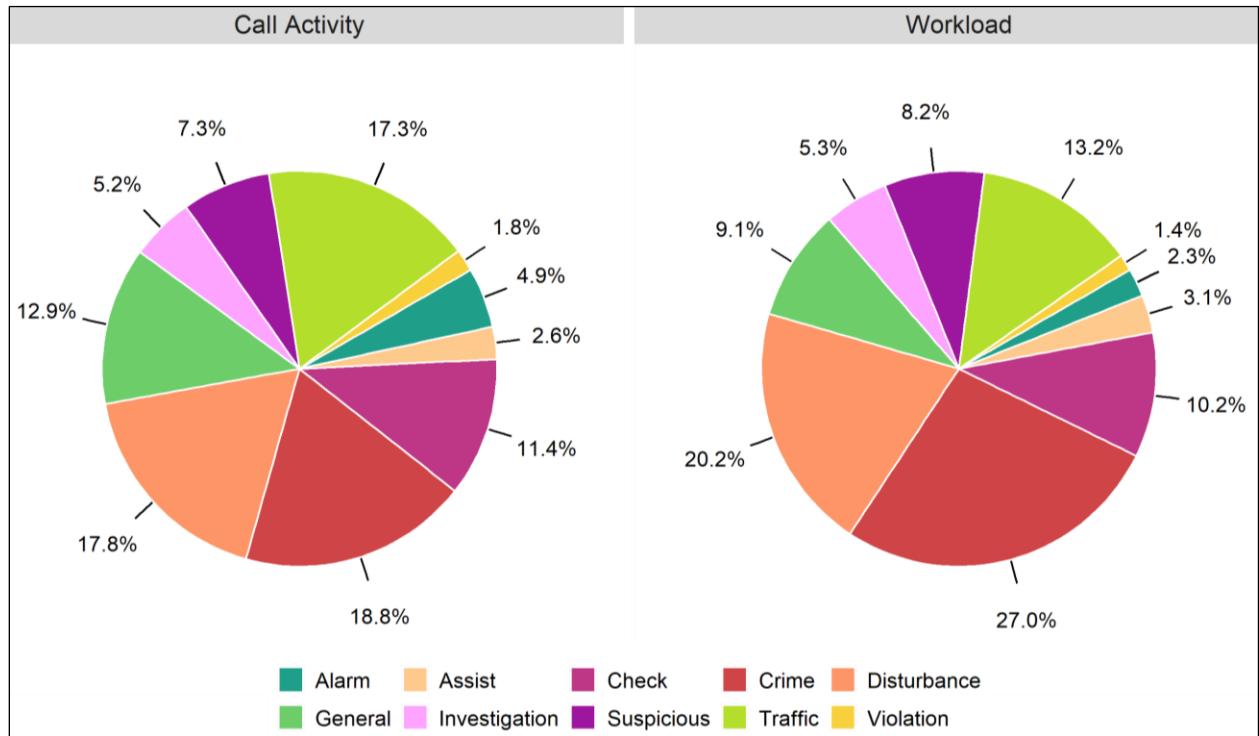


TABLE 11-11: Calls and Work Hours per Day, by Category, Summer 2019

Category	Per Day	
	Calls	Work Hours
Accident	3.0	4.8
Alarm	3.4	1.6
Animal	0.5	0.4
Assist other agency	1.8	2.1
Check	7.8	7.0
Crime-person	5.2	9.9
Crime-property	7.8	8.7
Disturbance	12.2	13.9
Follow-up	3.1	1.4
Investigation	3.6	3.6
Miscellaneous	5.2	4.5
Suspicious incident	5.0	5.6
Traffic enforcement	2.0	1.4
Traffic stop	6.9	3.0
Violation	1.2	0.9
Total	68.9	68.8

Note: Workload calculations focused on calls rather than events.

Observations, Summer:

- The average number of calls per day and the average daily workload were higher in summer than in winter.
- Total calls averaged 69 per day or 2.9 per hour.
- Total workload averaged 69 hours per day, meaning that on average 2.9 units per hour were busy responding to calls.
- Traffic calls constituted 17 percent of calls and 13 percent of workload.
- Crime calls constituted 19 percent of calls and 27 percent of workload.
- Disturbance calls constituted 18 percent of calls and 20 percent of workload.
- These top three categories constituted 54 percent of calls and 60 percent of workload.

NONCALL ACTIVITIES

In the period from January 1, 2019, through December 31, 2019, the dispatch center recorded activities that were not assigned call numbers. We focused on those noncall activities that involved a patrol unit. Each record only indicates one unit per activity. There were a few problems with the data provided and we made assumptions and decisions to address these issues:

- We excluded activities that lasted less than 30 seconds. These are irrelevant and contribute little to the overall workload.
- Another portion of the recorded activities lasted more than eight hours. As an activity is unlikely to last more than eight hours, we assumed that these records were inaccurate.
- After these exclusions, 4,963 activities remained. These activities had an average duration of 63 minutes.

In this section, we report out-of-service activities and workload by type of activity. In the next section, we include these activities in the overall workload when comparing the total workload against available personnel in winter and summer.

TABLE 11-12: Activities and Occupied Times by Description

Status	Description	Occupied Time	Count
OOS	Carwash	12.6	128
	Code 7	38.1	85
	Court	122.6	57
	Follow-up	18.5	182
	Paper	101.2	65
	Special detail	51.2	36
	Training	122.9	116
	*Miscellaneous	57.8	213
At Station	Miscellaneous	50.1	4
	Unknown	63.8	4,077
Weighted Average/Total Activities		62.6	4,963

Note: The miscellaneous category included activities such as "out of city," "equipment," and "priority paper."

Observations:

- The most common out-of-service activities were at station.
- The average time spent on noncall activities was 62.6 minutes.

FIGURE 11-12: Activities per Day, by Month

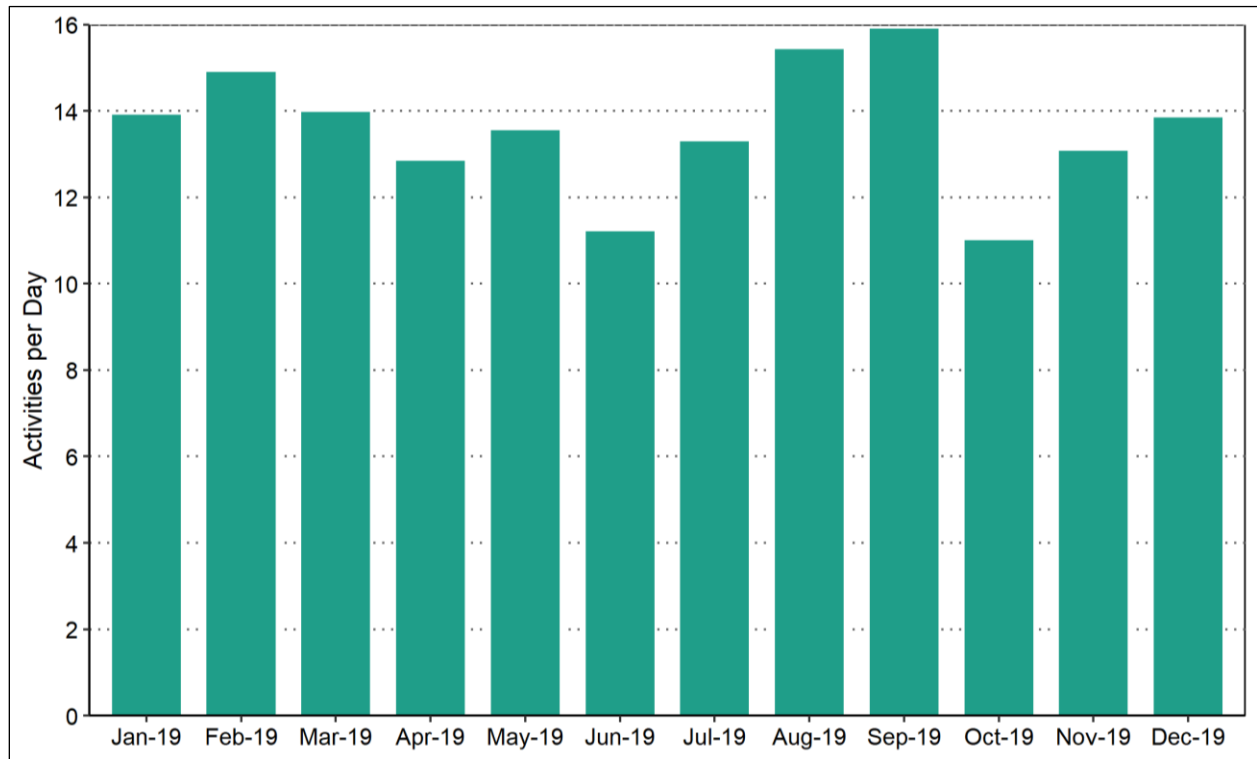


TABLE 11-13: Activities and Work Hours per Day, by Month

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Count	13.9	14.9	14.0	12.9	13.6	11.2	13.3	15.5	15.9	11.0	13.1	13.9
Hours	14.8	17.7	14.3	12.5	14.5	11.4	12.4	15.2	16.2	12.8	14.4	14.2

Observations:

- The number of activities per day was lowest in June and October.
- The number of activities per day was highest in September.

FIGURE 11-13: Activities per Day, by Day of Week

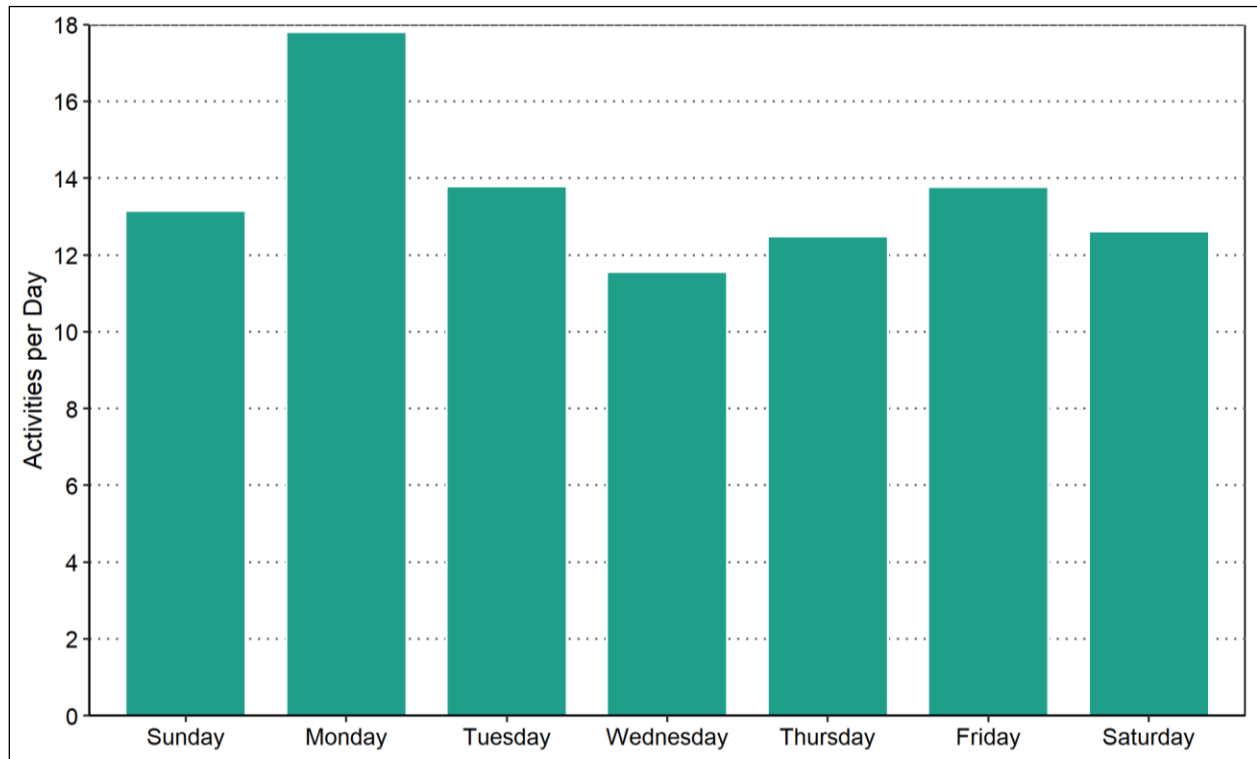


TABLE 11-14: Activities and Work Hours per Day, by Day of Week

Day of Week	Activities	Hours
Sunday	13.2	12.6
Monday	17.8	22.2
Tuesday	13.8	15.4
Wednesday	11.6	11.0
Thursday	12.5	12.9
Friday	13.8	13.7
Saturday	12.6	11.4
Weekly Average	13.6	14.2

Observations:

- The number of activities per day was lowest on Wednesdays.
- The number of activities per day was highest on Mondays.

FIGURE 11-14: Activities per Day, by Hour of Day

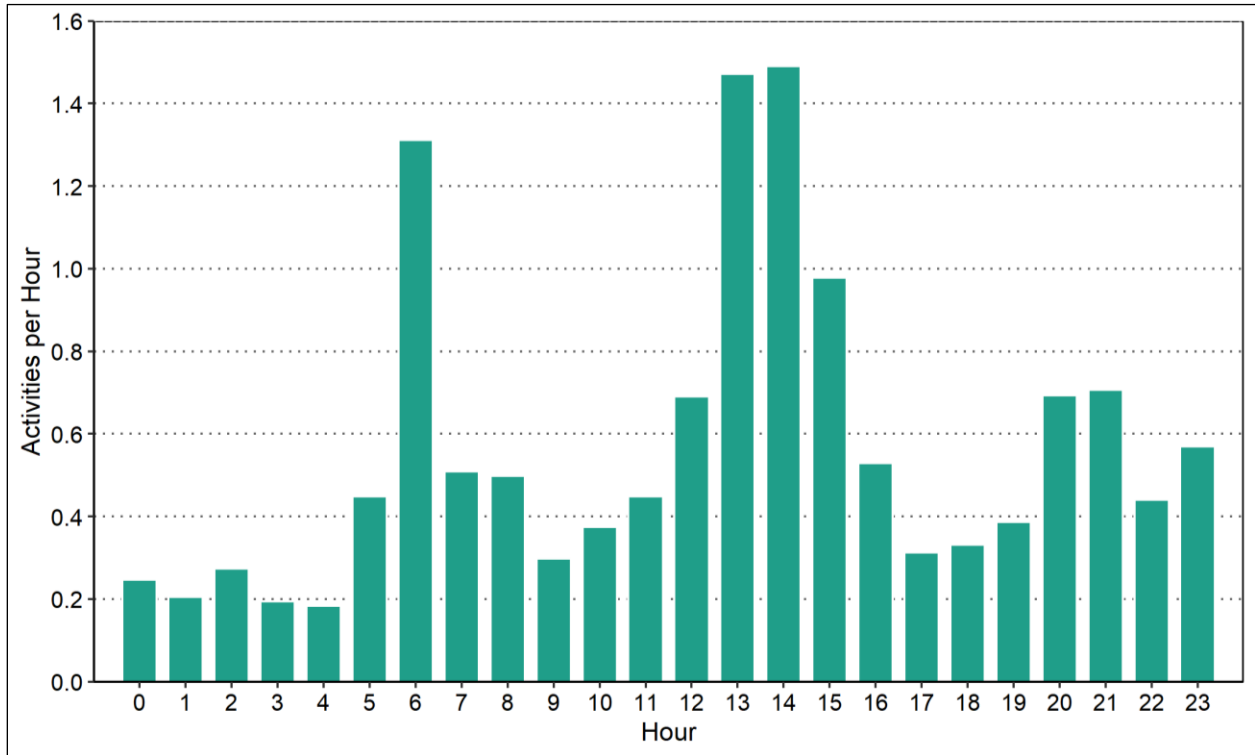


TABLE 11-15: Activities and Minutes per Hour, by Hour of Day

Hour	Activities	Minutes
0	0.2	16.9
1	0.2	15.4
2	0.3	19.1
3	0.2	14.2
4	0.2	13.0
5	0.4	34.0
6	1.3	84.6
7	0.5	40.8
8	0.5	31.7
9	0.3	13.9
10	0.4	23.5
11	0.4	32.2
12	0.7	48.8
13	1.5	111.3
14	1.5	74.4
15	1.0	42.7
16	0.5	27.8
17	0.3	16.4
18	0.3	19.6
19	0.4	22.2
20	0.7	50.2
21	0.7	47.3
22	0.4	26.0
23	0.6	25.0
Hourly Average	0.6	35.5

Observations:

- The number of activities per hour was highest between 2:00 p.m. and 3:00 p.m.
- The number of activities per hour was lowest between 4:00 a.m. and 5:00 a.m.

DEPLOYMENT

For this study, we examined deployment information for eight weeks in winter (January 4 through February 28, 2019) and eight weeks in summer (July 7 through August 31, 2019). The department's main patrol force operated on 10-hour shifts starting at 6:00 a.m., 2:00 p.m., and 9:00 p.m. The police department's main patrol force deployed an average of 7.9 units per hour during the 24-hour day in winter 2019 and an average of 7.7 units per hour in summer 2019.

In this section, we describe the deployment and workload in distinct steps, distinguishing between summer and winter and between weekdays (Monday through Friday) and weekends (Saturday and Sunday).

- First, we focus on patrol deployment alone.
- Next, we compare "all" workload, which includes community-initiated calls, police-initiated calls, directed patrol, and out-of-service activities.
- Finally, we compare the workload against deployment by percentage.

Comments follow each set of four figures, with separate discussions for winter and summer.

FIGURE 11-15: Deployed Units, Weekdays, Winter 2019

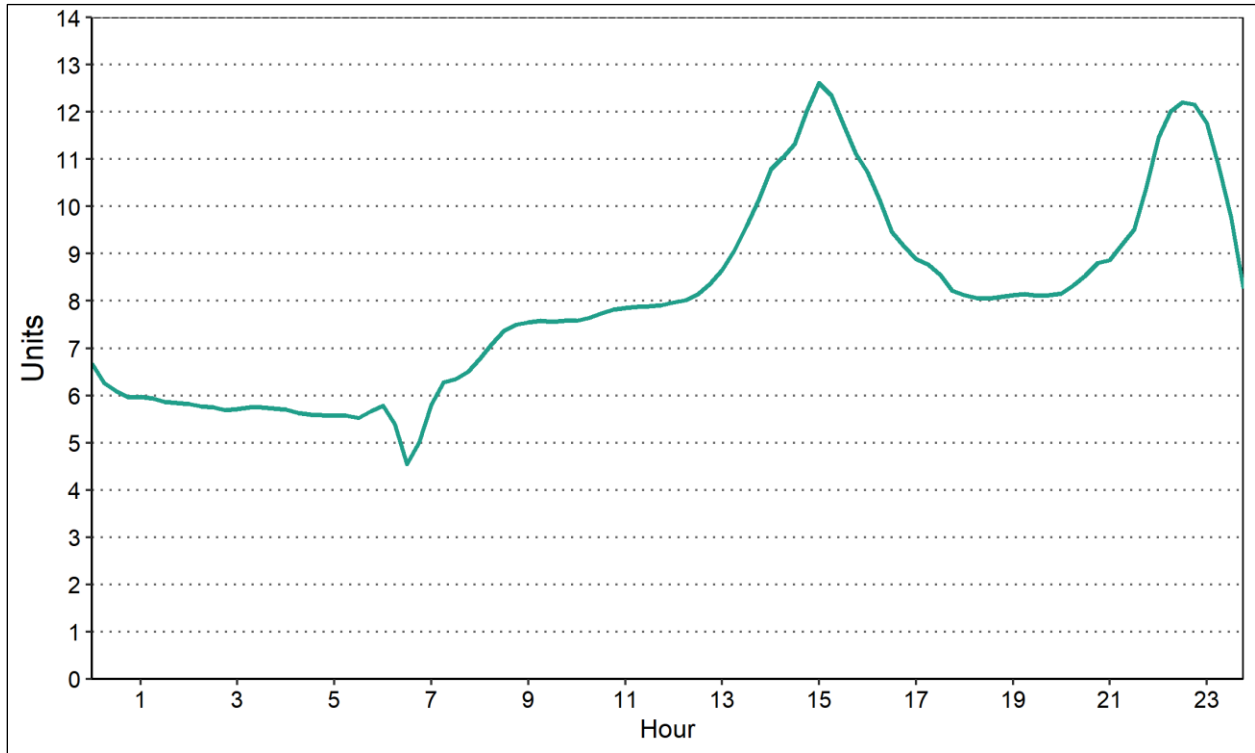


FIGURE 11-16: Deployed Units, Weekends, Winter 2019

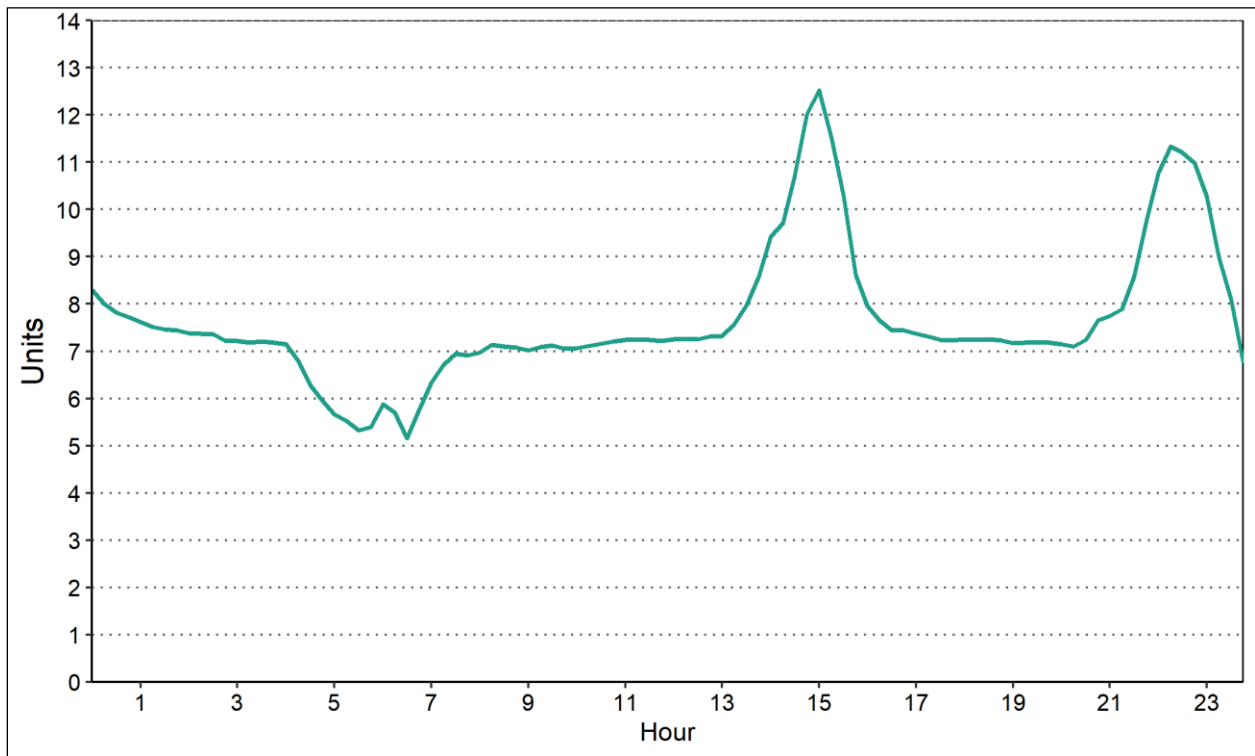


FIGURE 11-17: Deployed Units, Weekdays, Summer 2019

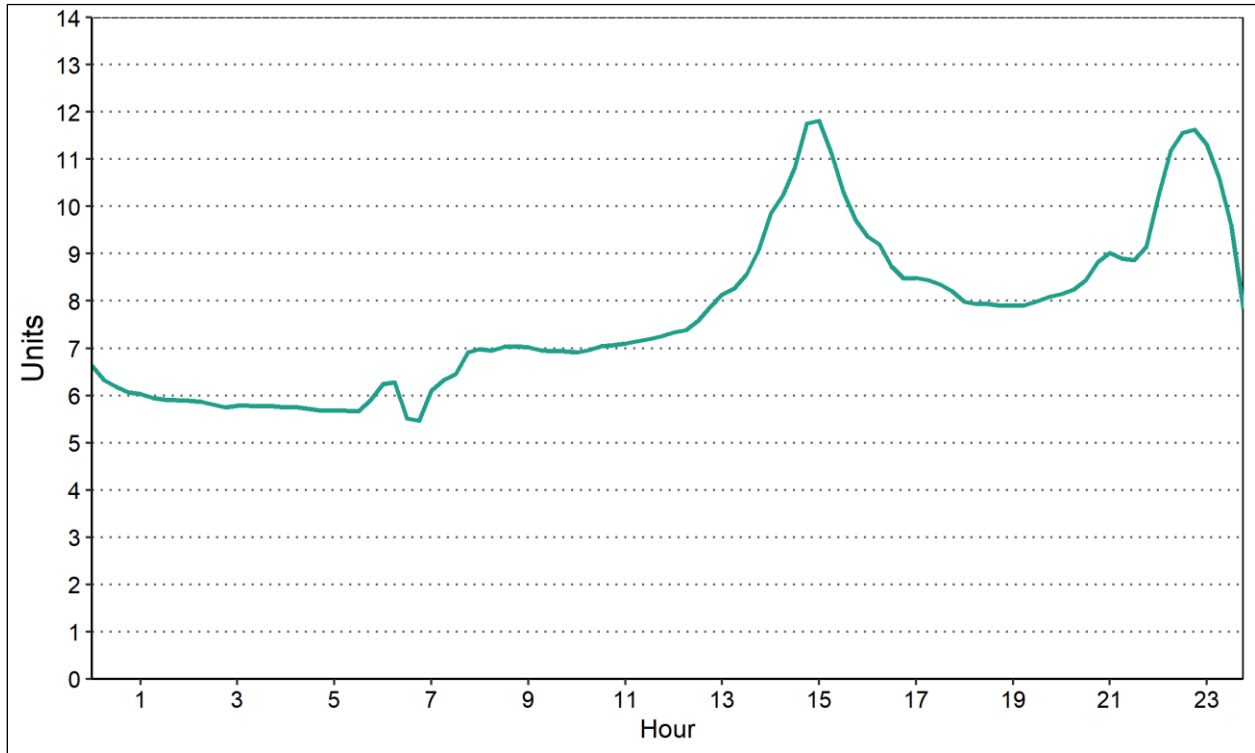
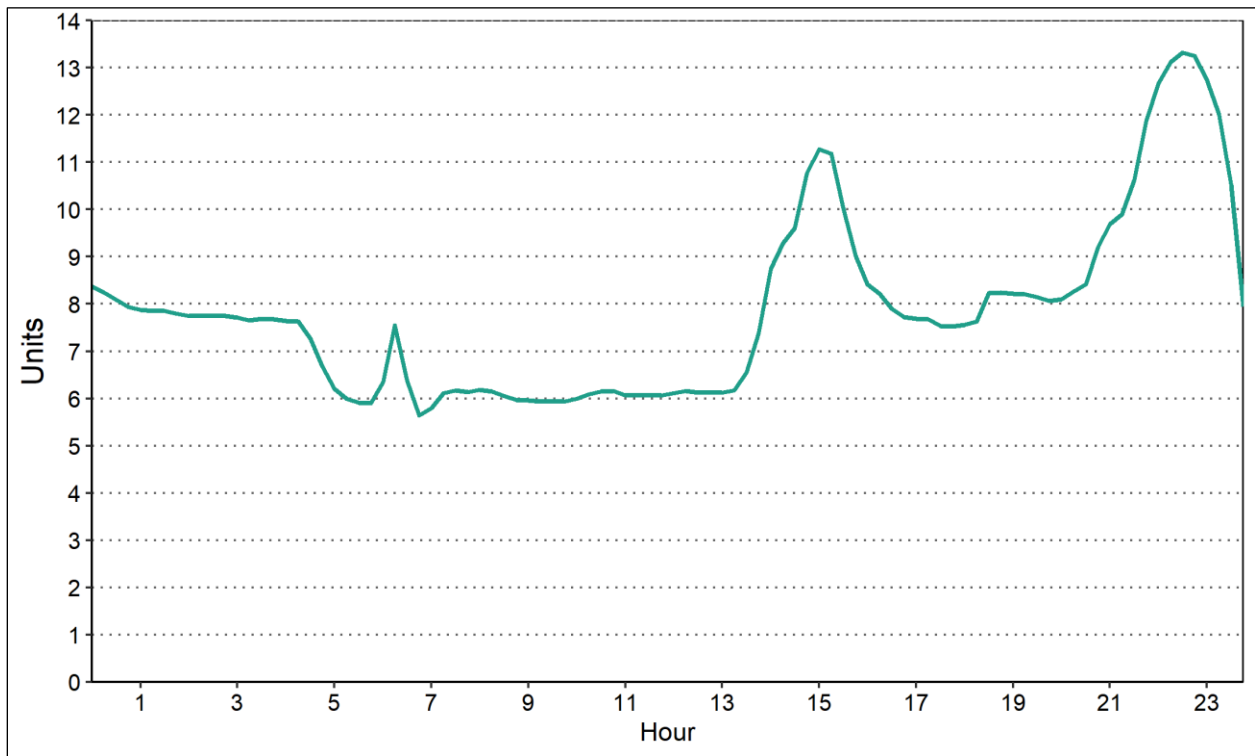


FIGURE 11-18: Deployed Units, Weekends, Summer 2019



Observations:

- For Winter (January 4 through February 28, 2019):
 - The average deployment was 8.0 units per hour during the week and 7.7 units per hour on the weekend.
 - Average deployment varied from 4.5 to 12.6 units per hour on weekdays and 5.2 to 12.5 units per hour on weekends.
- For Summer (July 7 through August 31, 2019):
 - The average deployment was 7.7 units per hour during the week and 7.9 units per hour on the weekend.
 - Average deployment varied from 5.5 to 11.8 units per hour on weekdays and 5.6 to 13.3 units per hour on weekends.

FIGURE 11-19: Deployment and All Workload, Weekdays, Winter 2019

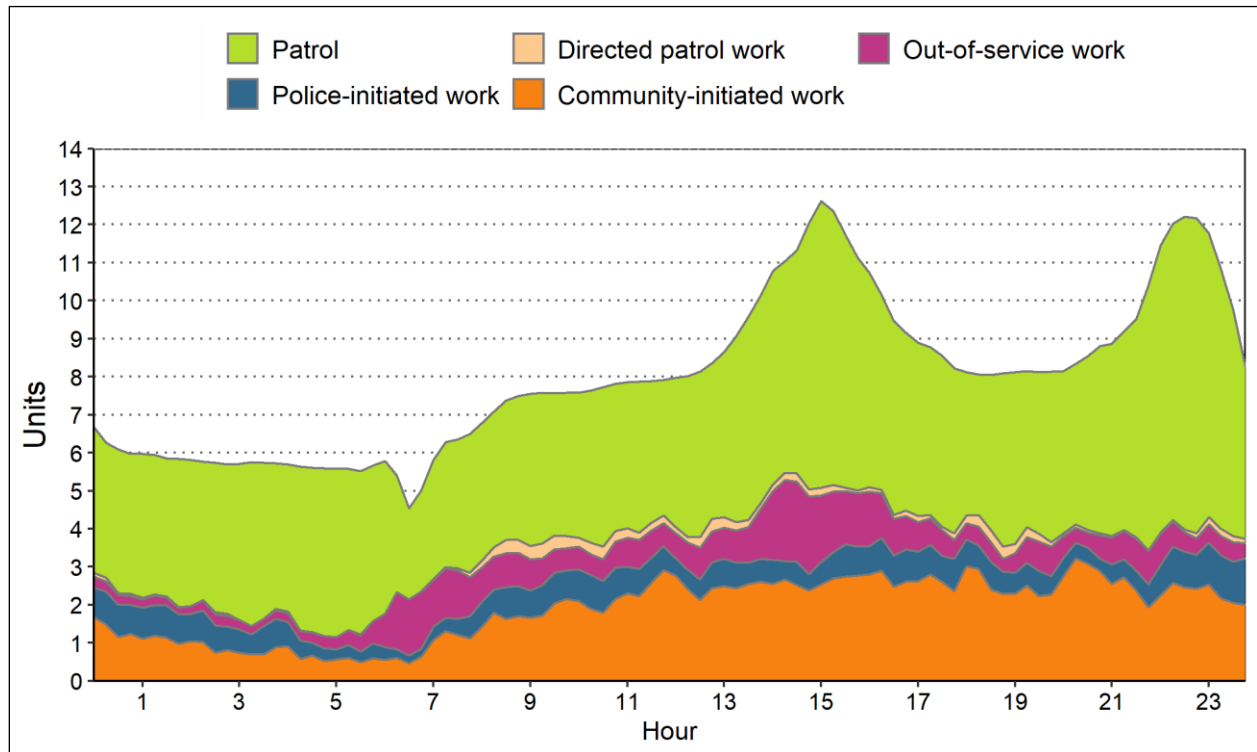


FIGURE 11-20: Deployment and All Workload, Weekends, Winter 2019

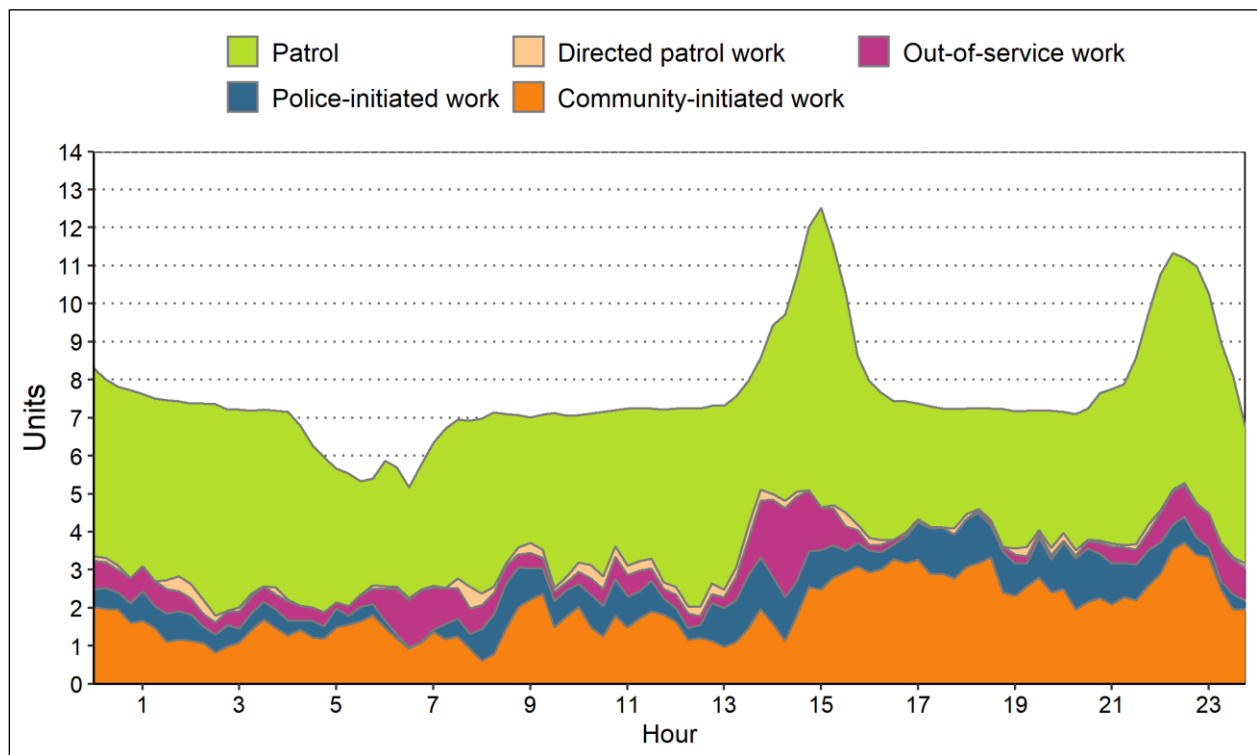


FIGURE 11-21: Deployment and All Workload, Weekdays, Summer 2019

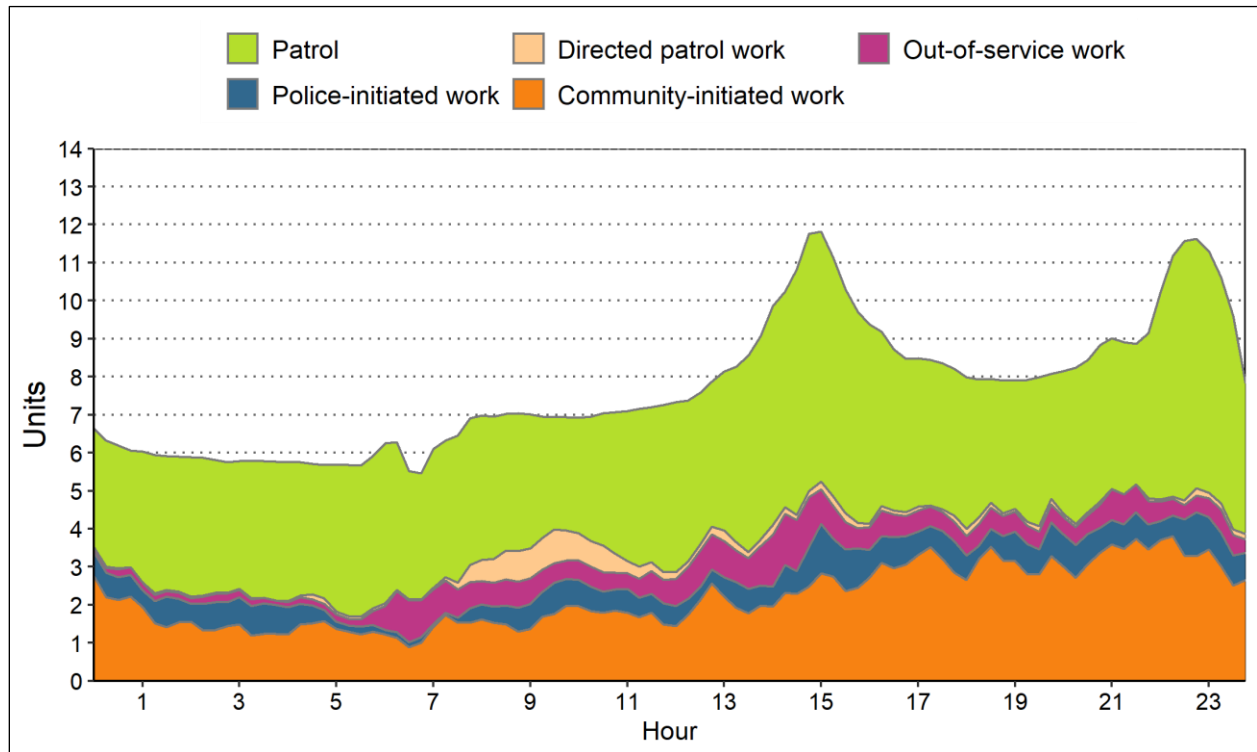
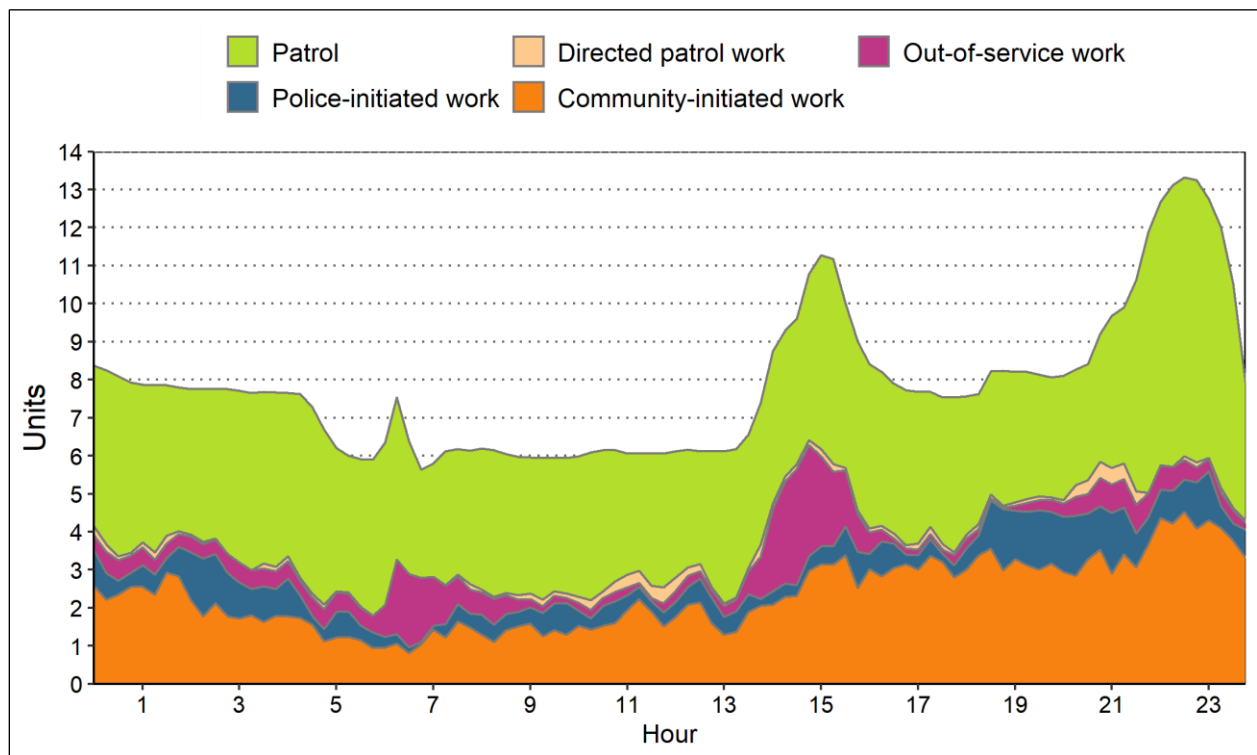


FIGURE 11-22: Deployment and All Workload, Weekends, Summer 2019



Note: Figures 11-19 to 11-22 show deployment along with all workloads from community-initiated calls and police-initiated calls, directed patrol work, and out-of-service work.

Observations:

Winter:

- Community-initiated work:
 - Average community-initiated workload was 1.9 units per hour during the week and 1.9 units per hour on weekends.
 - This was approximately 24 percent of hourly deployment during the week and 25 percent of hourly deployment on weekends.
- All work:
 - Average workload was 3.4 units per hour during the week and 3.3 units per hour on weekends.
 - This was approximately 43 percent of hourly deployment during the week and 43 percent of hourly deployment on weekends.

Summer:

- Community-initiated work:
 - Average community-initiated workload was 2.2 units per hour during the week and 2.3 units per hour on weekends.
 - This was approximately 29 percent of hourly deployment during the week and 30 percent of hourly deployment on weekends.
- All work:
 - Average workload was 3.6 units per hour during the week and 3.7 units per hour on weekends.
 - This was approximately 46 percent of hourly deployment during the week and 48 percent of hourly deployment on weekends.

FIGURE 11-23: Percentage of Workload, Weekdays, Winter 2019

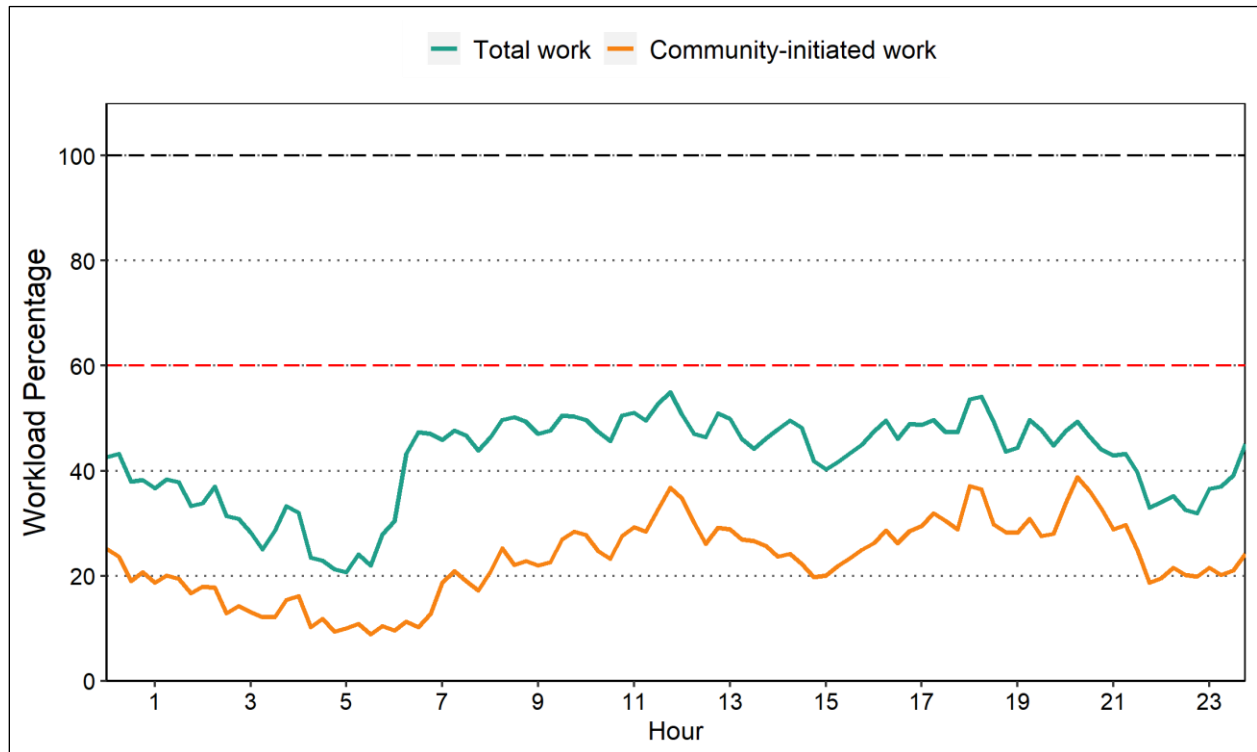


FIGURE 11-24: Percentage of Workload, Weekends, Winter 2019

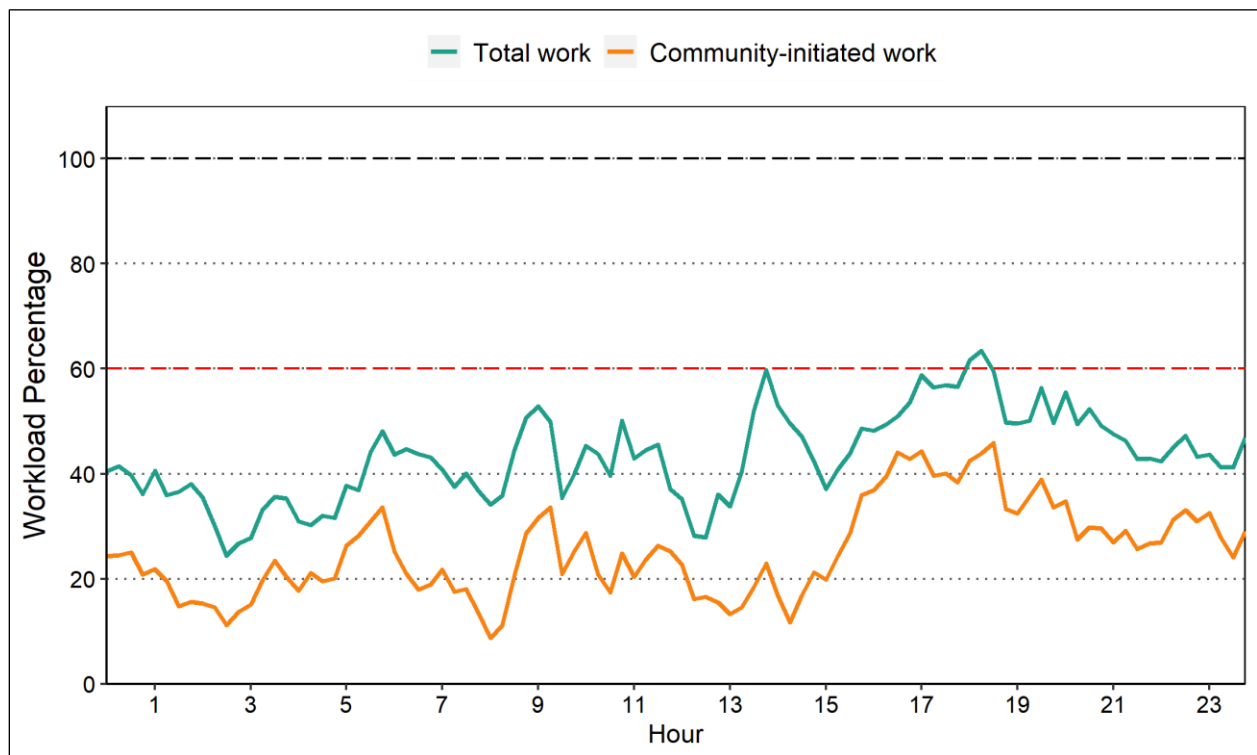


FIGURE 11-25: Percentage of Workload, Weekdays, Summer 2019

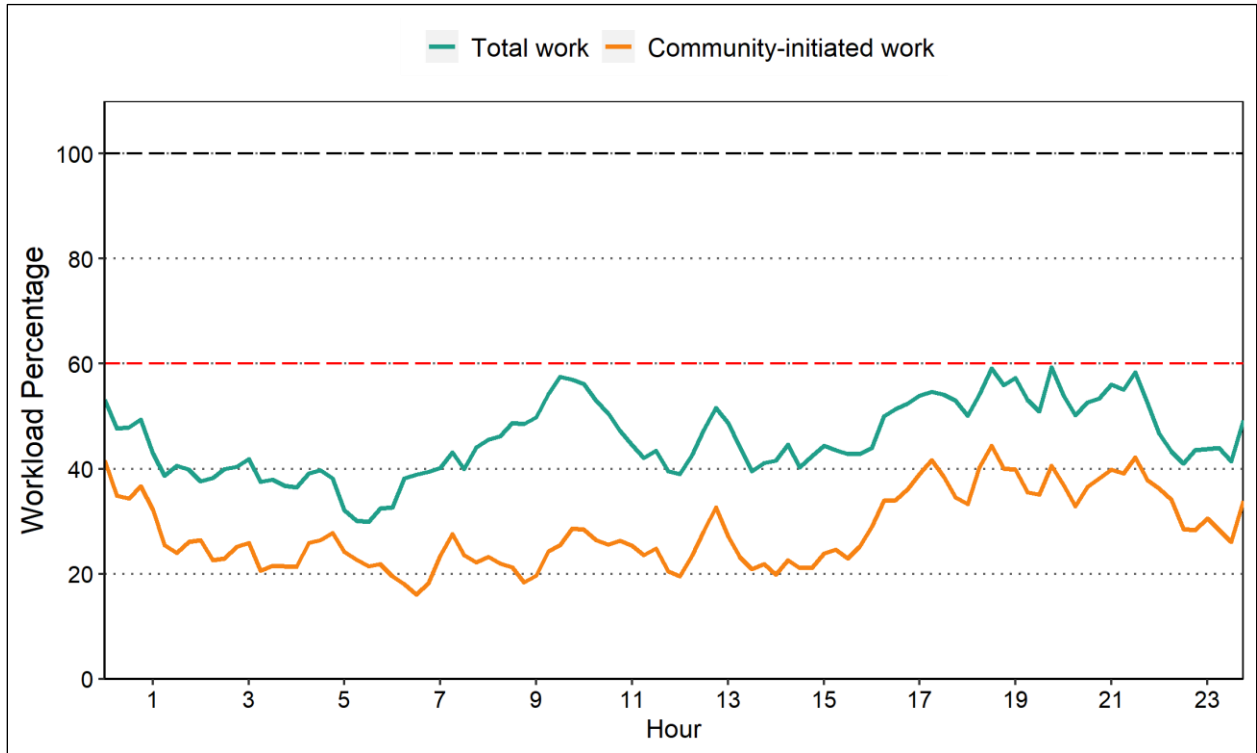
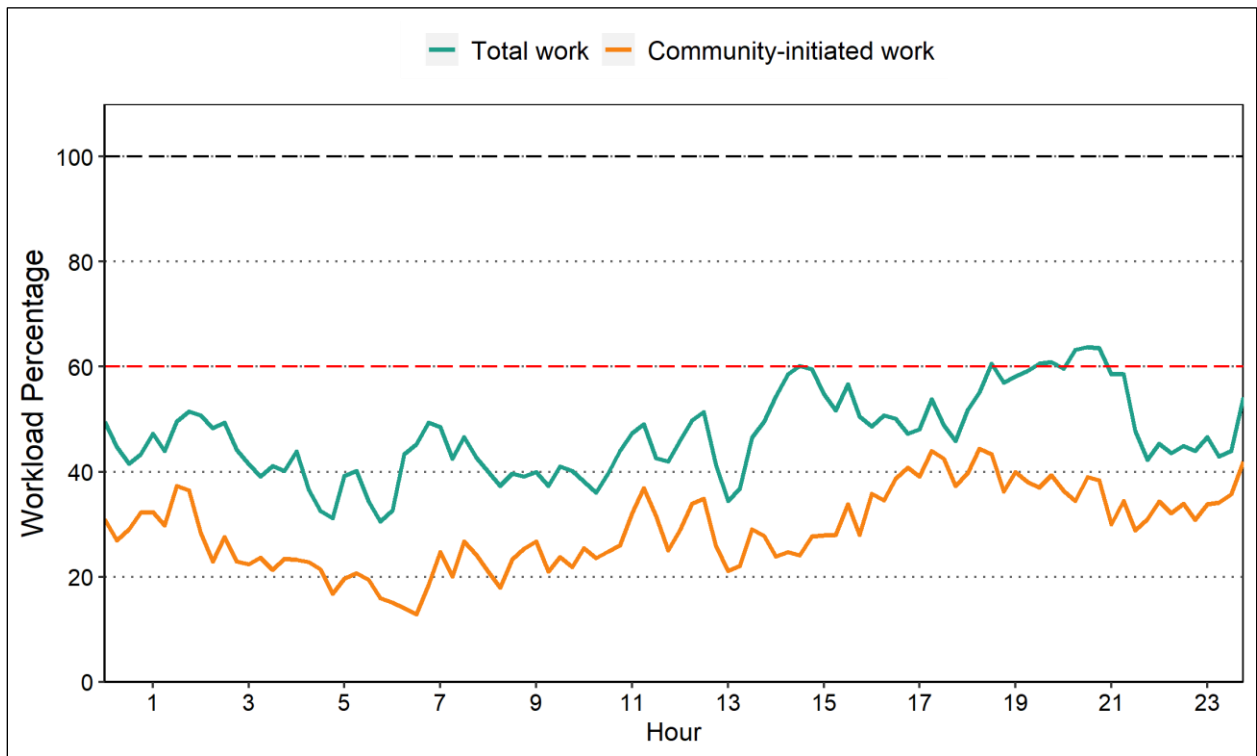


FIGURE 11-26: Percentage of Workload, Weekends, Summer 2019



Observations:

Winter:

- Community-initiated work:
 - During the week, workload reached a maximum of 39 percent of deployment between 8:15 p.m. and 8:30 p.m.
 - On weekends, workload reached a maximum of 46 percent of deployment between 6:30 p.m. and 6:45 p.m.
- All work:
 - During the week, workload reached a maximum of 55 percent of deployment between 11:45 a.m. and 12:00 p.m.
 - On weekends, workload reached a maximum of 63 percent of deployment between 6:15 p.m. and 6:30 p.m.

Summer:

- Community-initiated work:
 - During the week, workload reached a maximum of 44 percent of deployment between 6:30 p.m. and 6:45 p.m.
 - On weekends, workload reached a maximum of 44 percent of deployment between 5:15 p.m. and 5:30 p.m. and between 6:15 p.m. and 6:30 p.m.
- All work:
 - During the week, workload reached a maximum of 59 percent of deployment between 6:30 p.m. and 6:45 p.m. and between 7:45 p.m. and 8:00 p.m.
 - On weekends, workload reached a maximum of 64 percent of deployment between 8:15 p.m. and 8:45 p.m.

RESPONSE TIMES

We analyzed the response times to various types of calls, separating the duration into dispatch processing and travel time, to determine whether response times varied by call type. Response time is measured as the difference between when a call is received and when the first unit arrives on scene. This is further divided into dispatch processing and travel time. Dispatch processing is the time between when a call is received and when the first unit is dispatched. Travel time is the remaining time until the first unit arrives on scene.

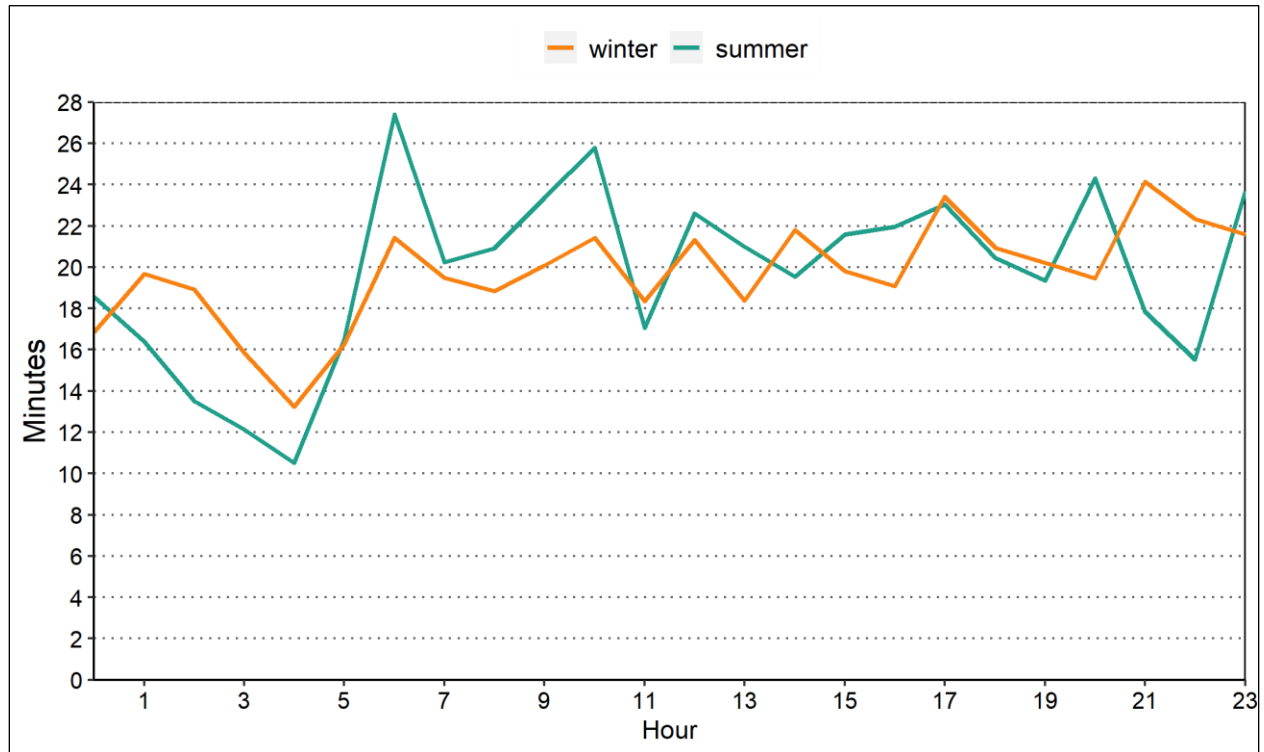
We begin the discussion with statistics that include all calls combined. We started with 3,715 calls for winter and 3,864 calls for summer. We limited our analysis to community-initiated calls, which amounted to 2,283 calls for winter and 2,693 calls for summer. Also, we removed a few calls lacking a recorded arriving unit and calls located at headquarters. We were left with 2,123 calls in winter and 2,502 calls in summer for our analysis. For the entire year, we began with 23,783 calls, limiting our analysis to 15,785 community-initiated calls. With similar exclusions, we were left with 14,689 calls.

Our initial analysis does not distinguish calls based on priority; instead, it examines the difference in response to all calls by time of day and compares the winter and summer periods. We then present a brief analysis of response time for high-priority calls alone.

All Calls

This section looks at all calls without considering their priorities. In addition to examining the differences in response times by both time of day and season (winter versus summer), we show differences in response times by category.

FIGURE 11-27: Average Response Times, by Hour of Day, Winter and Summer 2019



Observations:

- Average response times varied significantly by the hour of the day.
- In winter, the longest response times were between 9:00 p.m. and 10:00 p.m., with an average of 24.1 minutes.
- In winter, the shortest response times were between 4:00 a.m. and 5:00 a.m., with an average of 13.2 minutes.
- In summer, the longest response times were between 6:00 a.m. and 7:00 a.m., with an average of 27.4 minutes.
- In summer, the shortest response times were between 4:00 a.m. and 5:00 a.m., with an average of 10.5 minutes.

FIGURE 11-28: Average Response Time by Category, Winter 2019

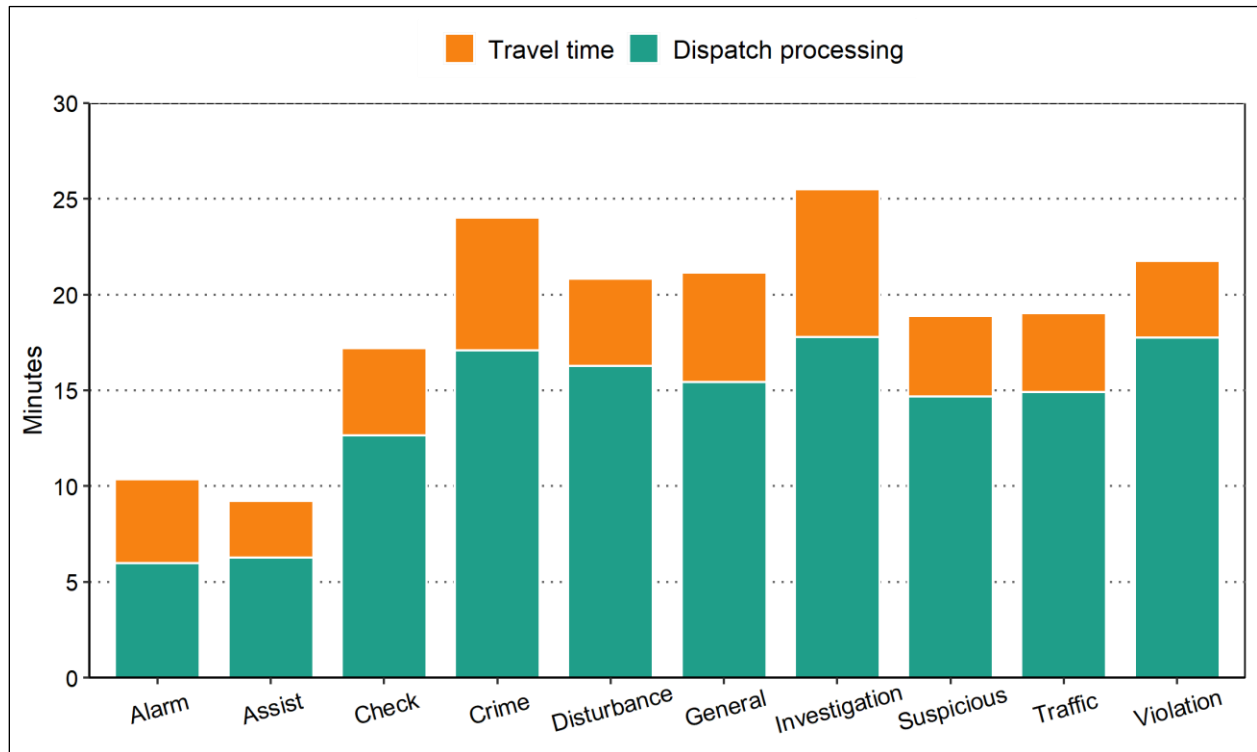


FIGURE 11-29: Average Response Time by Category, Summer 2019

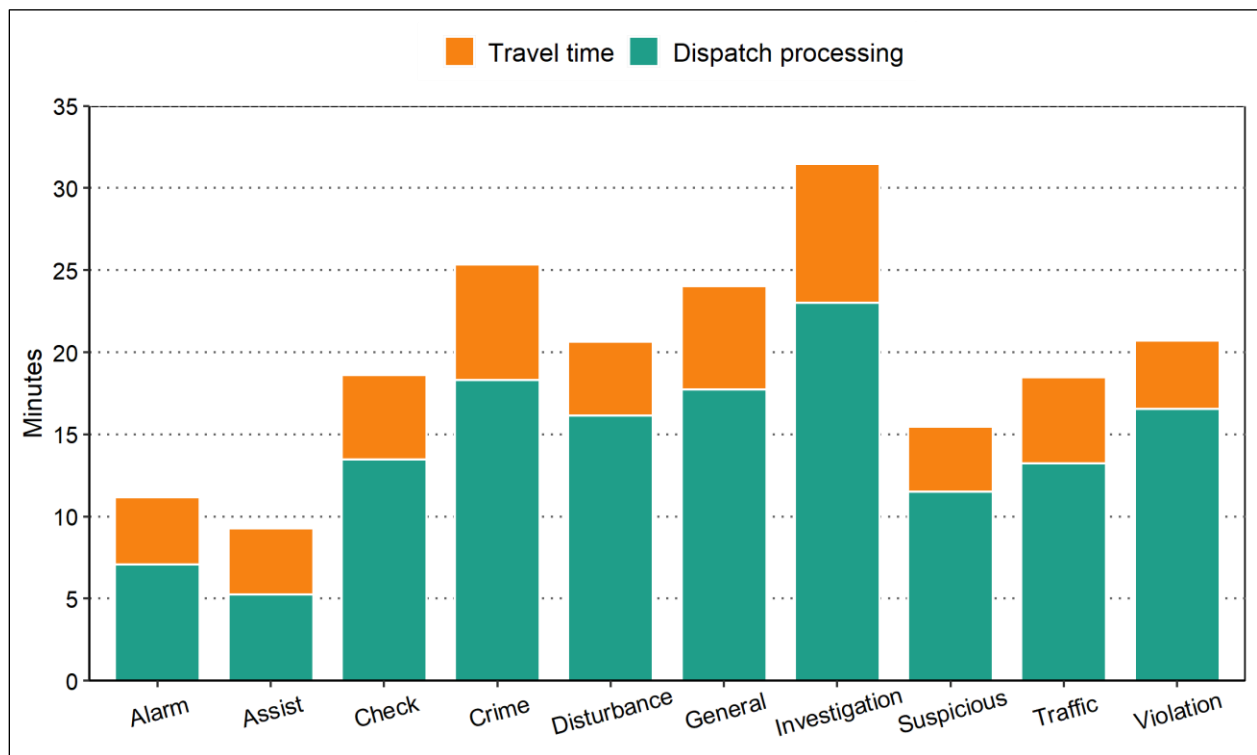


TABLE 11-16: Average Response Time Components, by Category

Category	Winter				Summer			
	Minutes			Count	Minutes			Count
	Dispatch	Travel	Response		Dispatch	Travel	Response	
Accident	6.6	3.7	10.3	124	6.4	4.2	10.5	127
Alarm	6.0	4.4	10.4	139	7.1	4.1	11.2	177
Animal	10.3	5.2	15.4	22	16.0	5.2	21.2	28
Assist other agency	6.3	3.0	9.2	58	5.2	4.0	9.3	73
Check	12.6	4.6	17.2	206	13.5	5.1	18.6	291
Crime-person	10.0	5.3	15.3	198	13.7	5.8	19.5	256
Crime-property	21.0	7.8	28.9	358	21.5	7.9	29.4	377
Disturbance	16.3	4.5	20.8	514	16.1	4.5	20.6	620
Follow-up	23.2	3.4	26.6	18	27.2	8.0	35.1	28
Investigation	17.8	7.7	25.5	85	23.0	8.5	31.5	72
Miscellaneous	15.1	6.3	21.4	89	15.2	6.1	21.3	86
Suspicious incident	14.7	4.2	18.9	187	11.5	3.9	15.5	241
Traffic enforcement	31.7	5.0	36.7	61	25.8	7.2	33.1	69
Violation	17.7	4.0	21.8	64	16.6	4.2	20.7	57
Total Average	15.0	5.2	20.2	2,123	15.0	5.4	20.4	2,502

Note: The total average is weighted according to the number of calls per category.

Observations:

- In winter, the average response time for most categories was between 9 minutes and 24 minutes.
- In winter, the average response time was as short as 9 minutes (for assists) and as long as 25 minutes (for investigations).
- In summer, the average response time for most categories was between 9 minutes and 26 minutes.
- In summer, the average response time was as short as 9 minutes (for assist) and as long as 31 minutes (for investigation).
- The average response time for crimes was 24 minutes in winter and 25 minutes in summer.

TABLE 11-17: 90th Percentiles for Response Time Components, by Category

Category	Winter			Summer		
	Minutes			Minutes		
	Dispatch	Travel	Response	Dispatch	Travel	Response
Accident	14.7	6.5	17.7	14.7	7.6	23.7
Alarm	13.0	8.0	17.8	13.3	6.9	20.2
Animal	24.9	8.3	31.2	34.8	9.1	39.0
Assist other agency	22.0	5.1	23.8	8.8	7.1	15.3
Check	33.8	8.1	40.4	37.1	8.4	45.8
Crime-person	28.0	8.8	36.9	44.9	10.5	56.7
Crime-property	58.2	18.2	69.6	61.2	17.3	76.8
Disturbance	44.8	8.2	48.7	45.7	7.9	52.9
Follow-up	62.3	7.3	65.5	95.3	18.4	103.7
Investigation	54.8	16.0	71.3	57.7	22.6	86.2
Miscellaneous	42.2	11.9	54.7	46.6	10.9	56.7
Suspicious incident	41.7	7.6	46.9	31.4	7.7	36.7
Traffic enforcement	98.4	10.5	98.6	85.8	22.0	92.6
Violation	31.4	7.4	37.7	45.7	6.8	47.8
Total	43.5	10.1	50.0	42.8	10.2	52.7

Note: A 90th percentile value of 37.7 minutes means that 90 percent of all calls are responded to in fewer than 37.7 minutes. For this reason, the columns for dispatch processing and travel time may not be equal to the total response time.

Observations:

- In winter, the 90th percentile value for response time was as short as 18 minutes (for alarms) and as long as 71 minutes (for investigations).
- In summer, the 90th percentile value for response time was as short as 15 minutes (for assists) and as long as 86 minutes (for investigations).

FIGURE 11-30: Average Response Time Components, by Beat

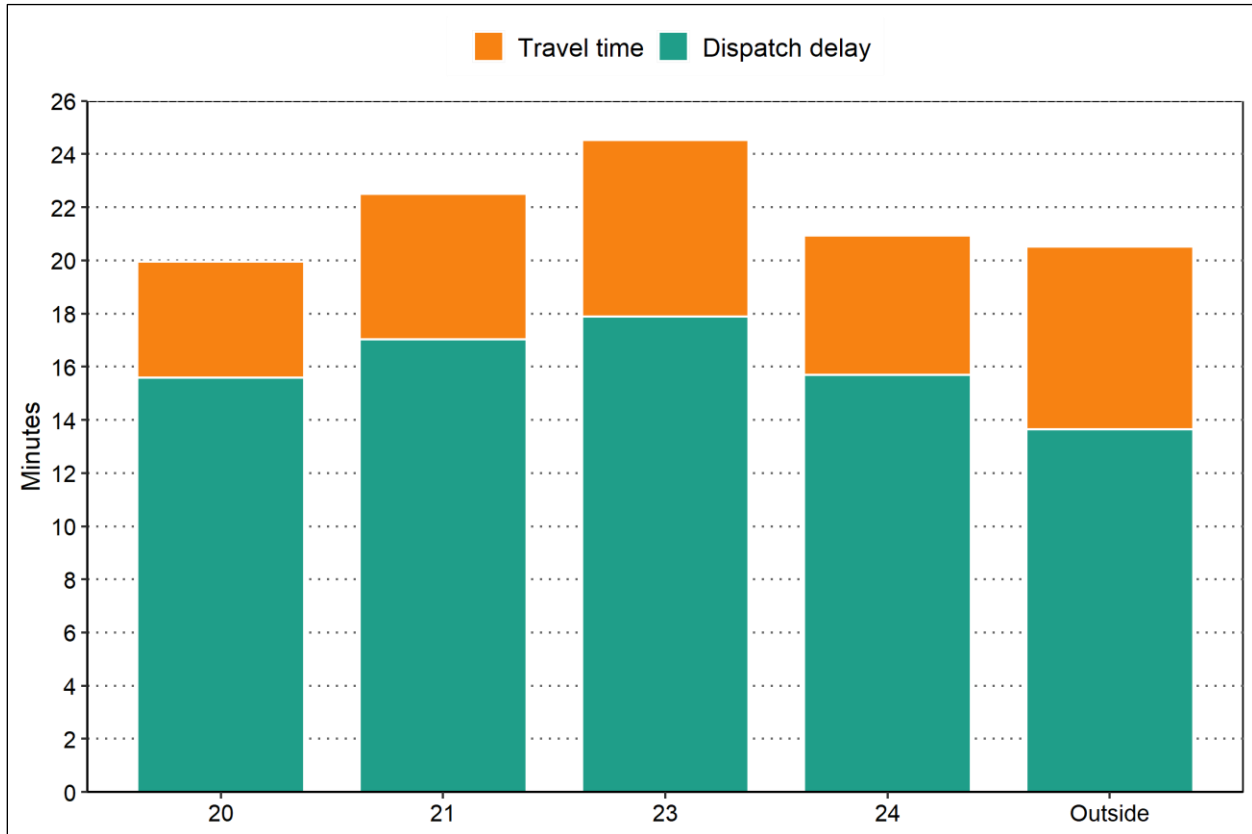


TABLE 11-18: Average Response Time Components, by Beat

Beat	Minutes			Calls	Area (Sq. Miles)	Population (2020)
	Dispatch	Travel	Response			
20	15.6	4.4	19.9	3,287	1.1	8,786
21	17.0	5.5	22.5	5,600	2.1	24,561
23	17.9	6.6	24.5	3,200	1.8	14,751
24	15.7	5.3	20.9	2,336	1.7	7,760
Outside	13.6	6.9	20.5	275	NA	NA
Total	16.6	5.5	22.1	14,689	6.7	55,858

Observations:

- Excluding calls outside National City, beat 20 had the shortest average dispatch processing time, which was about 15.6 minutes.
- Excluding calls outside National City, beat 20 had the shortest average response time, which was about 19.9 minutes.

High-priority Calls

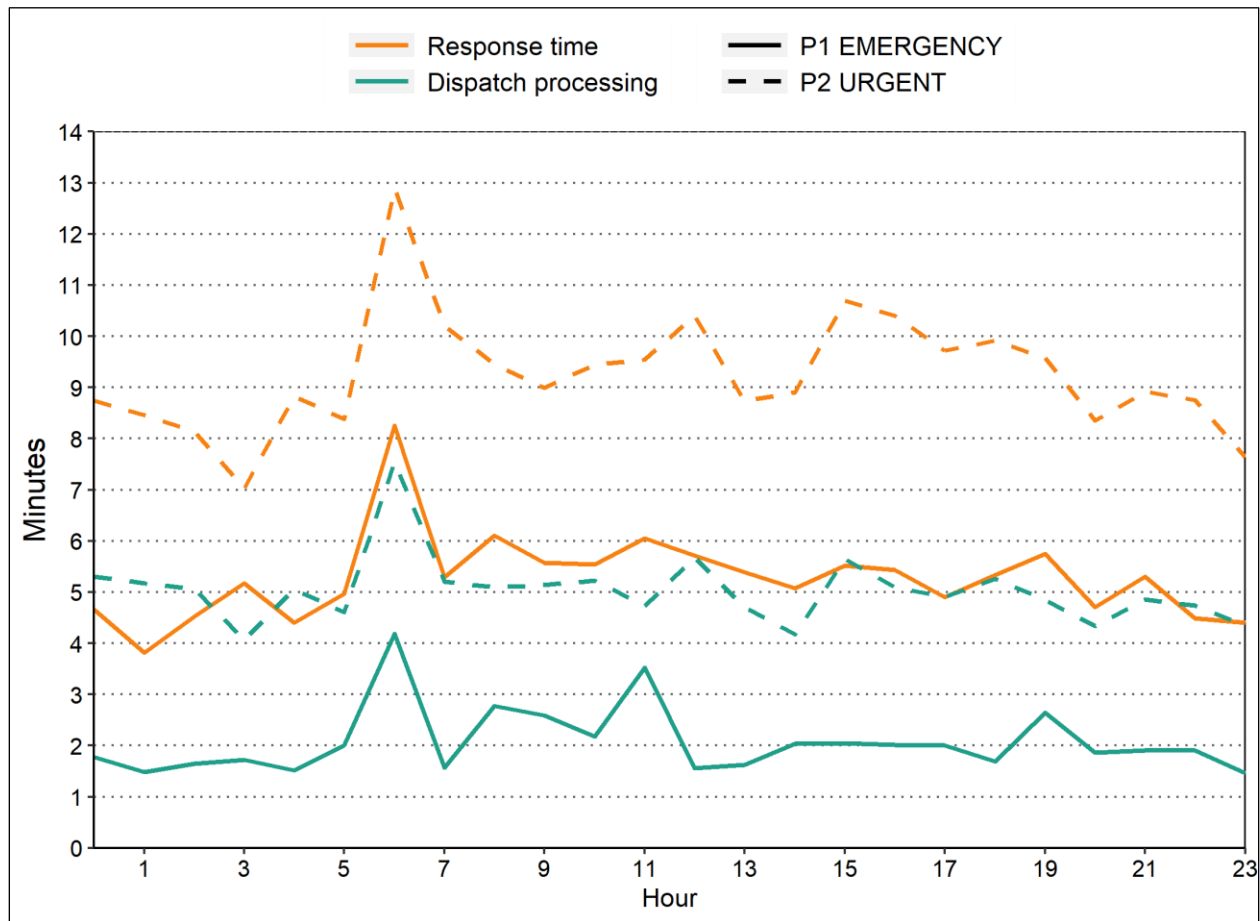
The department assigns priorities to calls with priorities "P1 EMERGENCY" and "P2 URGENT" as the highest priorities. Table 11-19 shows average response times by priority. Also, we identified the majority of injury accidents based upon their call descriptions, "11-81 ACCIDENT MINOR INJURY," "20001 HIT & RUN W/INJURY," "20001R HIT & RUN W/INJURY RPT," "11-80 ACCIDENT MAJOR INJURY," and "11-81R ACCIDENT MINOR INJ RPT," to see if these provided an alternate measure for emergency calls.

TABLE 11-19: Average and 90th Percentile Response Times, by Priority

Priority	Minutes			Calls	90th Percentile, Minutes
	Dispatch	Travel	Response		
P1 EMERGENCY	2.1	3.2	5.3	693	8.4
P2 URGENT	5.0	4.3	9.3	3,768	17.0
P3 SERIOUS	15.9	5.4	21.3	6,105	49.0
P4 NON-URGENT	31.1	7.2	38.3	3,319	101.6
P5 SELF-INITIATED/OTHER	29.2	6.1	35.4	804	98.5
Total	16.6	5.5	22.1	14,689	58.3
Injury accident	5.3	3.6	9.0	126	14.8

Note: The total average is weighted according to the number of calls within each priority level.

FIGURE 11-31: Average Response and Dispatch Processing Times for High-priority Calls, by Hour



Observations:

- The average response time was 5.3 minutes for P1 calls and 9.3 minutes for P2 calls. This was lower than the overall average of 22.1 minutes for all calls.
- The average dispatch delay was 2.1 minutes for P1 calls and 5.0 minutes for P2 calls. This was lower than 16.6 minutes overall.
- For P1 calls, the longest response times were between 6:00 a.m. and 7:00 a.m., with an average of 8.3 minutes.
- For P2 calls, the longest response times were between 6:00 a.m. and 7:00 a.m., with an average of 12.9 minutes.
- For P1 calls, the shortest response times were between 1:00 a.m. and 2:00 a.m., with an average of 3.8 minutes.
- For P2 calls, the shortest response times were between 3:00 a.m. and 4:00 a.m., with an average of 7.0 minutes.

APPENDIX A: CALL TYPE CLASSIFICATION

Call descriptions for the department's calls for service from January 1, 2019, to December 31, 2019, were classified into the following categories.

TABLE 11-20: Call Type, by Category

Call Type Code	Table Category	Figure Category		
211A ROBBERY ALARM	Alarm	Alarm		
459A AUDIBLE BURG ALARM				
459S SILENT BURG ALARM				
ASSIST OTHER AGENCY COVER NOW	Assist other agency	Assist		
ASSIST OTHER AGENCY NON-URGENT				
ASSIST OTHER AGENCY URGENT				
FIRE OTHER				
FIRE STRUCTURE				
FIRE VEHICLE				
MEDICAL				
MEDICAL TRANSFER				
OTHER AGENCY DETAIL				
OVERDOSE				
11-11 CHECK THE AREA			Check	Check
BAR CHECK				
BEAT INFORMATION				
CHECK THE WELFARE NON-URGENT				
CHECK THE WELFARE URGENT				
CITIZEN FLAG				
DRIVEBY REQUEST				
SECURITY CHECK				
11550 UNDER INFLUENCE	Crime-person	Crime		
166 VIOLATION OF CT ORDER				
166R VIOLATION OF CT ORDER RPT				
207 KIDNAPPING				
207R KIDNAPPING REPORT				
211 ROBBERY STRONG ARM				
215 CARJACKING				
220R SEXUAL ASSAULT REPORT				
23152 DRIVING UNDER INFLUENCE				
242 BATTERY				
242R BATTERY REPORT				
243.4 BATTERY SEXUAL				
243.4R BATTERY SEXUAL REPORT				
243E1R DOMESTIC DISPUTE REPORT				
243R BATTERY W/INJURY REPORT				
245 ASSAULT W/DEADLY WEAPON				

Call Type Code	Table Category	Figure Category
245R ASSAULT W/DEADLY WPN RPT		
246 SHOOT AT DWELL/VEHICLE		
246R SHOOT AT DWELL/VEH RPT		
261 RAPE		
261R RAPE REPORT		
273.5 DOMESTIC VIOLENCE		
273.5R DOMESTIC VIOLENCE RPT		
273.6 VIOLATION OF DVRO		
273.6R VIOLATION OF DVRO RPT		
273a CHILD ABUSE/NEGLECT		
273aR CHILD ABUSE/NEGLECT RPT		
288 LEWD ACT AGAINST CHILD		
288R LEWD ACT AGAINST CHILD RP		
311R CHILD PORNOGRAPHY		
314 INDECENT EXPOSURE		
314R INDECENT EXPOSURE REPORT		
368 ELDER/DEP ADULT ABUSE		
368R ELDER/DEP AD ABUSE RT		
415 DV-VIOLENT		
415 FIGHT		
415 VIOLENT		
417 BRANDISHING WEAPON		
417R BRANDISHING WEAPON REPORT		
422 CRIMINAL THREATS		
422R CRIMINAL THREATS REPORT		
459 HOT PROWL		
518R EXTORTION REPORT		
646 STALKING		
646R STALKING REPORT		
647.6 ANNOY/MOLEST CHILD		
647.6R ANNOY/MOLEST CHILD RPT		
647b PROSTITUTION		
653M ANNOYING PHONE CALL		
BOMB THREAT 148.1		
10851 RECOVERY		
10851 REPORT		
10851 STOLEN VEHICLE		
10852 VEHICLE TAMPERING		
211 ROBBERY	Crime-property	
211 ROBBERY ARMED		
211R ROBBERY REPORT		
23110 THROW OBJECT AT VEH		

Call Type Code	Table Category	Figure Category
23110R THROW OBJ A/VEH RPT		
451 ARSON		
459 CASER		
459C BURGLARY COMMERCIAL		
459CR BURGLARY COMMERCIAL RPT		
459R BURGLARY RESIDENTIAL		
459RR BURGLARY RESIDENTIAL RPT		
459V BURGLARY VEHICLE		
459VR BURGLARY VEHICLE REPORT		
470 FORGERY/FRAUD		
470R FORGERY/FRAUD REPORT		
476R NSF CHECKS REPORT		
487 GRAND THEFT		
487R GRAND THEFT REPORT		
488 PETTY THEFT		
488R PETTY THEFT REPORT		
496 POSSESSION STOLEN PROPERTY		
503R EMBEZZLEMENT REPORT		
530R IDENTITY THEFT REPORT		
537 DEFRAUDING INNKEEPER		
537R DEFRAUDING INNKEEPER RPT		
594 VANDALISM/MAL MISCHIEF		
594R VANDALISM/MAL MISCHIEF RT		
NARCOTICS ACTIVITY		
SHOPLIFTER		
11-86 SPECIAL DETAIL		
EXTRA PATROL	Directed patrol	Directed patrol
PRESERVE THE PEACE		
RANGE USE 10-19		
415 CIVIL		
415 DRINKING IN PUBLIC	Disturbance	Disturbance
415 DV-VERBAL		
415 FAMILY		
415 GROUP		
415 MUSIC		
415 NEIGHBORS		
415 NOISE		
415 OTHER		
415 PARTY		
415 REFUSING TO LEAVE		
415 SUBJECT		
415 VERBAL		

Call Type Code	Table Category	Figure Category
5150 MENTAL SUBJECT		
5150 VIOLENT MENTAL SUBJECT		
647F DRUNK IN PUBLIC		
FIREWORKS		
PANHANDLING		
ANIMAL AT LARGE	Animal	
ANIMAL ATTACK IN PROGRESS		
ANIMAL BITE REPORT		
ANIMAL OTHER REPORT		
ANIMAL ROUTINE		
ANIMAL VICIOUS/INJURED/SICK	Follow-up	
FOLLOW-UP		
10-16 ARREST	Miscellaneous	General noncriminal
10-87 MEET OFFICER		
11-48 TRANSPORT		
911 CELL INCOMPLETE		
911 DISCONNECT		
911 LE AGENCY TRANSFER		
911 MISUSE		
ATTEMPT TO CONTACT		
ATTEMPT TO LOCATE		
BE ON THE LOOKOUT		
CALL TAKING IN PROGRESS		
HAZARD		
MISCELLANEOUS		
PROPERTY RELINQUISH		
PUBLIC WORKS CALL OUT		
REPOSSESSION		
RUNAWAY JUVENILE		
SELF INITIATED		
TARASOFF NOTIFICATION		
TICKET SIGN OFF		
TRUANT		
UTILITY NOTIFICATION		
VEHICLE LOCK OUT		
11-44 DEATH REPORT	Investigation	Investigation
11-50 FIELD INTERVIEW		
ADULT FOUND		
ADULT LOST		
C5 SURVEILLANCE		
C6 STAY OUT OF THE AREA		
CHILD FOUND		

Call Type Code	Table Category	Figure Category
CHILD LOST		
MISSING PERSON		
MISSING PERSON AT RISK		
MP/RAJ RECOVERY		
PROPERTY FOUND		
PROPERTY LOST		
UNKNOWN PROBLEM		
TRAINING/TEST	Out of service–administrative	Out of service
11-45 THREAT/ATTEMPT/SUICIDE		
11-6 SHOTS FIRED		
11-7 PROWLER		
11-8 PERSON DOWN		
LOITERING		
PURSUIT		
SUBJECT WITH A GUN	Suspicious incident	Suspicious
SUBJECT WITH A WEAPON		
SUSPICIOUS CIRCUMSTANCES		
SUSPICIOUS SUBJECT		
SUSPICIOUS VEHICLE		
WANTED SUBJECT		
11-80 ACCIDENT MAJOR INJURY		
11-81 ACCIDENT MINOR INJURY		
11-81R ACCIDENT MINOR INJ RPT		
11-82 ACCIDENT NON-INJURY		
11-83 ACCIDENT NO DETAIL	Accident	
20001 HIT & RUN W/INJURY		
20001R HIT & RUN W/INJURY RPT		
20002 HIT & RUN NON-INJURY		
20002R HIT & RUN NON-INJ RT		
ACCIDENT DRIVERS REPORT		Traffic
11-84 TRAFFIC CONTROL		
11-88 STALLED VEHICLE		
23103 RECKLESS DRIVER		
ABANDONED VEHICLE	Traffic enforcement	
DUI CHECK POINT		
LOST OR STOLEN PLATES		
PARKING COMPLAINT		
TRAFFIC STOP	Traffic stop	
602 TRESPASSING		
602R TRESPASSING REPORT	Violation	Violation
IMPOUND PD		
IMPOUND PRIVATE		

APPENDIX B: CALLS EXCLUDED FROM STUDY

According to records obtained from CAD, National City PD was associated with 67,438 calls in 2019. Of these, 26,043 events were recorded with at least one patrol unit. In other words, 41,395 calls were excluded from our analysis.

Some of these calls (7,004) had a responding NCPD unit that was not part of the patrol force, 474 calls had responding units but lacked adequate unit information, for a total of 7,478 calls.

TABLE 11-21: All Excluded Calls

Summary of Calls Excluded	Count	Percentage
No Incident Number Assigned	6,434	16
No Dispatched Units	27,485	66
Only Nonpatrol Units Responded	7,004	17
Missing or Inaccurate Unit Time Stamps	472	1
All Calls Excluded from Study	41,395	100

We examined the call records for the 33,917 calls without dispatched units more closely. We found that all 33,917 calls had no first unit assign, en route, or arrival time recorded within the call record.

TABLE 11-22: Calls Without Units, By Cancel Reason

Cancel Reason	Count	Cumulative Percentage
BY DISPATCHER REQUEST	24,958	91
BY RP REQUEST	1,870	98
BY SUPERVISOR REQUEST	328	99
BY OFFICER REQUEST	317	100
Other*	11	100
Total	27,485	100

Note: *These 11 calls include an additional 3 different cancel reasons.

TABLE 11-23: Calls with Only Nonpatrol Units, By Description

Call Type	Count	Cumulative Percentage
TRAFFIC STOP	1,137	16
ANIMAL ROUTINE	755	27
REPOSSESSION	727	37
PARKING COMPLAINT	715	48
IMPOUND PRIVATE	680	57
11-86 SPECIAL DETAIL	561	65
SELF-INITIATED	498	72
FOLLOW-UP	357	78
11-50 FIELD INTERVIEW	227	81
LOST OR STOLEN PLATES	94	82
ANIMAL AT LARGE	75	83
Other*	1,178	100
Total	7,004	100

Note: *These 1,178 calls include an additional 114 different call descriptions. Within this group, the most frequent type accounts for less than 1 percent of the total 7,004 calls.

TABLE 11-24: Calls with Only Nonpatrol Units, By Unit Type

Unit Type	Responses	Cumulative Percentage
GANG ENFORCEMENT	1,707	20
DISPATCH	1,540	37
TRAFFIC	1,268	52
ANIMAL CONTROL	946	63
PARKING ENFORCEMENT	806	72
DETECTIVE	674	80
TOW	536	86
COMMUNITY SERVICE OFFICER	438	91
SCHOOL RESOURCE OFFICER	298	94
EITHER GANG OR HOMELESS	128	96
HOMELESS OUTREACH TEAM	128	97
Other*	261	100
Total	8,730	100

Note: *These 261 responses include an additional 15 different unit types. Within this group, the most frequent type accounts for less than 1 percent of the total 8,730 responses.

APPENDIX C: WORKLOAD BY SEASON, 2020

FIGURE 11-32: Deployment and All Workload, Weekdays, Winter 2020

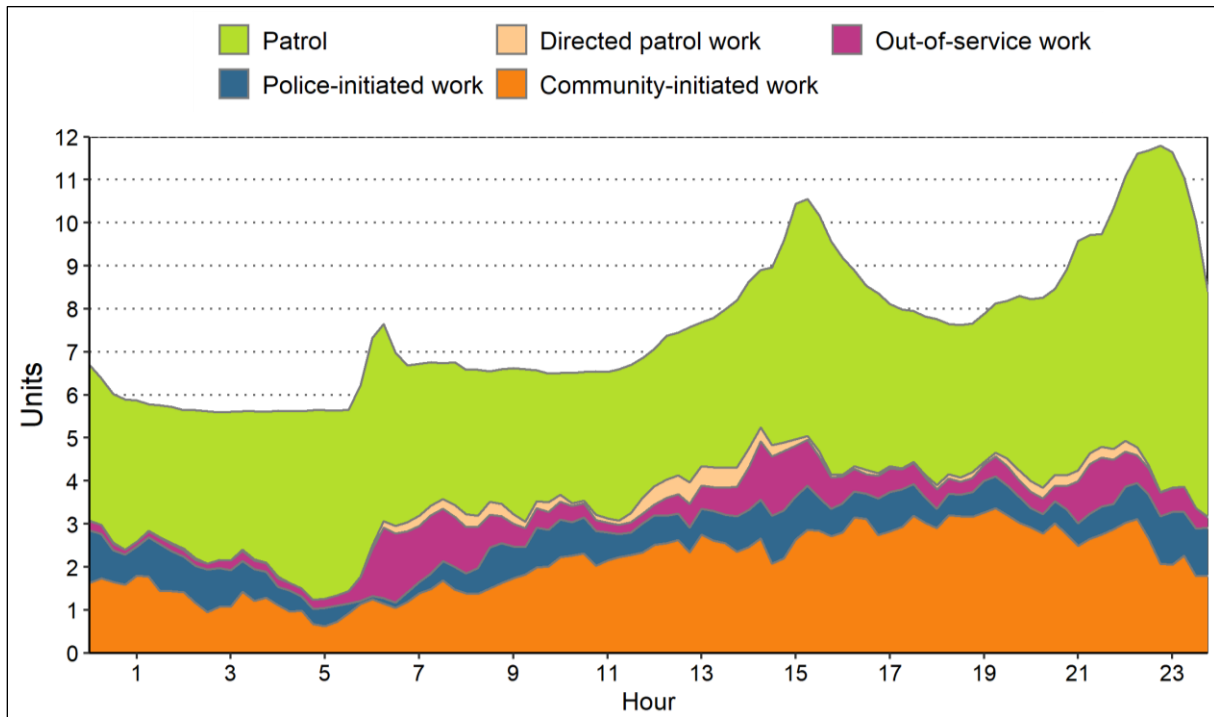


FIGURE 11-33: Deployment and All Workload, Weekends, Winter 2020

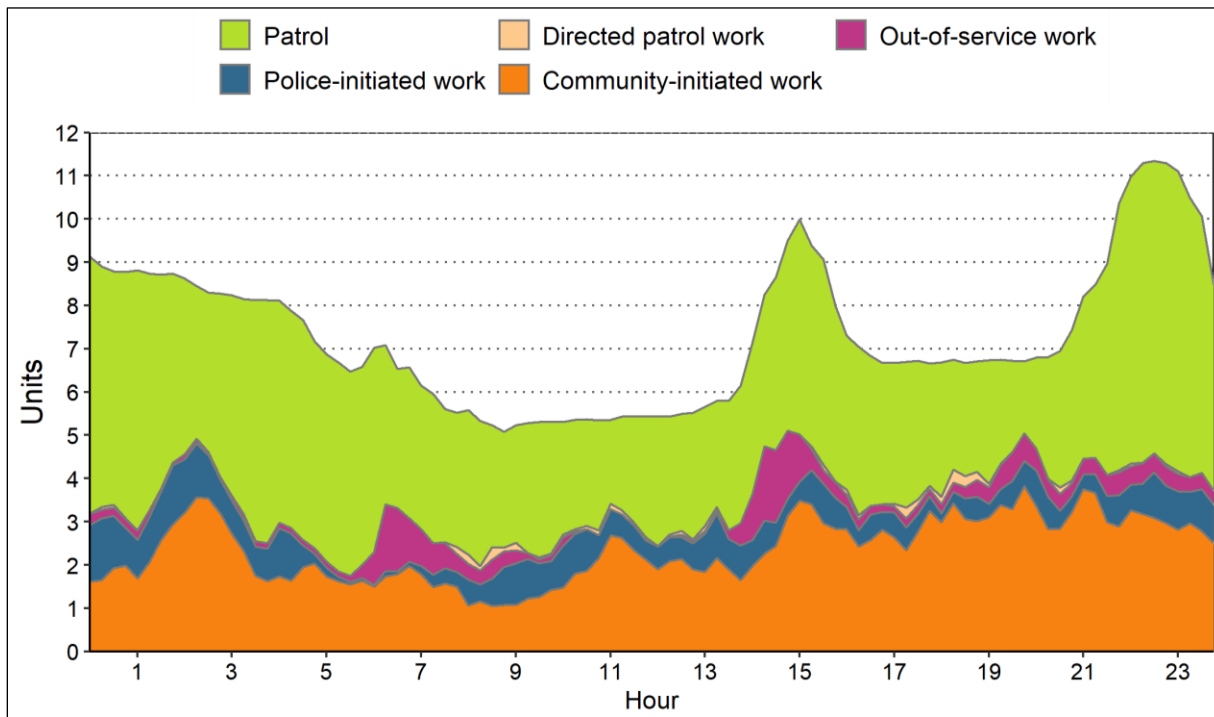


FIGURE 11-34: Deployment and All Workload, Weekdays, Summer 2020

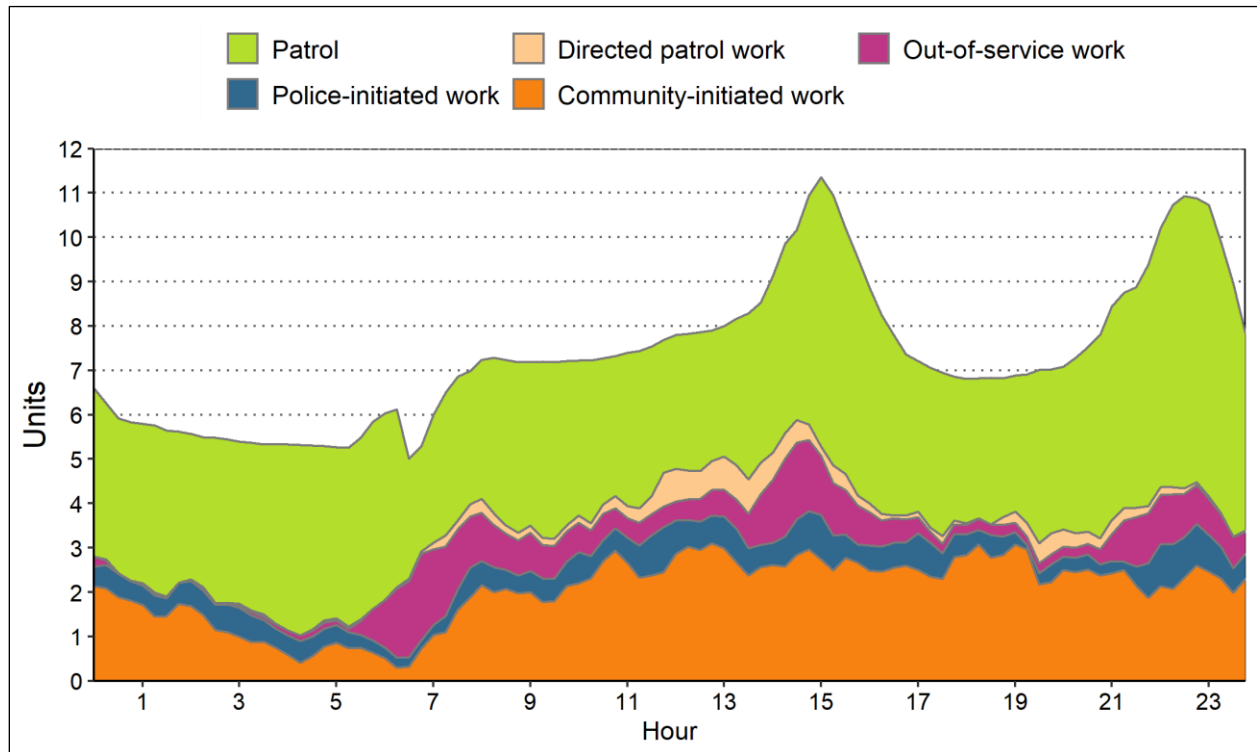
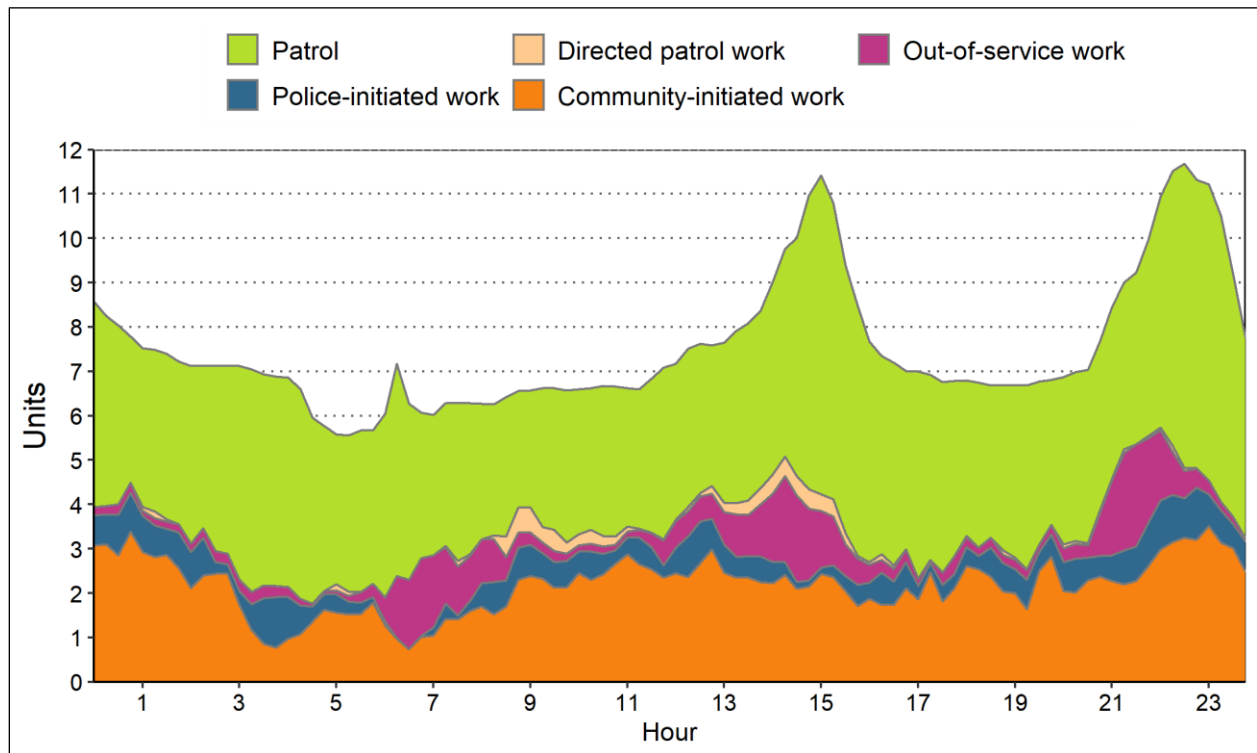


FIGURE 11-35: Deployment and All Workload, Weekends, Summer 2020



Winter (January 4 through February 28, 2020):

- Community-initiated work:
 - Average community-initiated workload was 2.1 units per hour during the week and 2.4 units per hour on weekends.
 - This was approximately 28 percent of hourly deployment during the week and 32 percent of hourly deployment on weekends.
- All work:
 - Average workload was 3.5 units per hour during the week and 3.4 units per hour on weekends.
 - This was approximately 46 percent of hourly deployment during the week and 47 percent of hourly deployment on weekends.

Summer (July 7 through August 31, 2020):

- Community-initiated work:
 - Average community-initiated workload was 2.0 units per hour during the week and 2.2 units per hour on weekends.
 - This was approximately 28 percent of hourly deployment during the week and 29 percent of hourly deployment on weekends.
- All work:
 - Average workload was 3.4 units per hour during the week and 3.4 units per hour on weekends.
 - This was approximately 46 percent of hourly deployment during the week and 45 percent of hourly deployment on weekends.

FIGURE 11-36: Percentage of Workload, Weekdays, Winter 2020

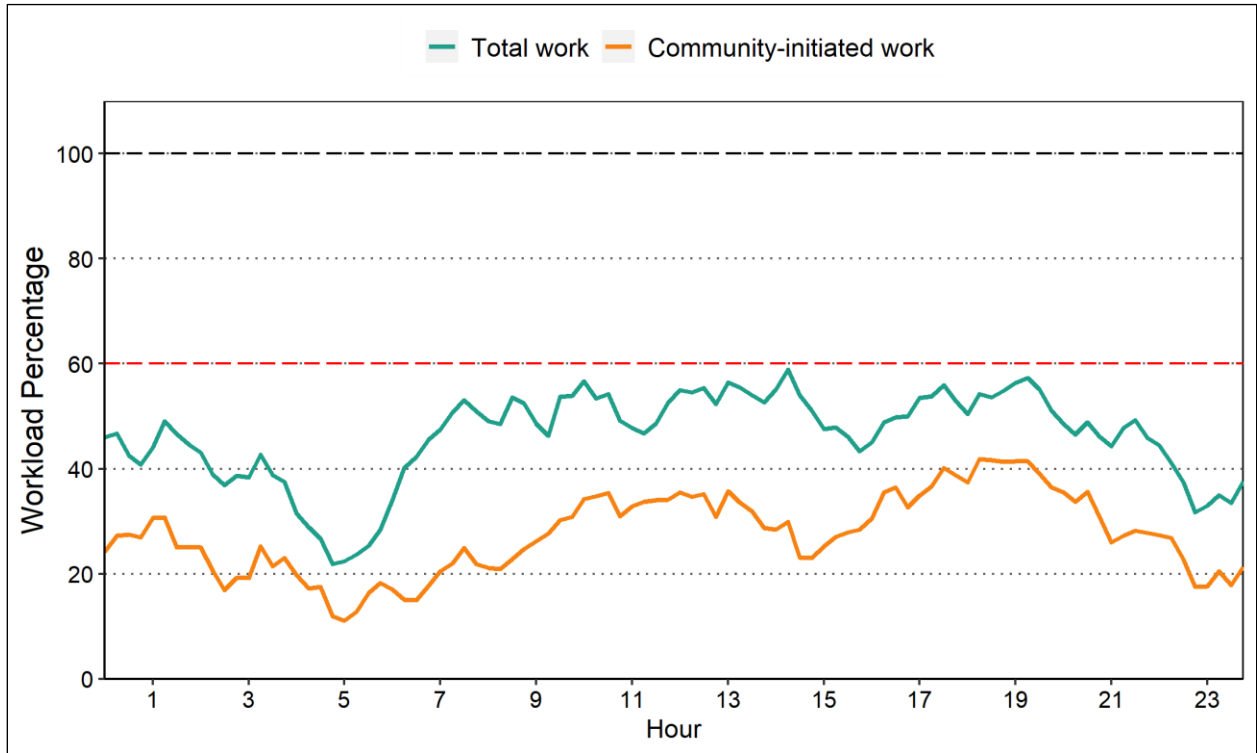


FIGURE 11-37: Percentage of Workload, Weekends, Winter 2020

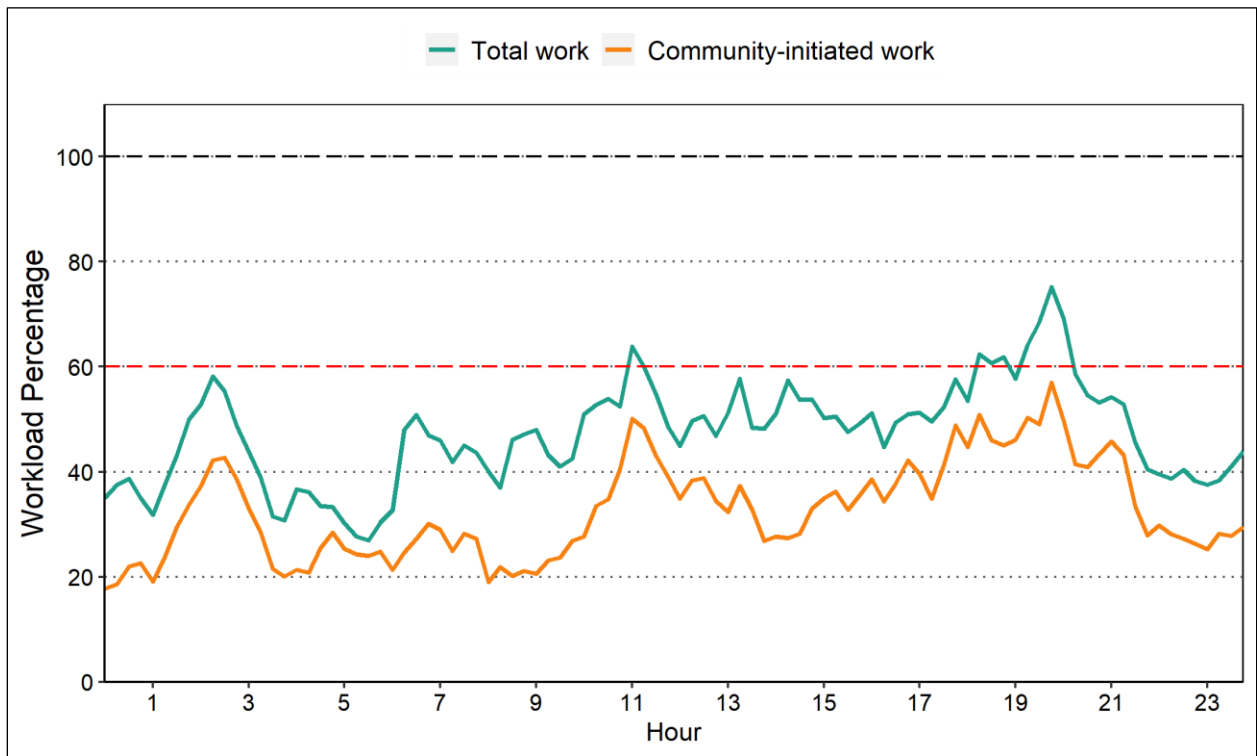


FIGURE 11-38: Percentage of Workload, Weekdays, Summer 2020

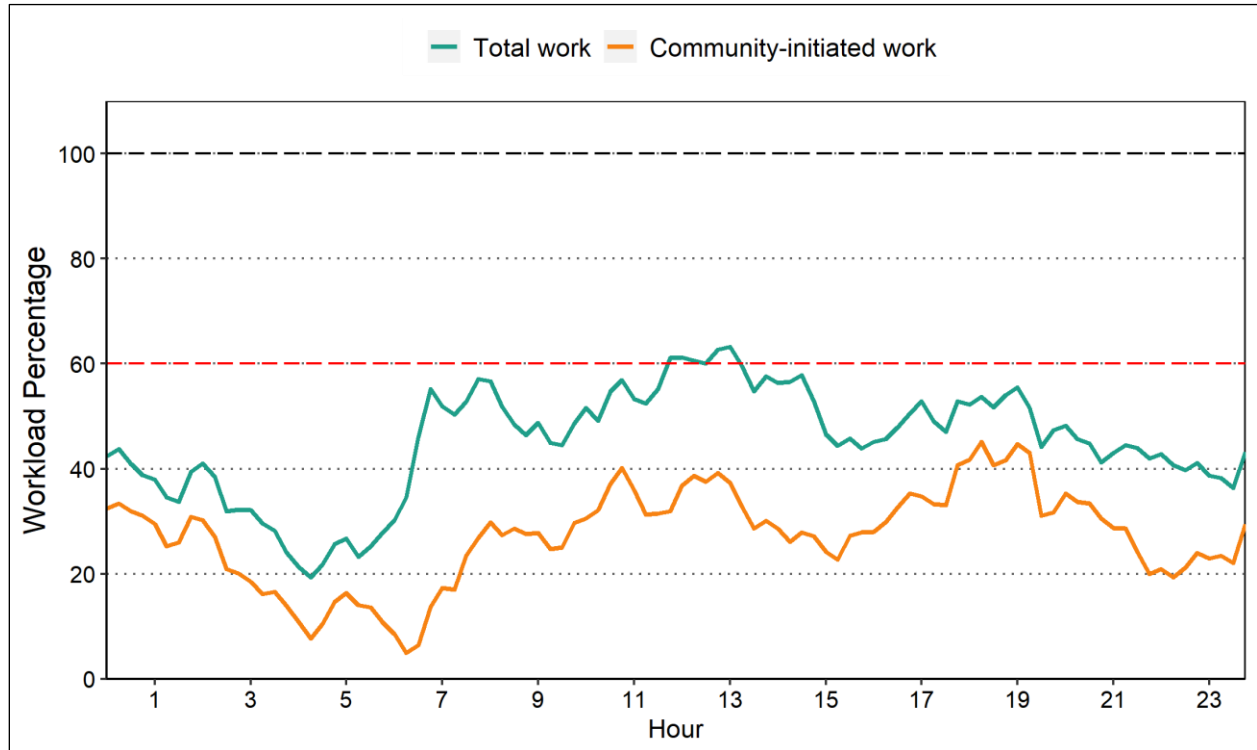
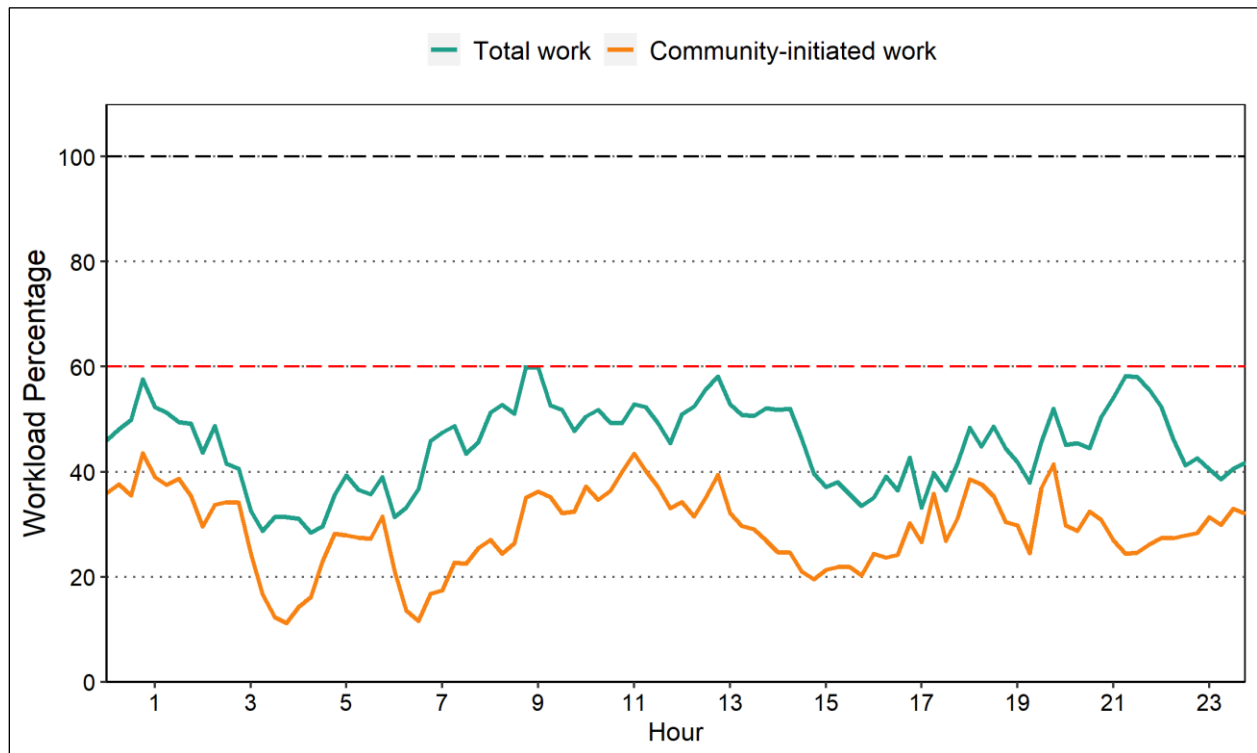


FIGURE 11-39: Percentage of Workload, Weekends, Summer 2020



Observations:

Winter:

- Community-initiated work:
 - During the week, workload reached a maximum of 42 percent of deployment between 6:15 p.m. and 6:45 p.m.
 - On weekends, workload reached a maximum of 57 percent of deployment between 7:45 p.m. and 8:00 p.m.
- All work:
 - During the week, workload reached a maximum of 59 percent of deployment between 2:15 p.m. and 2:30 p.m.
 - On weekends, workload reached a maximum of 75 percent of deployment between 7:45 p.m. and 8:00 p.m.

Summer:

- Community-initiated work:
 - During the week, workload reached a maximum of 45 percent of deployment between 6:15 p.m. and 6:30 p.m. and between 7:00 p.m. and 7:15 p.m.
 - On weekends, workload reached a maximum of 44 percent of deployment between 12:45 a.m. and 1:00 a.m. and between 11:00 a.m. and 11:15 a.m.
- All work:
 - During the week, workload reached a maximum of 63 percent of deployment between 12:45 p.m. and 1:15 p.m.
 - On weekends, workload reached a maximum of 60 percent of deployment between 8:45 a.m. and 9:15 a.m.

APPENDIX D: UNIFORM CRIME REPORT INFORMATION

This section presents information obtained from Uniform Crime Reports (UCR) collected by the Federal Bureau of Investigation (FBI). The tables and figures include the most recent information that is publicly available at the national level. This includes crime reports for 2011 through 2020, along with clearance rates for 2020. Crime rates are expressed as incidents per 100,000 population.

TABLE 11-25: Reported Crime Rates in 2020, by City

Municipality	State	Population	Crime Rates		
			Violent	Property	Total
Carlsbad	California	116,516	192	1,580	1,772
Chula Vista	California	278,027	329	1,171	1,501
Coronado	California	23,750	72	1,124	1,196
El Cajon	California	103,035	497	1,792	2,289
Escondido	California	152,446	373	1,769	2,142
La Mesa	California	59,488	304	1,742	2,046
Oceanside	California	176,616	406	1,801	2,206
San Diego	California	1,437,608	369	1,692	2,061
San Diego County Sheriff	California	908,834	158	428	586
Richmond	California	111,367	964	3,303	4,268
National City	California	61,710	569	1,880	2,449
California		39,538,223	442	2,139	2,581
National		331,449,281	399	1,958	2,357

FIGURE 11-40: Reported National City Violent and Property Crime Rates, by Year

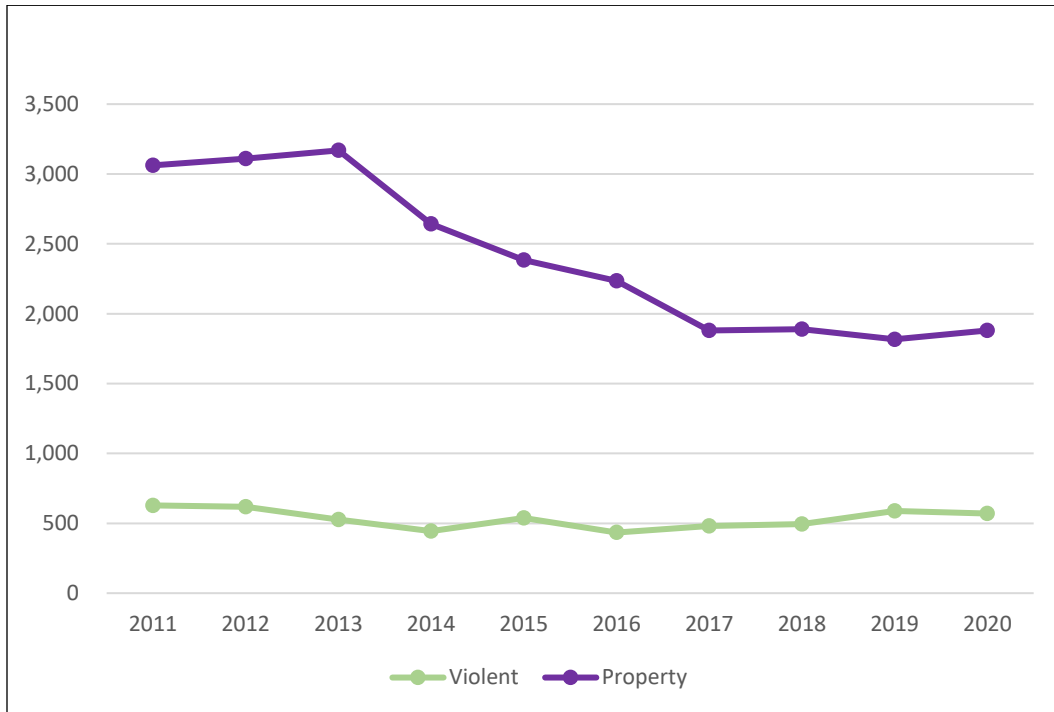


FIGURE 11-41: Reported City and State Crime Rates, by Year

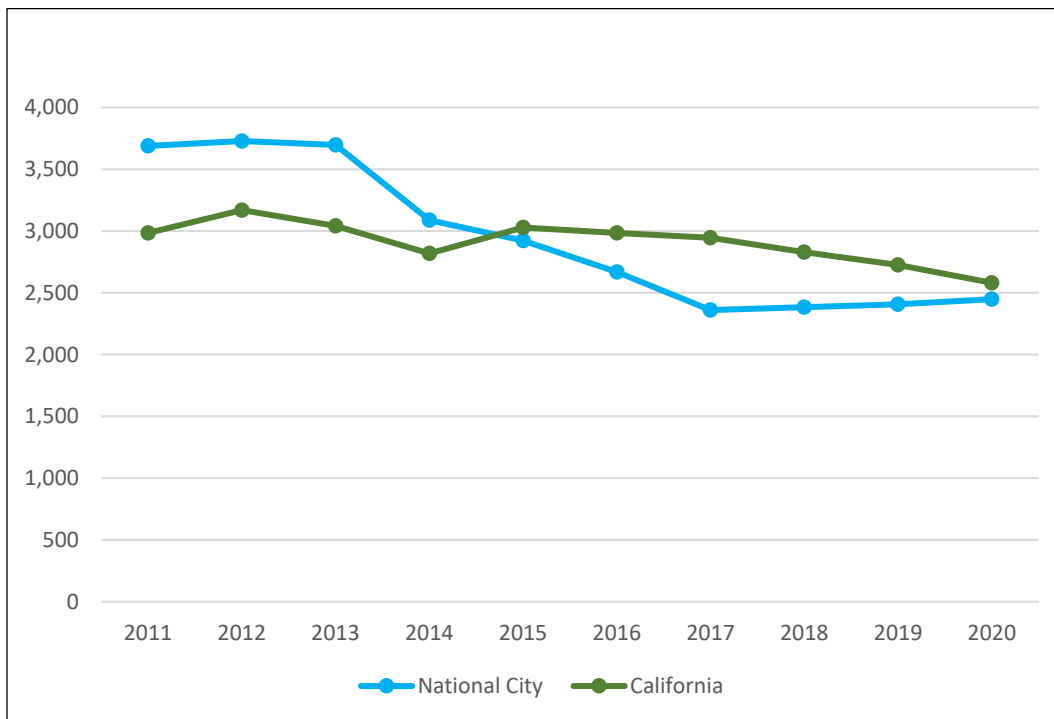


TABLE 11-26: Reported National City, California, and National Crime Rates, by Year

Year	National City				California				National			
	Population	Violent	Property	Total	Population	Violent	Property	Total	Population	Violent	Property	Total
2011	59,271	628	3,061	3,688	37,819,249	410	2,574	2,983	317,186,963	376	2,800	3,176
2012	59,920	619	3,109	3,728	38,183,375	421	2,747	3,169	319,697,368	377	2,758	3,135
2013	59,637	527	3,169	3,696	38,498,377	394	2,646	3,041	321,947,240	362	2,627	2,989
2014	60,130	444	2,643	3,087	38,970,399	389	2,430	2,819	324,699,246	357	2,464	2,821
2015	60,768	538	2,384	2,923	39,315,550	424	2,605	3,029	327,455,769	368	2,376	2,744
2016	61,550	434	2,236	2,669	39,421,283	443	2,541	2,984	329,308,297	383	2,353	2,736
2017	61,574	481	1,879	2,360	39,536,653	449	2,497	2,946	325,719,178	383	2,362	2,745
2018	61,763	495	1,889	2,384	39,557,045	447	2,380	2,828	327,167,434	369	2,200	2,568
2019	61,791	589	1,817	2,406	39,959,095	434	2,290	2,724	328,239,523	379	2,010	2,489
2020	61,710	569	1,880	2,449	39,538,223	442	2,139	2,581	331,449,281	399	1,958	2,357

TABLE 11-27: Reported National City, California, and National Crime Clearance Rates

Crime	National City			California			National		
	Crimes	Clearances	Rate	Crimes	Clearances	Rate	Crimes	Clearances*	Rate
Murder Manslaughter	4	2	50%	2,202	1,296	59%	18,109	9,851	54%
Rape	19	2	11%	12,641	4,673	37%	110,095	33,689	31%
Robbery	99	40	40%	44,684	14,816	33%	209,643	60,377	29%
Aggravated Assault	229	118	52%	113,539	57,868	51%	799,678	371,051	46%
Burglary	139	17	12%	145,377	17,229	12%	898,176	125,745	14%
Larceny	760	85	11%	527,748	45,114	9%	4,004,124	604,623	15%
Vehicle Theft	261	22	8%	168,046	15,800	9%	727,045	89,427	12%

Note: *Clearances were calculated from crimes and clearance rates, as these numbers are not directly available from the FBI.

END



ENHANCED MINIMUM STAFFING PILOT PROGRAM 4/18/2023

PURPOSE

Seek authorization of an Enhanced Staffing Pilot Program designed to enhance public safety and the efficiency of the Fire Department by implementing a 4-person Engine Company response model.

BACKGROUND

In **2009**, National City retained **Citygate Associates LLC** to conduct a Standards of Response Analysis for the City. This comprehensive analysis provided several recommendations for emergency service delivery improvements, which included increasing daily staffing.

(See Appendix A - Citygate Executive Summary- Recommendation #4)

In **2022**, the City of National City retained the services of **Center for Public Safety Management LLC (CPSM)** to complete an analysis of the city's Fire Department, EMS ground transport service, and fire dispatch services. This comprehensive analysis provided several recommendations for emergency service delivery improvements, once again recommending an increase to daily staffing (See Appendix B - CPSM Executive Summary).

Using the **CPSM** study as a reference, in the year 2020 the Fire Department responded to **8,923** calls for service. This number represents an increase of **55%** since the **2009** Citygate study with no increase to fire department staffing levels.

RECOMENDATIONS

Included in the Fire department analysis, **CPSM** recommends that the city develop a plan to implement a 4-person Engine Company response model on Engine 34 and Engine 31 due to the following factors:

- Demand for service
- Population density that includes substantial current and projected vertical density structures, many involving assisted and/or senior living
- Building and other risks identified in the report such as:
 - The San Diego Port property
 - Industrial and commercial properties that include heavy rail and tractor-trailer transportation
 - Proposed industrial and commercial properties
- The resiliency issues caused by marked increases in demand for service
- Ability to assemble an Effective Firefighting/Response Force
(See Appendix C - NIST Report on Residential Fireground Field Experiments)

IMPLEMENTATION

In an effort to adopt the recommendations of the CPSM's Fire Department analysis, staff recommends the Fire Department begin an Enhanced Staffing Pilot Program.

On April 18, 2023 (or upon Council approval):

- Addition of one (1) Full Time Equivalent (FTE) Firefighter on each of the three (3) operational shifts increasing on-duty operational staffing to fourteen (14) personnel per day.
 - These 3 additional FTE's are currently included in the FY23 Fire budget and proposed FY24 Budget.
 - Offset funding is provided through an existing SAFER Grant through March of 2024.
- The expected cost of the Enhanced Staffing Pilot Program to the Fire Department budget during the period (March 9, 2024-June 30, 2024), is expected to be in the range of \$139,313.00 (*table.2*)
 - The range takes into account personnel cost not covered by the SAFER Grant and predicted use of leave (Sick leave with pay, Vacation, injury leave, etc.)
- The Fire Department will maintain management rights regarding staffing as outlined in the existing Memorandum of Understanding (MOU) between the City of National City and the National City Firefighters' Association (January 1, 2022 - December 21, 2024)

FY24/25:

- FY24/25 Fire Budget to include three (3) additional FTE Firefighters previously funded by SAFER Grant.
- The cost to the FY24/25 Fire Budget is expected to be in the range of \$485,000 to \$514,000 (*table. 3*)
 - This range takes into account predicted salary, salary increases and leave costs.
- These three (3) additional FTE's increase the number of General Funded Firefighters to **18**.
- Additional SAFER Grant funding is currently being explored.

SCOPE OF ENHANCED STAFFING PILOT PROGRAM

The Fire Department has three operational shifts A, B, and C. Each shift is staffed by 5 Firefighters, 3 Engineers, 4 Captains, and 1 Battalion Chief, for an on-duty operational response force of **13 personnel**.

On April 18 2023, **1 Firefighter will be added to E34** on each of the three operational shifts, A, B, and C, thereby increasing on-duty operational staffing by 1 to a total of **14 personnel- (6 Firefighters per operational shift)-(table 1)**

A Shift (24-Hour) Shift)	B Shift (24-Hour) Shift)	C Shift (24-Hour) Shift)
B57 <ul style="list-style-type: none"> ■ 1 Battalion Chief 	B57 <ul style="list-style-type: none"> ■ 1 Battalion Chief 	B57 <ul style="list-style-type: none"> ■ 1 Battalion Chief
E34 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 1 Firefighter ■ 1 Firefighter 	E34 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 1 Firefighter ■ 1 Firefighter 	E34 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 1 Firefighter ■ 1 Firefighter
T34 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 1 Firefighter ■ 1 Firefighter 	T34 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 1 Firefighter ■ 1 Firefighter 	T34 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 1 Firefighter ■ 1 Firefighter
E31 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 1 Firefighter ■ 	E31 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 1 Firefighter ■ 	E31 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 1 Firefighter ■
Squad 33 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Firefighter 	Squad 33 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Firefighter 	Squad 33 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Firefighter

(table 1)

FISCAL IMPACT

As presented, the Enhanced Staffing Pilot Program will result in the following ongoing costs:

FY23/24 Fire Budget (General Fund) Cost-

** Staffing costs encumbered by the city as a result of the 5 SAFER Grant funded positions expiring in March 2024*

Personnel (4-person Engine Company, Engine 34)	
• Personnel cost not covered by Safer Grant – \$37,020 x 3	\$111,060.00
• Predicted use of leave– \$9,417 x 3	\$ 28,253.00
<i>* Total cost to increase GF Budgeted FF positions to 18</i>	<u>\$139,313.00</u>

(table 2)

FY24/25 Fire Budget (General Fund) Costs

Personnel (4-person Engine Company, Engine 34)	
• 1- Firefighter/Paramedic – \$167,452	
• 1- Firefighter/Paramedic – \$167,452	
• 1- Firefighter/EMT – \$149,773	
• Predicted use of leave– \$29,100	
Total Cost to General Fund for <u>FY25 \$513,777.00</u>	
• <i>These three (3) additional FTE’s increase the number of General Funded Firefighters to 18.</i>	

(table 3)

GOALS OF THE ENHANCED STAFFING PILOT PROGRAM

- Enhance service delivery and improve efficiency to the residents of National City
- Increase ability to complete critical tasking elements for specific incident responses
- Improve cardiac arrest survivability rates by decreasing patient down time prior to initiation of life saving interventions. (See Appendix D - NIST Report on EMS Field Experiments)
- Maintain and enhance public satisfaction with the service delivery of our Fire Department
- Increase Department resiliency (ability to handle more than one incident at a time)
- Assembling of an effective response force
- Reduce overall workload on the workforce
- Increase minimum daily staffing from 13 to 14 Firefighters
- Provide 14 National City Firefighters on first alarm responses in National City

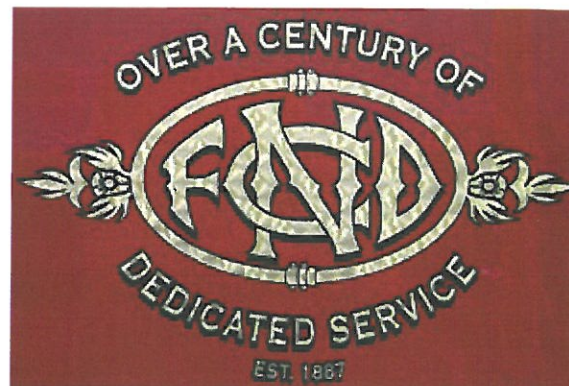
APPENDIX A



FIRE RESPONSE STUDY FOR THE **NATIONAL CITY FIRE DEPARTMENT**

VOLUME 1 OF 3 – MAIN REPORT

January 23, 2009



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CITYGATE ASSOCIATES, LLC
FIRE & EMERGENCY SERVICES

EXECUTIVE SUMMARY

National City retained Citygate Associates, LLC to conduct a Standards of Response Cover Planning analysis (fire response study) for the City. This study reviews the adequacy of the existing deployment system from the current fire station locations, and based on that analysis and possible service area growth, proposes what deployment enhancements the City could consider as funds allow. This deployment report is presented in two main sections, including this Executive Summary summarizing the most important findings and recommendations and a deployment analysis section supported by maps and response statistics bound in supplemental volumes as attachments to this document.

This planning effort is part of National City's efforts to enhance its services through progressive planning as the community continues to evolve. At this point in a slow economy, it is an ideal time to take stock of fire services and place fire defense planning on the forefront before the pace of growth again becomes fast and the City finds itself behind the planning timeline to match a desire for additional services to serve growth.

POLICY CHOICES FRAMEWORK

First, the City leadership must understand there are no mandatory federal or state regulations directing the level of fire service response times and outcomes. The body of regulations on the fire service provides that *if fire services are provided at all, they must be done so with the safety of the firefighters and citizens in mind* (see regulatory discussion on page 7). Historically, the City has made significant investments in its fire services, and as a result, has good fire and EMS response coverage, which is further supported by the countywide automatic aid system, which provides for the closest appropriate unit response to all emergencies regardless of jurisdictional borders. Some of these resources are commonly dispatched by one east countywide communications center, and the remainder by the City of San Diego.

CITYGATE'S OVERALL OPINIONS ON THE STATE OF THE CITY'S FIRE SERVICES

In brief, Citygate finds that the challenge of providing fire services in the National City is similar to that found in many California communities: providing an adequate level of fire services within the context of limited fiscal resources, competing needs, growing and aging populations plus uncertainty surrounding the exact timing of future development. The Department today is handling the City's needs through local resources and the use of partnerships with its neighbors in the mutual aid system. The deployment system meets the City's current basic needs and could grow commensurate with additional development and revenue to provide increased fire services over time as the City approaches build out of its General Plan. Throughout this report, Citygate makes observations, key findings, and, where appropriate, specific action item recommendations. Overall, there are 10 key findings and 3 specific action item recommendations.

CHALLENGE – FIELD OPERATIONS DEPLOYMENT (FIRE STATIONS)

Fire department deployment, simply stated, is about the *speed* and *weight* of the attack. *Speed* calls for first-due, all risk intervention units (engines and ladder trucks) strategically located across a community. These units are tasked with controlling everyday average emergencies without the incident escalating to second alarm or greater size, which then unnecessarily depletes the department's resources as multiple requests for service occur. *Weight* is about multiple-unit response for significant emergencies like a "room and contents structure fire," a multiple-patient incident, a vehicle accident with extrication required, or a complex rescue incident. In these situations, departments must assemble enough firefighters in a reasonable period in order to control the emergency safely without it escalating to greater alarms.

In Section 2 of this study, Standards of Cover (Deployment) Analysis, Citygate's analysis of prior response statistics and use of geographic mapping tools reveals that the City has good fire station coverage for *some* of its neighborhoods. However, given the large area, hilly terrain, insufficient roadway circulation, and mix of suburban and rural population densities, the City is challenged to provide a desirable suburban level of service to the northeastern City from only the existing two fire stations. The maps provided in Volume 2 and the corresponding text explanation beginning on page 26 of Section 2 of this volume show that the City would need a combination of improvements to increase service levels above the current amount.

For effective outcomes on serious medical emergencies and to keep serious, but still-emerging fires small, best practices recommend that the first-due fire unit should arrive within 7 minutes of the 911-call receipt, 90 percent of the time. For serious fires and rescues, the balance of the multiple units needed (first alarm) should arrive within 11 minutes of the 911-call receipt, 90 percent of the time. In the City, the current fire station system provides the following unit coverage, averaged Citywide for emergency medical and fire incident types:

1st Apparatus On Scene 7:45 @ 90.6% of the time
1st Alarm On Scene <= 12:15 @ 90.3% of the time

The City is only staffed for one serious building fire at a time or one to two medical calls for service at the same time. The regional automatic response system delivers greater alarm and multiple-incident support, when needed, although with longer response times.

Citygate's deployment findings and recommendations are summarized below. For reference purposes, the findings and recommendation numbers refer to the sequential numbers as these are presented in the main body of the report.

Finding #1: The City does not have a fire deployment measure adopted by the City Council that includes the beginning time measure starting from the point of fire dispatch receiving the 911-phone call, and a goal statement tied to risks and outcome expectations. The deployment measure should have a second measurement statement to define multiple-unit response coverage for serious emergencies. Making these deployment goal changes will meet the best practice recommendations of the Center for Public Safety Excellence (formerly the Commission on Fire Accreditation International).

-
- Finding #2:** The age of the City’s housing stock and the increasing numbers of younger and older populations means that there is a greater chance of more serious fires where rescues will be necessary, and if so, the current quantity of in-city firefighter staffing will be quickly overwhelmed with too many critical tasks to accomplish.
- Finding #3:** Given the travel distance difficulties in the northeast area of National City, coverage by a first-due unit within the desirable time of 4 minutes travel and 7 minutes from the time of 911 call is problematic. While a San Diego unit can make the 4-minute drive time, it is not always available, and due to multiple dispatch centers, it cannot make all of the needed National City areas within 7 minutes of the 911 call being processed.
- Finding #4:** If an additional fire company location could be funded, effective first-due unit coverage can be obtained from three (3) fire station sites, at 4 minutes travel time. This means that National City would add a 3rd fire station in the hard-to-serve northeast area.
- Finding #5:** Due to mutual aid, the multiple-unit first alarm coverage is good throughout National City at 8 minutes travel. However, this also depends on successful, timely, mutual aid.
- Finding #6:** With a City fire/EMS incident first-due unit performance of 07:00 minutes/seconds at 84.3 percent, as the mapping analysis predicted, the City does not have enough primary neighborhood fire stations in the City to deliver suburban response times to all areas. This is also seen in the first alarm response time measures.
- Finding #7:** The City has dispatch times close to meeting national best practices and these efforts need to continue. The City’s overall turnout time measure is about 45 seconds slower than it could be.
- Finding #8:** The simultaneous emergency call for service rate of 18 percent for two incidents at once, while not a large problem, is a problem for the eastern City area. Even with a second company (the ladder truck) in Station 34 downtown, Station 31 east of I-805 runs 18 percent of their total calls in Station 34’s area. When this occurs, the eastern City has to rely on a mutual aid company for a “3rd” simultaneous call for service and these companies are farther away in the eastern City than along the I-5 corridor.
- Finding #9:** The City’s geography is a little too large to provide suburban outcome first alarm response time coverage from only two stations.
- Finding #10:** The City benefits from the closest unit “automatic aid” regional dispatch and response system. While this system cannot replace existing City stations or units, the City should continue to participate in this valuable support system for simultaneous calls for service and multiple-unit serious emergencies.

Observation: *Generally, population, not buildings, drives fire department calls for service. Additional people have accidents, medical problems, auto accidents, and cause fires. Over recent years, National City Fire has seen a call for service rate of 81 incidents per 1,000 population. The current City population is approximately 61,000 residents and the current General Plan year 2020 population forecast is for a population of approximately 76,000. At the current rate of 81 calls per 1,000 residents, in the year 2020 the annual incident count would be approximately 6,200, an increase of 25 percent over the current count of 4,928 calls per year. While this appears to be a large increase, it occurs slowly at a rate of about 2 percent per year, which gives the City time to assess its fire planning policies and, if desired, add a 3rd fire station and 4th crew per day as revenue allows.*

Recommendation #1: The City should adopt revised performance measures to direct fire station location planning and to monitor the operation of the Department. The measures should take into account a realistic company turnout time of 2 minutes and be designed to deliver outcomes that will save patients medically salvageable upon arrival; and to keep small, but serious fires from becoming greater alarm fires. Citygate recommends these measures be:

- 1.1 Distribution of Fire Stations: To treat medical patients and control small fires, the first-due unit should arrive within 7 minutes, 90 percent of the time from the receipt of the 911 call. This equates to 1 minute dispatch time, 2 minutes company turnout time and 4 minutes drive time spacing for single stations.
- 1.2 Multiple-Unit Effective Response Force for Serious Emergencies: To confine fires near the room of origin, to stop wildland fires to under 3 acres when noticed promptly and to treat up to 5 medical patients at once, a multiple-unit response of at least 14 personnel should arrive within 11 minutes from the time of 911 call receipt, 90 percent of the time. This equates to 1 minute dispatch time, 2 minutes company turnout time and 8 minutes drive time spacing for multiple units.

Recommendation #2: As fiscal resources allow, the most beneficial next improvement in fire services the City could make would be to add a fire station in the northeast City area equipped with one fire engine and a 3-person crew.

This capital improvement project can be phased over several fiscal years, from final location to land acquisition, design, bidding, and finally construction as the economy allows.

Recommendation #3: As fiscal resources allow, a follow-on step to adding the 3rd fire station would be to increase the daily staffing by one firefighter on the downtown engine at Station 34. The east side stations due to lower call for service volumes could stay long term at three personnel per day staffing.

FIRE & EMS SERVICES ANALYSIS REPORT

National City, California

Final Report-August 2022



CPSM[®]

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Exclusive Provider of Public Safety Technical Services for
International City/County Management Association

THE ASSOCIATION & THE COMPANY

The International City/County Management Association is a 103-year old, nonprofit professional association of local government administrators and managers, with approximately 13,000 members located in 32 countries.

Since its inception in 1914, ICMA has been dedicated to assisting local governments and their managers in providing services to its citizens in an efficient and effective manner. ICMA advances the knowledge of local government best practices with its website (www.icma.org), publications, research, professional development, and membership. The ICMA Center for Public Safety Management (ICMA/CPSM) was launched by ICMA to provide support to local governments in the areas of police, fire, and emergency medical services.

ICMA also represents local governments at the federal level and has been involved in numerous projects with the Department of Justice and the Department of Homeland Security.

In 2014, as part of a restructuring at ICMA, the Center for Public Safety Management (CPSM) was spun out as a separate company. It is now the exclusive provider of public safety technical assistance for ICMA. CPSM provides training and research for the Association's members and represents ICMA in its dealings with the federal government and other public safety professional associations such as CALEA, PERF, IACP, IFCA, IPMA-HR, DOJ, BJA, COPS, NFPA, and others.

The Center for Public Safety Management, LLC, maintains the same team of individuals performing the same level of service as when it was a component of ICMA. CPSM's local government technical assistance experience includes workload and deployment analysis using our unique methodology and subject matter experts to examine department organizational structure and culture, identify workload and staffing needs, and align department operations with industry best practices. We have conducted 341 such studies in 42 states and provinces and 246 communities ranging in population from 8,000 (Boone, Iowa) to 800,000 (Indianapolis, Ind.).

Thomas Wieczorek is the Director of the Center for Public Safety Management. Leonard Matarese serves as the Director of Research & Program Development. Dr. Dov Chelst is the Director of Quantitative Analysis.

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FIGURE 8-14: Average Transport Calls by Hour and Year..... 181

SECTION 1. EXECUTIVE SUMMARY

The Center for Public Safety Management LLC (CPSM) was contracted by the City of National City, CA to complete an analysis of the city's Fire Department, EMS ground transport service, and fire dispatch services.

The National City Fire Department (NCFD) is responsible for providing services from two primary divisions that include Operations (fire suppression, first response emergency medical services, emergency management, training and education, EMS oversight and logistics, fleet and facility oversight, emergency communications liaison, and technical rescue), and Community Risk Reduction (fire code enforcement, fire investigation, weed abatement, new business license inspections, public education to the extent possible, and juvenile fire setter intervention). The NCFD carries out these and other logistical and administrative functions through the Fire Chief's office and operational fire suppression officers and staff.

The service demands on the department from the community are numerous and include EMS first response; fire suppression; wild land-urban interface; technical rescue; hazardous materials; and transportation emergencies to include extensive rail and vehicle traffic, a mass transit system utilizing bus and light rail transportation, the Port of San Diego property to include marine vessels, buildings, and occupancies located within the city's municipal boundaries; and other non-emergency responses typical of urban fire departments. A significant component of this report is the completion of an All-Hazard Risk Assessment of the Community. The All-Hazard Risk Assessment of the Community contemplates many factors that cause, create, facilitate, extend, and enhance risk in and to a community. The risk assessment includes Port property and proposed new industrial businesses/processes that are contemplating build-out in National City.

The response time and staffing components discussion of this report are designed to examine the current level of service provided by the NCFD compared to national best practices. As well, these components of the report provide incident data and relevant information that can be utilized for future planning and self-review of service levels for continued improvement designed to meet community expectations and mitigate emergencies effectively and efficiently. Included also is an analysis of fire and EMS responses the NCFD provides through a regional automatic aid agreement to Paradise Hills, an area of San Diego City contiguous to National City.

Other significant components of this report are an analysis of the current deployment of resources and the performance of these resources in terms of response times and the three NCFD fire stations; current staffing levels and patterns; department resiliency (ability to handle more than one incident at a time); critical tasking elements for specific incident responses and assembling an effective response force; the private EMS ground transport system with an analysis that depicts the start-up and annualized cost of a city EMS service; and an analysis to include start-up and annualized costs of a city fire dispatch section in the National City Police 911 Center. CPSM analyzed these items and provides recommendations where applicable to improve service delivery and for future planning purposes.

A comprehensive risk assessment and review of deployable assets are critical aspects of a fire department's operation. First, these reviews will assist the NCFD in quantifying the risks that it faces. Second, the NCFD will be better equipped to determine if its current response resources are sufficiently staffed, equipped, trained, and positioned. The factors that drive the service needs are examined and then link directly to discussions regarding the assembling of an effective response force; these factors also must be considered when contemplating the response capabilities needed to adequately address the existing and future risks, and which

encompass the component of critical tasking. CPSM does recommend additional staffing on both Engines 31 and 34 over a five-year period. This recommendation is based on current and projected building, transportation, and other risks inherent to the city, and as comprehensively discussed herein.

This report also contains a series of observations and planning objectives and recommendations provided by CPSM which are intended to help the NCFD deliver services more efficiently and effectively. This includes succession planning for near-term retirements, administrative capacity needed to manage day-to-day programs and processes such as workforce training and education, EMS (the greatest response workload of the department), and fleet and facilities (the infrastructure backbone of the department), and as well additional capacity in the Fire Marshal's Office, based on current and projected fire code inspection workload.

Recommendations and considerations for continuous improvement of services are presented here. CPSM recognizes there may be recommendations and considerations offered that first must be budgeted and/or bargained, or for which processes must be developed prior to implementation.

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RECOMMENDATIONS

Department Structure

1. CPSM recommends the NCFD work with the city's Human Resources Department and develop and implement a succession planning process that identifies and develops future organizational leadership and includes key components that focuses on the retention of current talent. Included in this planning should be consideration for a 40-hour Deputy Fire Chief position that will work with the Fire Chief managing the day-to-day activities and programs of the department. This position would be the likely successor to the Fire Chief on his retirement and would ensure succession of current department direction. This position can be implemented and filled through promotion (retention opportunity), which will create a vacancy to be filled at the lesser expensive Firefighter level. (See pp. 5-8.)
2. CPSM also recommends the city consider adding an administrative Battalion Chief position to assist with the day-to-day management of the department and to assume key program assignments currently assigned to shift Battalion Chiefs such as training, EMS, fleet and facilities, and health and safety. This position can be implemented through promotion (retention opportunity), which will create a vacancy to be filled at the lesser expensive Firefighter level. (See pp. 5-8.)

Estimated cost alternatives to support these recommendations are: Deputy Chief position internal promotion, \$108,000 (salary and benefits for one firefighter/EMT and \$20,000 for promotions for Engineer, Captain, and Battalion Chief); Battalion Chief position through internal promotion, \$103,000 (salary and benefits for one firefighter/EMT and \$15,000 for promotions of Engineer and Captain).

Fleet and Facilities

3. CPSM recommends the NCFD, due to the current and expected future workload on apparatus, follow to the extent possible the current apparatus in-service and replacement schedule. (See pp. 11-16.)
4. CPSM further recommends the city continue with its planning to construct a permanent brick and mortar station in the northeast portion of the city utilizing national industry standards for fire facilities as outlined herein and designed to accommodate current and future response apparatus and personnel. (See pp. 11-16.)

ISO Rating

5. CPSM recommends the NCFD review and address, to the extent possible, deficiencies in the current ISO Public Protection Classification report (Fire Department Section) as outlined in this analysis. This includes, and given the identified building risks in the city, ensuring company personnel conduct (and document for future ISO reviews) some level of commercial, industrial, institutional, and other similar type buildings (all buildings except one- to four-family dwellings) familiarization and pre-plan information gathering; work with Sweetwater Authority to ensure the fire hydrants are inspected and flow-tested on a more regular basis; address Community Risk Reduction staffing and make adjustments to staffing to ensure current (and future) inspectable properties (2,700 total current) are receiving annualized (where required) inspections, and those not requiring annualized inspections receive timely inspections in accordance with applicable laws and standards, and as established by the Fire Marshal. Addressing the Community Risk Reduction deficiency will require additional staffing, to the extent possible with available funding, which has an estimated cost of \$87,500 to \$117,000 per Community Risk Reduction inspector, dependent on placement in the pay range. (See pp. 39-41.)

Risk Assessment / Resiliency

6. CPSM recommends the NCFD continue with the Squad program as designed, due to the efficiencies and effectiveness this unit has produced for the city. CPSM further recommends the NCFD monitor dual responses (Squad/Engine) and make necessary adjustments to maintain a 10-percent ratio. (See pp. 47-50.)

NCFD Staffing Model

7. CPSM recommends the NCFD, to the extent possible and if practical depending on available automatic and mutual aid resources, work with regional Fire Chiefs to increase response resources to commercial, apartment, and high-rise fire responses that align more closely with the NFPA 1710 standard. (See pp. 63-69.)
8. CPSM further recommends due to the following factors: demand for service on the NCFD; population density that includes substantial current and projected vertical density structures, many involving assisted and/or senior living; building and other risks identified in this report such as the San Diego Port property; industrial and commercial properties that include heavy rail and tractor-trailer transportation; proposed industrial and commercial properties; the resiliency issues the department faces due to demand for service; and to increase NCFD resources regarding assembling an Effective Response Force, that the city develop a one- to three-year funding plan to increase staffing on Engine 31 to four per shift (three total personnel with estimated costs of \$263,000) as this is a single station response unit in a high-demand fire management zone, and in the subsequent three- to five-year period develop a funding plan to increase staffing on Engine 34 to four per shift (three total personnel with estimated costs of \$263,000 to \$300,000, depending on implementation year). (See pp. 63-69.)

Ambulance Service

9. The current method of ambulance service provision of using an outside contractor should be retained, and the NCFD should not assume responsibility for providing ambulance services to the city. (See pp. 83-91.)
10. The city should negotiate with AMR for significant contracting updates or consider undergoing an RFP process to seek enhanced service delivery models, either from the current, or prospective ambulance service providers. (See pp. 83-91.)

Mobile Integrated Healthcare

11. NCFD should engage in discussions with local and regional stakeholders to determine the potential benefits and impact of initiating a Mobile Integrated Healthcare / Community Paramedicine program. (See p. 91.)

Fire Emergency Communications

12. Based on the initial start-up and annualized costs CPSM estimates Fire Dispatch in-house totals, and that the annualized costs almost double the current San Diego Metro Fire Dispatch costs, CPSM strongly recommends National City continue with the current agreement with San Diego City for fire dispatch services. CPSM does recommend, however, that National City work with San Diego City to reduce the current fire dispatch agreement costs to offset the costs the NCFD incurs as the de facto fire department for Paradise Hills, which was demonstrated in the analysis. (See pp. 92-93.)

SECTION 2. AGENCY REVIEW AND CHARACTERISTICS

DEPARTMENT OVERVIEW AND ORGANIZATIONAL STRUCTURE

The National City Fire Department (NCFD) is responsible for providing emergency services from two primary divisions that include Operations (primarily fire suppression, first response emergency medical services) and Community Risk Reduction (fire code enforcement, fire prevention and plans review, new business license inspection program, weed abatement). Other programs administered through these primary divisions include the City's emergency management function, a department health and safety program, professional development programs, community education to include juvenile fire setter intervention program and CPR classes, hazardous materials and technical rescue response, and Community Emergency Response Team or CERT program. **These represent best practices/best program practices for fire service agencies.**

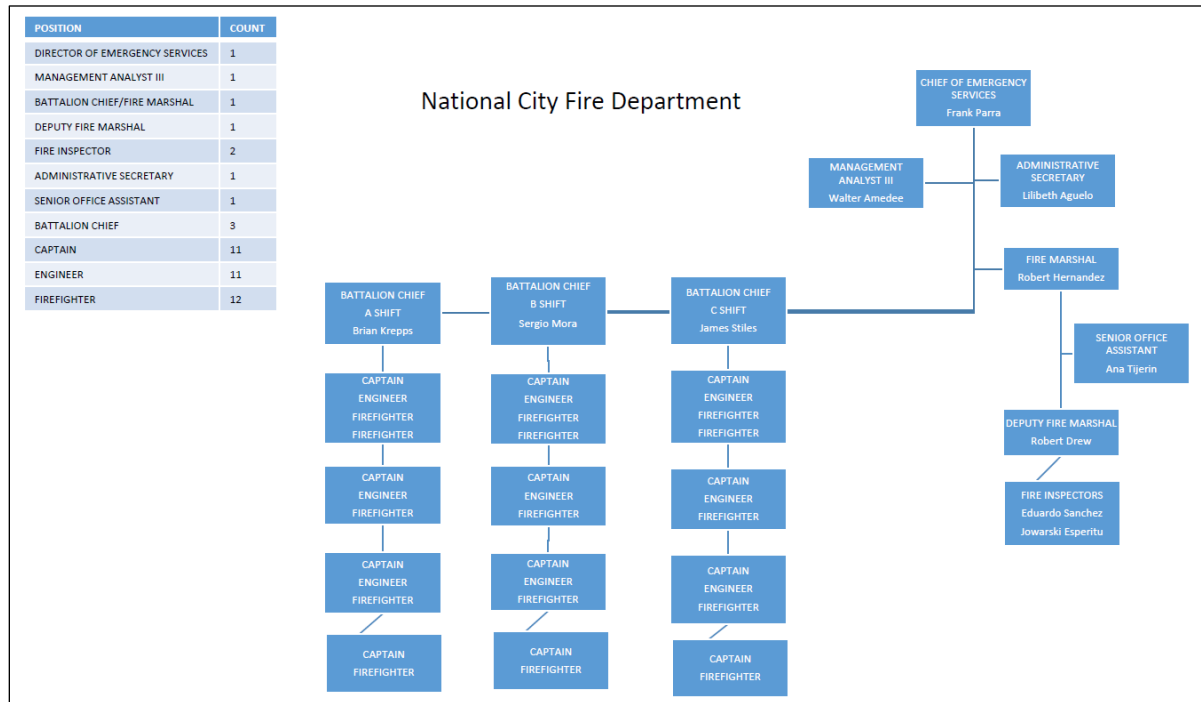
The NCFD is led by a Chief of Emergency Services/Fire Chief. This position (department head level) serves as a member of the City Manager's cabinet. The organizational structure includes senior and middle manager level positions (Fire Marshal, Deputy Fire Marshal, Battalion Chiefs), first-line supervisors (Captain level), engineers (apparatus driver-operator), firefighters, and civilian support staff. The largest contingent of personnel in the organization are company-level officers, engineers, and firefighters.

Field operations provide services from three operational shifts and work a 24-hour schedule. The operational shift schedule consists of a 24-hour shift every other day for 7 total days (4 x 24-hour shifts, with a day off in between each), followed by 4 days off and then 6 days in the next cycle. This schedule ensures compliance with 29 U.S.C 207(k) wherein firefighters working in excess of 53-hours/week must be compensated for the three additional hours worked each week or scheduled off. **This is a national best practice.**

Emergency Medical Services (EMS) ground transportation is provided in National City by a single private ambulance service, American Medical Response (AMR). The NCFD responds to EMS incidents as a first responder agency. NCFD engine, ladder, and squad companies have appropriately trained staff (including Paramedic level) on duty on each apparatus to render pre-transport emergency care to those requiring that care.

The following figure illustrates the NCFD's chart of the organization.

FIGURE 2-1: NCFD Organizational Chart



Note: On July 25, 2022, Fire Chief Parra became the Interim Assistant City Manager. BC Sergio Mora became the Interim Fire Chief. These assignments are for the near term (three-month period) but could be longer.

In addition to normal work assignments—and due to the limited capacity of NCFD administrative positions—operational shift Battalion Chiefs perform and oversee many ancillary duties and programs necessary to maintain administrative and operational systems and components of the organization. These are illustrated in the next three figures.

FIGURE 2-2: Operations Ancillary Duties, Battalion Chief Mora

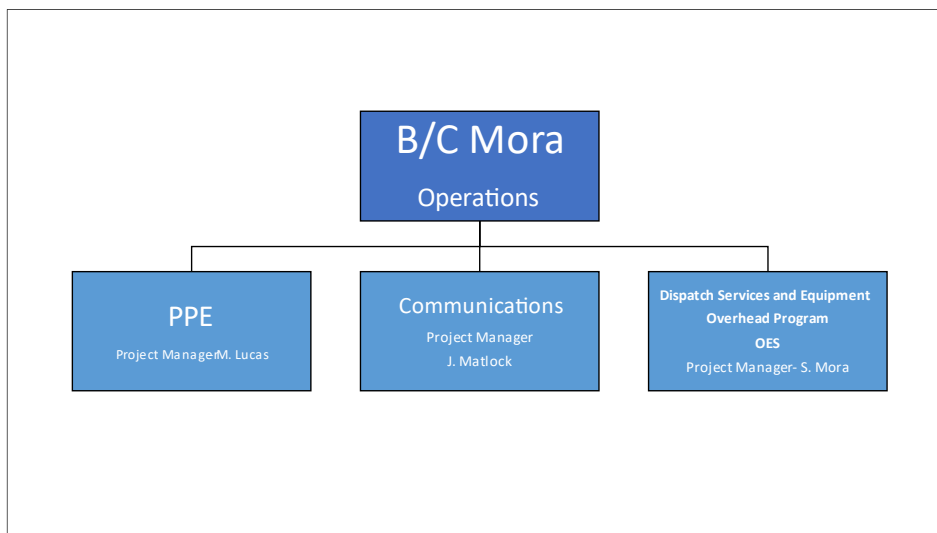


FIGURE 2-3: Training/EMS Ancillary Duties, Battalion Chief Stiles

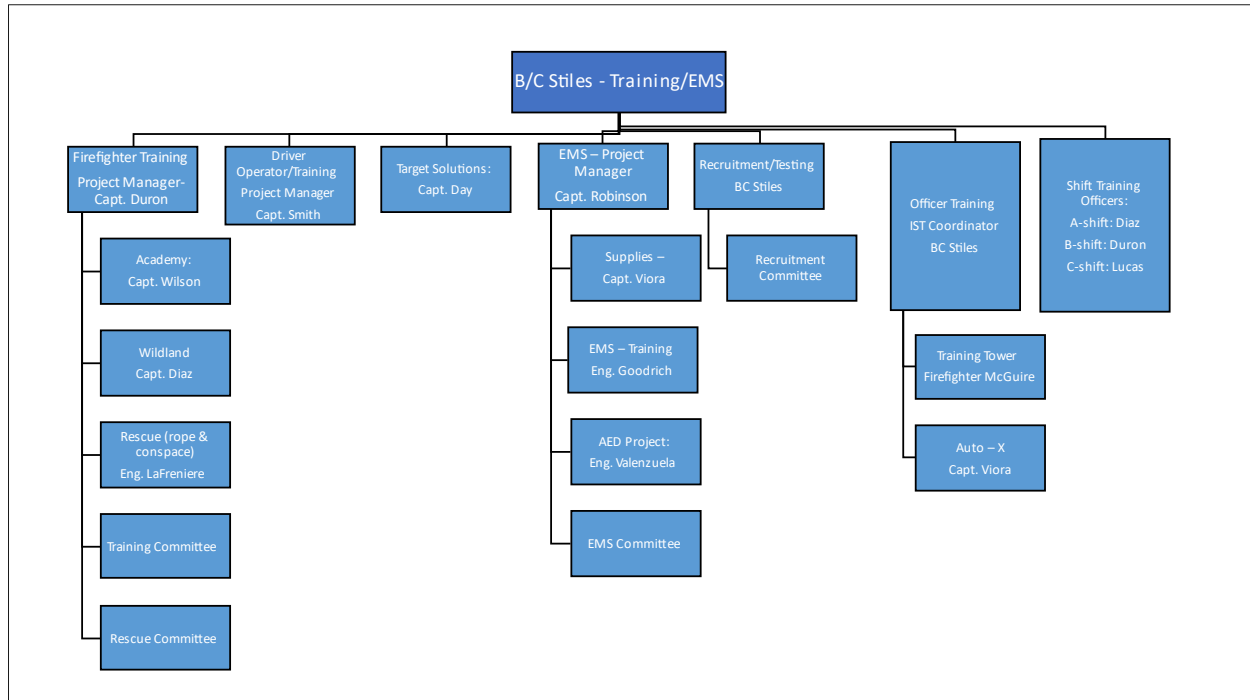
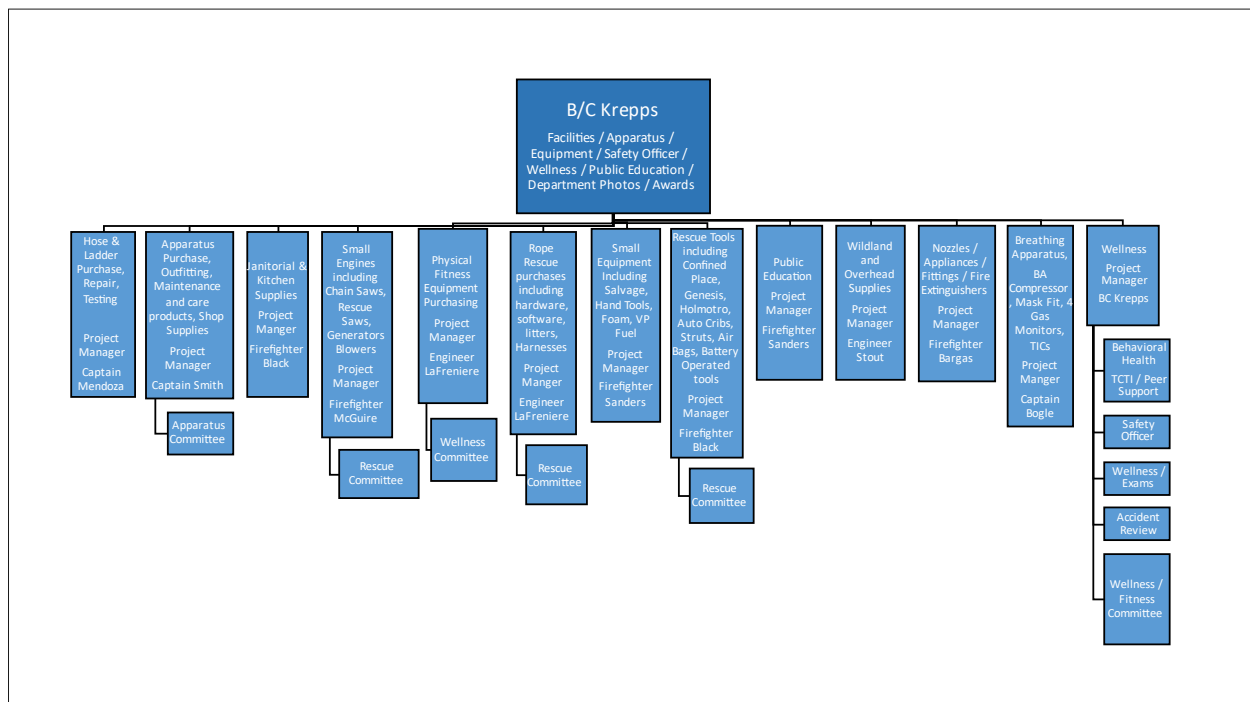


FIGURE 2-4: Support Programs Ancillary Duties, Battalion Chief Krepps



The programs, processes, and inter-workings of a fire department are many as can be seen in the above three figures. A drawback to assigning almost all of these components to shift personnel is that during their absence (either off-duty on shift rotation or out on leave) is the potential something is not getting done or will be missed. This is a real occurrence in any fire

department. Traditional administrative support positions in a fire department include those assigned the training, EMS and logistics (radio and comms, supply chain management, fleet, and facility) functions. Most smaller fire departments combine one or more of these main functions together and also include the health and safety oversight function as well.

CPSM learned while on-site in March 2022, that the Fire Chief may retire in 24 to 30 months, and one Battalion Chief and the Fire Marshal (Battalion Chief Position) are also approaching retirement in the near term (18 to 36 months). This will create a gap at the senior management level as 60 percent of the top leadership may depart over a three-year period. While there likely is an informal succession plan in the department, a more formal plan should be developed to address these and other near-term retirements. Our analysis of the NCFD did not identify a clear organizational succession plan.

Succession planning in the NCFD should include a systematic approach to developing potential successors to ensure organizational leadership stability is maintained. A plan should be in place to identify, develop, and nurture potential future leaders. CPSM sees this as critical for the long-term success of the NCFD. This plan should also include a focus on current talent and the retention of this valuable staff. CPSM was told by senior management that other area fire departments pursue the hiring of NCFD staff because of the urban response and firefighting capabilities in which staff is trained in National City. This raiding of seasoned staff creates knowledge and experience gaps in an already small agency and leads to continual hiring and onboarding expenses. Together (succession planning and retention of talent) is a systems approach that should not be overlooked.

Recommendations:

- CPSM recommends the NCFD work with the city's Human Resources Department and develop and implement a succession planning process that identifies and develops future organizational leadership and includes key components that focuses on the retention of current talent. Included in this planning should be consideration for a 40-hour Deputy Fire Chief position that will work with the Fire Chief managing the day-to-day activities and programs of the department. This position would be the likely successor to the Fire Chief on his retirement and would ensure succession of current department direction. This position can be implemented and filled through promotion (retention opportunity), which will create a vacancy to be filled at the lesser expensive Firefighter level. (Recommendation No. 1.)
- CPSM also recommends the city consider adding an administrative Battalion Chief position to assist with the day-to-day management of the department and to assume key program assignments currently assigned to shift Battalion Chiefs such as training, EMS, fleet and facilities, and health and safety. This position can be implemented through promotion (retention opportunity), which will create a vacancy to be filled at the lesser expensive Firefighter level. (Recommendation No. 2.)

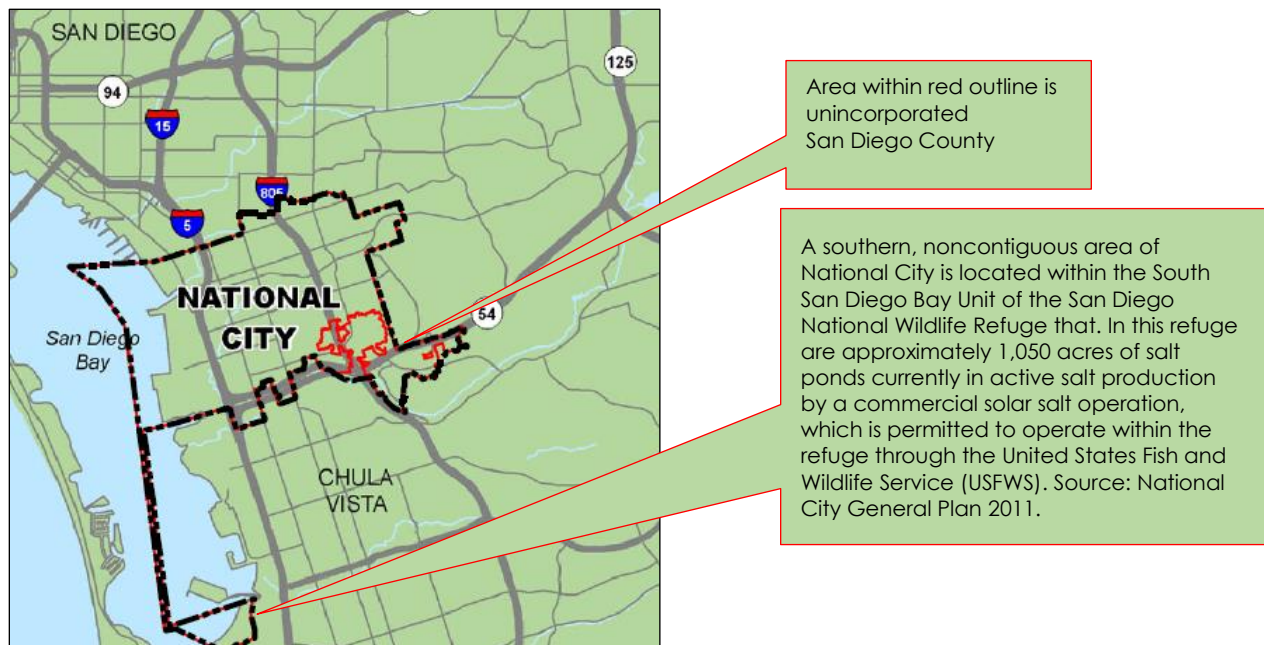
Estimated cost alternatives to support these recommendations are: Deputy Chief position internal promotion, \$108,000 (salary and benefits for one firefighter/EMT and \$20,000 for promotions for Engineer, Captain, and Battalion Chief); Battalion Chief position through internal promotion, \$103,000 (salary and benefits for one firefighter/EMT and \$15,000 for promotions of Engineer and Captain).

SERVICE AREA

National City is in the south bay area of San Diego County. The city boundaries encompass 9.1 total square miles of which 7.8 square miles are land area and the remainder water area. Contiguous jurisdictions include the City of San Diego city to the north and northeast, Bonita to the southeast (unincorporated San Diego County), and Chula Vista to the south (National City and Chula Vista are separated by the Sweetwater River).

The next figure illustrates the municipal boundaries of the city in which the NCFD responds. The NCFD also provides automatic/mutual aid to San Diego city and county, Bonita, and Chula Vista.

FIGURE 2-5: National City Jurisdictional Boundaries



The NCFD provides emergency services from three stations located in the city. Response is primarily made through two engine companies, one ladder/truck company, one quick response squad unit, one shift command vehicle, and various other operational support vehicles to include a state Office of Emergency Services Type 1 engine apparatus for wildland firefighting and deployment. In addition to in-city mitigation of fire and emergency service incidents, the NCFD provides and receives mutual/automatic aid from neighboring/contiguous jurisdictions (**a national best practice**).

Engine and ladder company response is provided through traditional fire apparatus. The squad apparatus is a Type 6 engine (heavy-duty pick-up truck chassis with equipment body) unit that has a 120 gpm pump and 250-gallon water tank and carries a crew of two (Captain and FF). This unit also has hose for initial attack on small outside fires, fire-related hand tools, self-contained breathing apparatus for the two-person crew, and basic and advanced medical equipment for first response EMS calls for service. This unit also carries crew member structural and wildland firefighting protective clothing and other crew-related equipment.

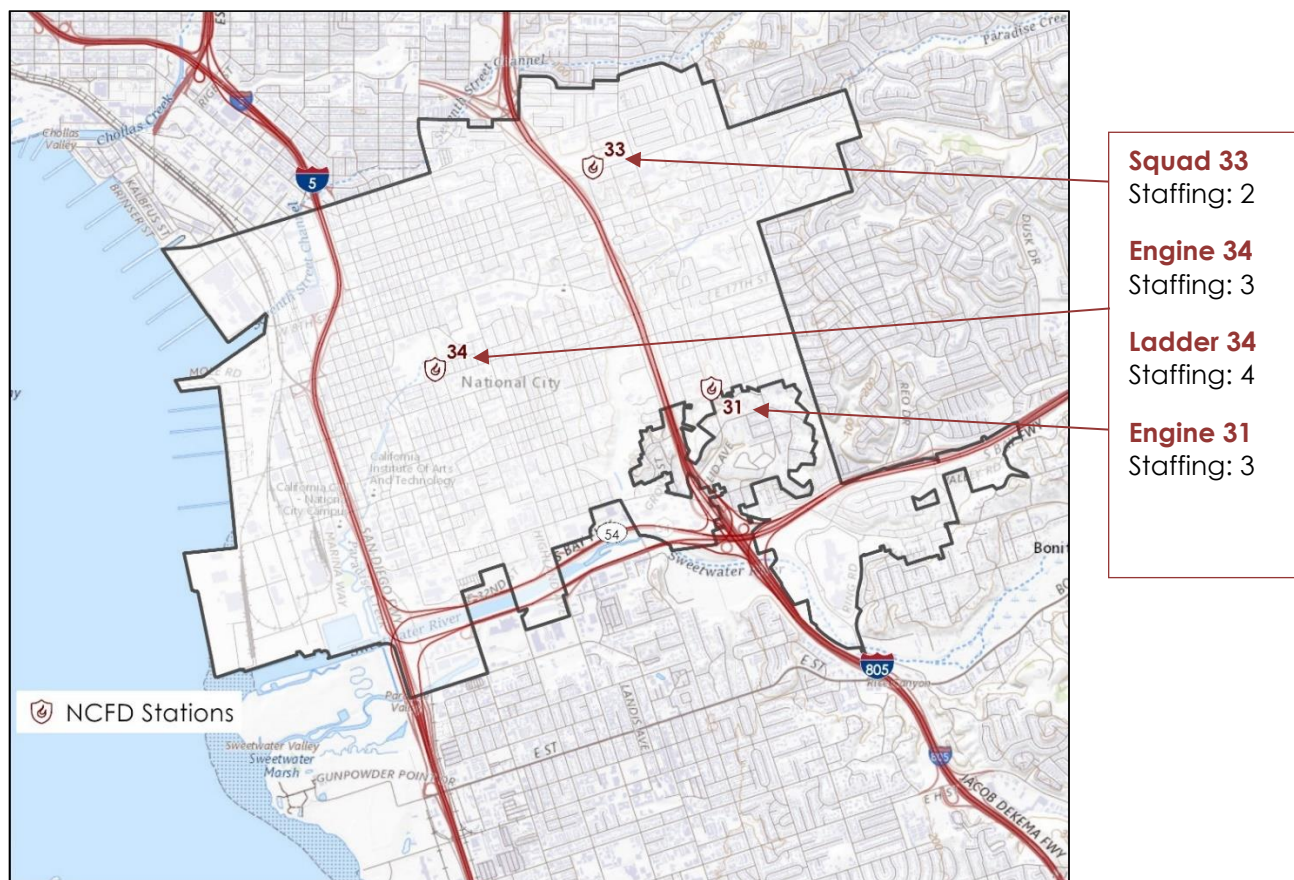
The squad unit was placed in service as the result of a 2009 fire service consultant report that identified gaps in response service in the northeast area of the city. This busy area of the city was

receiving emergency response from NCFD stations 31 and 34, as well as from mutual aid partner the City of San Diego. Several benefits have been realized by placing this unit in service:

- Quicker first due response to fire and EMS calls in the busy northeast portion of the city.
- Since this unit is not a resource type that is included in the mutual/auto aid agreements in the region, it does not leave the city, increasing its readiness to respond at all times.
- This unit provides an additional two firefighters (Captain, Firefighter) to respond to multi-unit responses such as structure fires in the city, increasing the ability for the NCFD to quickly assemble an Effective Response Force.

The following figure shows the municipal boundaries with NCFD fire station locations.

FIGURE 2-6: NCFD Fire Station Locations



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NCFD BUDGET AND CAPITAL ASSETS

An overview of the annual NCFD appropriations from the general fund is provided in the following table; it includes the general fund budget allocations for fiscal years 2020, 2021, and 2022.

TABLE 2-1: NCFD General Fund Appropriations, Fiscal Years 2020–2022

FY 2020 Adopted (General Fund)	FY 2021 Adjusted Appropriations (General Fund)	FY 2022 Adjusted Appropriations (General Fund)
\$11,424,457	\$11,369,542	\$11,106,737

Traditionally, and like every other career fire department in the nation, the NCFD's budget is primarily consumed by personnel costs. This includes salary, benefit and retirement costs, overtime, and worker's compensation, which are the larger line items in this budget area. The NCFD personnel services budget area consistently represents approximately 80 percent of the total budget. The next largest budget area is internal service charges (12 percent in FY 2022), which are for the operation and repair of facilities and equipment, automotive operational/repair costs and replacement, and maintenance and operations of equipment.

The NCFD does have certain revenues line items in the budget to offset overall expenditures. These include (FY 2022 proposed budget):

- Charges for community risk reduction services (plans review, fire permit fees, license and permit fees, weed abatement): \$71,879.
- False alarm fines: \$55,000.
- AMR (EMS ground transport provider) station rental fees: \$94,200
- Charges for fire services (misc. fire services, fire protection services for certain unincorporated San Diego County areas, fire services for the Port of San Diego, fire/life safety annual fire inspection fees): \$1,317,620.
- AMR Franchise Fee (EMT-D Revolving Fund): \$334,124 (used for certain personnel services costs in fire operations).
- Development impact fees: \$10,000.

The NCFD received a grant from the Staffing for Adequate Fire and Emergency Response (SAFER) program and has a FY 2022 expenditure of \$590,185 from this grant. Lastly, the city and department are utilizing Community Development Block Grant (CDBG) funds for bond principal and interest redemption in fire operations.

Capital Assets

Facilities

Fire facilities must be designed and constructed to accommodate both current and forecast trends in fire service vehicle type and manufactured dimensions. A facility must have sufficiently-sized bay doors, circulation space between garaged vehicles, departure and return aprons of adequate length and turn geometry to ensure safe response, and floor drains and oil separators to satisfy environmental concerns. Station vehicle bay areas should also consider future tactical vehicles that may need to be added to the fleet to address forecast response challenges, even

if this consideration merely incorporates civil design that ensures adequate parcel space for additional bays to be constructed in the future.

Personnel-oriented needs in fire facilities must enable performance of daily duties in support of response operations. For personnel, fire facilities must have provisions for vehicle maintenance and repair; storage areas for essential equipment and supplies; space and amenities for administrative work, training, physical fitness, laundering, meal preparation, and personal hygiene/comfort; and—where a fire department is committed to minimize “turnout time”—bunking facilities.

A fire department facility may serve as a de facto “safe haven” during local community emergencies and also serve as likely command center for large-scale, protracted, campaign emergency incidents. Therefore, design details and construction materials and methods should embrace a goal of having a facility that can perform in an uninterrupted manner despite prevailing climatic conditions and/or disruption of utilities. Programmatic details, such as the provision of an emergency generator connected to automatic transfer switching—even going as far as to provide tertiary redundancy of power supply via a “piggyback” roll-up generator with manual transfer (should the primary generator fail)—provide effective safeguards that permit the fire department to function fully during local emergencies when response activity predictably peaks.

Personnel/occupant safety is a key element of effective station design. This begins with small details such as the quality of finish on bay floors and nonslip treads on stairwell steps to decrease tripping/fall hazards, or use of hands-free plumbing fixtures and easily disinfected surfaces/countertops to promote infection control. It continues with installation of specialized equipment such as an exhaust recovery system to capture and remove cancer-causing by-products of diesel fuel exhaust emissions. A design should thoughtfully incorporate best practices for achieving a safe and hygienic work environment.

An ergonomic layout and corresponding space adjacencies in a fire station should seek to limit the travel distances between occupied crew areas to the apparatus bays. Likewise, facility design should carefully consider complementary adjacencies, such as lavatories/showers in proximity of bunk rooms, desired segregations, and break rooms or fitness areas that are remote from sleeping quarters. Furnishings, fixtures, and equipment selections should provide thoughtful consideration of the around-the-clock occupancy inherent to fire facilities. Durability is essential, given the accelerated wear and life cycle of systems and goods in facilities that are constantly occupied and operational.

Sound community fire-rescue protection requires the strategic distribution of fire station facilities to ensure that effective service area coverage is achieved, that predicted response travel times satisfy prevailing community goals and national best practices, and that the facilities are capable of supporting mission-critical personnel and vehicle-oriented requirements and needs. Additionally, depending on a fire-rescue department’s scope of services, size, and complexity, other facilities may be necessary to support emergency communications, personnel training, fleet and essential equipment maintenance and repair, and supply storage and distribution.

National standards such as NFPA 1500, *Standard on Fire Department Occupational Safety, Health, and Wellness Program*, outlines standards that transfer to facilities such as infection control, personnel and equipment decontamination, cancer prevention, storage of protective clothing, and employee fitness. NFPA 1851, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Firefighting and Proximity Fire Fighting*, further delineates laundering standards for protective clothing and station wear. Laundry areas in fire facilities

continue to evolve and are being separated from living areas to reduce contamination. Factors such as wastewater removal and air flow need to be considered in a facility design.

The NCFD operates out of three operational facilities strategically located throughout the city. Each station houses around-the-clock crews, 365 days a year. Two stations house one crew and one piece of first response apparatus (an engine at Station 31 and a squad at Station 33), while one station houses more than one crew and two primary first response apparatus (engine and truck companies-Station 34).

Apparatus and staffing assignments are outlined in the following table.

TABLE 2-2: NCFD Facilities, with Apparatus and Staffing

Station Number	Resource Assignment	Year Constructed	# Apparatus Bays
31	Engine: 3 staff 24/7/365	1984	2
33	Squad: 2 staff 24/7/365	2019	2
34	Engine: 3 staff Truck: 4 staff Battalion Chief: 1 staff 24/7/365	2004	4

Station 33 is not a permanent brick and mortar facility. The implementation of the Squad Company, as discussed above, originated from a previous consulting study the city commissioned for the specific purpose of examining ways to service the increased demand (particularly regularly dispatched EMS and lower acuity fire responses) in the northeast area of the city and NCFD response area. Station 33 is a modular type building with an open awning that provides cover to response apparatus. The awning and building are not connected.

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FIGURE 2-7: NCFD Station 33



Fleet

The provision of an operationally ready and strategically located fleet of mission-essential fire-rescue vehicles is fundamental to the ability of a fire-rescue department to deliver reliable and efficient public safety within a community.

The NCFD currently operates a fleet of front-line fire apparatus as outlined in the following table.

TABLE 2-3: NCFD Fleet

Apparatus Type	Year In Service	Operational Assignment / Station Assigned
Type 1 Engine	2011	Front Line / 34
Type 1 Engine	2019	Front Line / 31
Type 1 Engine	2006	Reserve
Ladder-105' Quint	2015	Front Line / 34
Ladder-105' Quint	2009	Reserve
Water Tender-2000 gallons		Front Line / 34
Type 6 Squad	2017	Front Line / 33

The procurement, maintenance, and eventual replacement of response vehicles is one of the largest expenses incurred in sustaining a community's fire-rescue department. While it is the personnel of the NCFD who provide emergency services within the community, the department's fleet of response vehicles is essential to operational success. Reliable vehicles are

needed to deliver responders and the equipment/materials they employ to the scene of dispatched emergencies within the city. Regular maintenance is performed by city fleet mechanics; specialized maintenance and repair of pump, aerial, and other fire apparatus are performed by a third-party fire apparatus maintenance vendor.

Replacement of fire-rescue response vehicles is a necessary, albeit expensive, element of fire department budgeting that should reflect careful planning. A well-planned and documented emergency vehicle replacement plan ensures ongoing preservation of a safe, dependable, and operationally capable response fleet. A plan must also include a schedule for future capital outlay in a manner that is affordable to the community.

NFPA 1901, *Standard for Automotive Fire Apparatus*, serves as a guide to the manufacturers that build fire apparatus and the fire departments that purchase them. The document is updated every five years using input from the public/stakeholders through a formal review process. The committee membership is made up of representatives from the fire service, manufacturers, consultants, and special interest groups. The committee monitors various issues and problems that occur with fire apparatus and attempts to develop standards that address those issues. A primary interest of the committee over the past years has been improving firefighter safety and reducing fire apparatus crashes.

The Annex Material in NFPA 1901 (2016) contains recommendations and work sheets to assist in decision-making in vehicle purchasing. With respect to recommended vehicle service life, the following excerpt is noteworthy:

"It is recommended that apparatus greater than 15 years old that have been properly maintained and that are still in serviceable condition be placed in reserve status and upgraded in accordance with NFPA 1912, Standard for Fire Apparatus Refurbishing (2016), to incorporate as many features as possible of the current fire apparatus standard. This will ensure that, while the apparatus might not totally comply with the current edition of the automotive fire apparatus standards, many improvements and upgrades required by the recent versions of the standards are available to the firefighters who use the apparatus."

The impetus for these recommended service life thresholds is continual advances in occupant safety. Despite good stewardship and maintenance of emergency vehicles in sound operating condition, there are many advances in occupant safety, such as fully enclosed cabs, enhanced rollover protection and air bags, three-point restraints, antilock brakes, higher visibility, cab noise abatement/hearing protection, and a host of other improvements as reflected in each revision of NFPA 1901. These improvements provide safer response vehicles for those providing emergency services within the community, as well those "sharing the road" with these responders.

The NCFD follows the NFPA recommendations for apparatus replacement as such: 10-years front line, 5-years reserve. At the 15-year mark, the NCFD budgets in the Capital Improvement Plan (CIP) to replace the apparatus so as not to extend the service life much beyond 15 years. The 2006 engine apparatus is due to be replaced in the FY 23 CIP budget. Staff vehicles are replaced based on age, mileage, and consideration of recurrent maintenance costs.

Recommendations:

- CPSM recommends the NCFD, due to the current and expected future workload on apparatus, follow to the extent possible the current apparatus in-service and replacement schedule. (Recommendation No. 3.)

- CPSM further recommends the city continue with its planning to construct a permanent brick and mortar station in the northeast portion of the city utilizing national industry standards for fire facilities as outlined herein and designed to accommodate current and future response apparatus and personnel. (Recommendation No. 4.)

TRAINING PROGRAMS

Training is, without question, one of the most essential functions that a fire department should be performing on a regular basis. One could even make a credible argument that training is, in some ways, as important as emergency responses because a department that is not well trained, prepared, and operationally ready will be unable to fulfill its emergency response obligations and mission. Education and training are vital at all levels of fire service operations to ensure that all necessary functions are completed correctly, safely, and effectively. A comprehensive, diverse, and ongoing training program is critical to the fire department's level of success.

An effective fire department training program must cover all the essential elements of that department's core missions and responsibilities. The level of training or education required given a set of tasks varies with the jobs to be performed. The program must include an appropriate combination of technical/classroom training, manipulative or hands-on/practical evolutions, and training assessment to gauge the effectiveness of these efforts. Much of the training, and particularly the practical, standardized, hands-on training evolutions should be developed based upon the department's own operating procedures and operations while remaining cognizant of widely accepted practices and standards that could be used as a benchmark to judge the department's operations for any number of reasons.

The NCFD has an extensive Fire Services Manual, which serves as the standard operating guidelines for the department. Chapter 600 of this manual is dedicated to training and education of the workforce and comprehensively outlines the training regimen of the department.

Chapter 600.1 outlines the purpose of training, which is:

It is the policy of this department to administer a training program that will provide for the professional growth and continued development of its members. By doing so, the Department will ensure its members possess the knowledge and skills necessary to provide a professional level of service that meets the needs of the community.

Chapter 600.2 states the policy of the department with regards to training, which is:

The Department seeks to provide ongoing training and encourages all members to participate in advanced training and formal education on a continual basis. Training is provided within the confines of funding, the requirements of a given assignment, staffing levels and legal mandates.

Whenever possible, the Department will use courses certified by the California Office of the State Fire Marshal (OSFM), the California Fire Service Training and Education System (CFSTES), the U.S. Department of Homeland Security or other accredited entities.

Chapter 623.1 further states the department's policy on individual responsibility as it links to training, and is:

The department shall provide a standardized Mandated Training Program to its members.

The department shall provide standardized training references and materials made available for the use of its members in conjunction with the Mandated Training Program.

All members shall participate in the Mandated Training Program relative to their position and classification within the department.

Certain Occupational Safety and Health Administration (OSHA) regulations dictate that minimum training must be completed on an annual basis, covering assorted topics that include:

- A review of the respiratory protection standard, self-contained breathing apparatus (SCBA) refresher and user competency training, SCBA fit testing (29 CFR 1910.134).
- Blood Borne Pathogens Training (29 CFR 1910.1030).
- Hazardous Materials Training (29 CFR 1910.120).
- Confined Space Training (29 CFR 1910.146).
- Structural Firefighting Training (29 CFR 1910.156).

Because so much depends upon the ability of the emergency responder to effectively deal with an emergency, education and training must have a prominent position within an emergency responder's schedule of activities when on duty. Education and training programs also help to create the character of a fire service organization. Agencies that place a real emphasis on their training tend to be more proficient in carrying out day-to-day duties. The prioritization of training also fosters an image of professionalism and instills pride in the organization. Overall, the NCFD has an excellent robust and comprehensive training program and there exists a dedicated effort focused on a wide array of training activities.

The NCFD does not have a stand-alone training unit. Incumbent training is developed and implemented by and through in-house instructors. Training and education opportunities are available through community college programs, other regional fire departments, and Vector Solutions, an on-line training platform.

The department hires only fire- and EMS-certified prospective employees. Minimum hiring requirements include (per NCFD Lateral FF job announcement):

- Possession of Calif. State Fire Marshal Firefighter I certification and one year of employment with a paid municipal fire department, California State fire department, or Federal fire department.
- High School Diploma or GED.
- Possession of a valid California Class C driver's license is required at the time of appointment.
- Possession of a valid EMT Level IA certification with the County of San Diego or the State Fire Marshal, or State of California Paramedic License, or National Registry Paramedic License.

Prospective employees are also noticed through the job announcement that the ability to obtain additional certificates as required to operate in an ever-changing fire service, Technical Rescue, Hazardous Material Awareness and Operations, etc., may be required during the term of employment.

Title 8 of the California Code of Regulations (CCR) also stipulates certain training classes that are grouped dependent on whether the staff member is initial and entry level staff; emergency response staff; firefighter level staff; and certain training dependent on response functions.

The NCFD has implemented a three-year training task book for new firefighters, **which is a national best practice**. This task book is assigned to the Captain level, where the accountability for completing the book rests. The task book is comprehensive, task oriented, and includes written, manipulative (hands-on), and presentation scoring at the end of years one and two. Training includes manipulative, didactic, computer-based, and self-study. The assigned Captain manages the employee's progress and is responsible for ensuring the employee is prepared to perform at the firefighter level. Shift Battalion Chiefs have oversight of the program as well.

The NCFD has also implemented a task book for engine company driver operations. This Task Book is designed to provide a training format and in-house certification of the minimum skill level needed to successfully operate engine (pumper) apparatus as the driver and pump operator. This task book is a model as well and is **a national best practice**. To achieve certification and subsequently be released to drive and operate the engine apparatus, the firefighter must successfully complete all task and job performance requirements outlined in the task book. Tasks include driving and safe driving checks; apparatus inspection and safety checks; understanding of manufacturers' recommendations; and pump operations.

The NCFD utilizes Vector Solutions as a didactic/virtual platform for department training. Vector Solutions has a robust course catalog system for fire and EMS training (among other disciplines in need of continuing education) that can be utilized to meet all federal, state, and local public safety training mandates. Its inventory is comprised of more than 450 hours of fire department training, as well as 250 hours of accredited EMS training.¹ Training personnel (and really any officer or member so authorized) can post training and information materials online for personnel to reference. The training schedule is posted prominently on Vector Solutions and accessible to all personnel. Vector Solutions also provides the platform for managing all training records and reports. The use of this program will help to ensure that there is a reliable and accurate data base for tracking and retrieval of all department-level training and for recording and tracking the status of certifications for all personnel. The NCFD is one of more than 7,000 public agencies that uses Vector Solutions.²

COMMUNITY RISK REDUCTION PROGRAMS

Community risk reduction is an important undertaking of a modern-day fire department. A comprehensive fire protection system in every jurisdiction should include, at a minimum, the key functions of fire prevention, code enforcement, inspections, and public education. Preventing fires before they occur, and limiting the impact of those that do, should be priority objectives of every fire department. Fire investigation is a mission-important function of fire departments, as this function serves to determine how a fire started and why the fire behaved the way it did, providing information that plays a significant role in fire prevention efforts. Educating the public about fire safety and teaching them appropriate behaviors on how to react should they be confronted with a fire is also an important life safety responsibility of the fire department.

Fire suppression and response, although necessary to protect property, have negligible impact on preventing fire. Rather, it is public fire education, fire prevention, and built-in fire protection systems that are essential elements in protecting citizens from death and injury due to fire, smoke

1. <https://www.vectorsolutions.com>

2. Ibid

inhalation, and carbon monoxide poisoning. The fire prevention mission is of utmost importance, as it is the only area of service delivery that dedicates 100 percent of its effort to the reduction of the incidence of fire.

Fire prevention is a key responsibility of every member of the fire department, and fire prevention activities should include all personnel. On-duty personnel can be assigned with the responsibility for “in-service” inspections to identify and mitigate fire hazards in buildings, to familiarize firefighters with the layout of buildings, identify risks that may be encountered during firefighting operations, and to develop pre-fire plans. On-duty personnel in many departments are also assigned responsibility for permit inspections and public fire safety education activities.

Fire prevention should be approached in a truly systematic manner, and many community stakeholders have a personal stake and/or responsibility in these endeavors. It has been estimated that a significant percentage of all the requirements found in building/construction and related codes are related in some way to fire protection and safety. Various activities such as plan reviews, permits, and inspections are often spread among different departments in the municipal government and are often not coordinated nearly as effectively as they should be. Every effort should be made to ensure these activities are managed effectively between departments.

The Fire Prevention Division in the NCFD is commanded by the Fire Marshal. In addition to the Fire Marshal, the office is staffed with a Deputy Fire Marshal and two Fire Inspectors. Together, these positions administer the fire code inspection program, fire plan reviews, weed abatement program, fire permitting, and public education mission of the department. The Fire Prevention Division works closely with the city's Community Development Department concerning matters of fire protection and relevant plan reviews, and fire code enforcement when building code issues are identified.

At the time of this analysis the City of National City and NCFD were utilizing the following fire and building codes:

- California Fire Code, 2019 edition.
- California Building Code, 2019 edition.
- California Mechanical Code.
- California Electrical Code.
- California Plumbing Code.
- Uniform Housing Code.
- California Energy Code.
- California Green Buildings Standard Code.
- California Residential Code.

In addition to state statutes and adopted fire and building codes, Chapter 400 of the NCFD Fire Services Manual outlines department policies for fire prevention, permit fees, fire investigation, public education, and associated Community Risk Reduction programs. These policies are comprehensive and are **a best practice**.

There are 2,700 inspectable occupancies in the city. For 2019 and 2020 the fire inspection division conducted the following number of inspections:

- 2020: 599 (COVID impact affected total).
- 2019: 992.

The Fire Marshal and staff complete required annual occupancy inspections to Assembly, Institutional, and High-Hazard occupancies as required. Additionally, the Fire Marshal's Office inspects those occupancies involving a complaint, and all occupancies issued a new Business License to operate in the city. All other occupancy types are inspected once every three years to the extent possible. This type of inspection plan is typical in smaller agencies with minimal staffing. The plans review function typically conducted in-house in the Fire Marshal's Office is contracted out to a third party due to current workload, which is also common in smaller community risk reduction offices.

There are many reasons why existing buildings should be inspected for fire code compliance. The obvious purpose is to ensure that occupants of the building are living, working, or occupying a building that is safe for them to do so. Some buildings are required to have specific inspections conducted based on the type of occupancy and the use of the building such as but not limited to healthcare facilities (hospitals, nursing homes, etc.), schools, restaurants, and places of assembly. These inspections are mandated by various statutes, ordinances, and codes. Fire inspections can also identify violations and lead to follow-up inspections to ensure that violations are addressed and that the fire code is enforced.

In fire prevention, the term "enforcement" is most often associated with inspectors performing walk-throughs of entire facilities, looking for any hazards or violations of applicable codes. Educating the owner to the requirements, as well as the spirit and intent, of the code can also attain positive benefits for fire and life safety. This practice also improves community and business relationships.

Taking into consideration that fire prevention activities are important and also a community-wide responsibility, the City Council adopted a city-wide self-inspection program for certain business occupancy types. Title 15.29.020 of the city code of ordinances establishes a self-inspection program for certain occupancies B1 (business) and R1 (hotels, motels, boarding houses, congregate housing) to *maintain functions necessary for the prevention of fire and for the protection of life and property from fire and panic, the city council establishes a business fire safety self-inspection program assuring that certain "B-2" and "R-1" occupancies within the city are inspected on an annual basis for fire safety.*

Under the self-inspection program, and pursuant to Title 15.29.030 of the code, the owner or manager of the occupancy or person in highest authority in the occupancy shall within 30 days inspect each occupancy, complete the forms mentioned in subsection A of this section, correct all deficiencies, and return the same to the National City fire department. All deficiencies observed shall be reported on the forms and corrected prior to returning the forms to the National City fire department.

Public education is the area where the fire service will make the greatest impact on preventing fires and subsequently reducing the accompanying loss of life, injuries, and property damage through adjusting people's attitudes and behaviors regarding fires and fire safety. The NCFD does not have a comprehensive public fire education program due to the current inspection workload, and the effort it is able to commit is commendable and results in time and resources well spent. A substantial percentage of all fires, fire deaths, and injuries occur in the home, an area where code enforcement and inspection programs have little to no jurisdiction. The NCFD

provides community fire extinguisher training, conducts a juvenile fire setter program, and provides community fire prevention classes when requested.

The investigation of the cause and origin of fires is also an important part of a comprehensive fire prevention system. Determining the cause of fires can help with future prevention efforts. Battalion Chiefs and Captains initiate the fire origin and cause determination process by NCFD policy 402.5. When possible, they can and should make the origin and cause determination. When needed, particularly when the on-scene officers cannot determine the origin and cause of the fire, or they believe a crime has been committed, the Fire Marshal or fire investigator responds to perform an in-depth investigation.

§ § §

SECTION 3. ALL-HAZARDS RISK ASSESSMENT OF THE COMMUNITY

COMMUNITY RISKS

Population and Community Growth

The 2020 U.S. Census determined the population of National City is 56,173. This is a 4 percent decrease from the 2010 population of 58,582. As the city land area is about 7.28-square miles, the population density based on Census population data is 8,050/square mile.³

In terms of fire and EMS risk, the age and socio-economic profiles of a population can have an impact on the number of requests for fire and EMS services. Evaluation of the number of seniors and children by fire management zones can provide insight into trends in service delivery and quantitate the probability of future service requests. In a 2021 National Fire Protection Association (NFPA) report on residential fires, the following key findings were identified for the period 2015–2019:⁴

- Males were more likely to be killed or injured in home fires than females and accounted for larger percentages of victims (57 percent of the deaths and 55 percent of the injuries).
- The largest number of deaths (19 percent) in a single age group was among people ages 55 to 65.
- 59 percent of the victims of fatal home fires were between the ages of 39 and 74, and three of every five (62 percent) of the non-fatally injured were between the ages of 25 and 64.
- Slightly over one-third (36 percent) of the fatalities were age 65 or older; only 17 percent of the non-fatally injured were in that age group.
- Children under the age of 15 accounted for 11 percent of the home fire fatalities and 10 percent of the injuries. Children under the age of 5 accounted for 5 percent of the deaths and 4 percent of the injuries.
- Adults of all ages had higher rates of non-fatal fire injuries than children.
- Smoking materials were the leading cause of home fire deaths overall (23 percent) with cooking ranking a close second (20 percent).
- The highest percentage of fire fatalities occurred while the person was asleep or physically disabled and not in the area of fire origin, which are key factors to vulnerable populations.

In National City the following age and socio-economic factors are considered when assessing and determining risk for fire and EMS preparedness and response:⁵

- Children under the age of five represent 5.5 percent of the population.
- Persons under the age of 18 represent 20.6 percent of the population.

3. U.S. Census Bureau Quick Facts, National City, California.

4. M. Ahrens, R. Maheshwari "Home Fire Victims by Age and Gender," Quincy, MA: NFPA, 2021.

5. <https://www.census.gov/quickfacts/nationalcitycalifornia>

- Persons over the age of 65 represent 13.4 percent of the population.
- Female persons represent 49.5 percent of the population.
- There are 3.33 persons per household in National City.
- The median household income in 2019 dollars is \$47,119.
- Persons living in poverty make up 18.3 percent of the population.
- Black or African-American alone represents 4.8 percent of the population. The remaining percentage of population by race includes White alone at 64.6 percent, American Indian or Alaska Native alone at 0.5 percent, Asian alone at 18.5 percent, two or more races at 3.0 percent, and Hispanic or Latino at 63.5 percent.

Estimated build-out in National City is discussed in two ways in the city's 2011 General Plan. The plan first contemplates build-out based on allowable densities, and if all open land is utilized. As this is unlikely to occur, the 2011 General Plan discusses build-out assumptions by 2030 on vacant or underutilized parcels near sites that are likely to redevelop within the city considering site and other development constraints. These assumptions are:⁶

- 5,091 new dwelling units.
- 20,362 new residents.
- 2.6 million square feet of new retail/office space.
- 3.2 million square feet of new industrial space.⁷

Regardless of the build-out in the city, an increase in population, the type of housing units (multi-family, vertical density etc.) built, and the type of industry and retail space have impacts on call demand and increases building risks as outlined further in this section.

Environmental Factors

The City of National City is prone to and will continue to be exposed to certain environmental hazards that may impact the community. The most common natural hazards prevalent to the city according to the National City Emergency Operations Plan (EOP), and that create environmental risks are:

- **Earthquakes:** National City is in proximity to local faults such as the Rose Canyon Fault and that are potential risks to older structures (structural integrity and collapse causing natural gas leaks, fires, and trapping residents); potential for loss of life, injuries, and damage to property, as well as disruption to infrastructure and services. According to the San Diego County Multi-Jurisdictional Hazard Mitigation Plan, the city has had no repetitive loss from earthquake risks.
- **Dam Failure:** National City is proximity to and downstream from the Sweetwater Dam. Dam inundation to property and infrastructure in and adjacent to the Sweetwater River channels exists. The National City EOP considers the likelihood of dam failure to be low due to the construction features of the dam; however, it still poses an environmental risk. According to the San Diego County Multi-Jurisdictional Hazard Mitigation Plan, the city has had no repetitive loss from dam failure risks.
- **Floods:** According to the National City EOP, significant portions of the City are within FEMA mapped 100-year floodplains, thus posing a risk of flooding. Urban and flash flooding can

6. National City 2011 General Plan.

7. Ibid.

occur during heavy rain events. According to the San Diego County Multi-Jurisdictional Hazard Mitigation Plan, the city has minimal (two) repetitive losses from flood risks.

- **Tsunami:** Coastal land areas on the east and west coasts of the United States are susceptible to tsunami events that create significant coastal flooding. According to the San Diego County Multi-Jurisdictional Hazard Mitigation Plan, the city has had no repetitive loss from Tsunami risks.
- **Extreme Heat:** Increased risk of medical complications from increased temperatures.
- **Drought:** Periods of prolonged drought may limit water supply available to the region.^{8 9}

The following table describes the potential hazard-related exposure and loss from environmental risks in National City, as detailed by the San Diego County Office of Emergency Services for the San Diego County Multi-Jurisdictional Hazard Mitigation Plan.

TABLE 3-1: Environmental Risks: Potential Hazard and Loss in National City

Hazard Type	Exposed Population	Residential		Commercial		Critical Facilities	
		Number of Residential Buildings	Potential Exposure/Loss for Residential Buildings (x\$1,000)	Number of Commercial Buildings	Potential Exposure/Loss for Commercial Buildings (x\$1,000)	Number of Critical Facilities	Potential Exposure for Critical Facilities (x\$1,000)
Coastal Storm / Erosion	0	0	0	0	0	0	0
Sea level Rise	1,276	0	0	64	22,534	15	12,787
Dam Failure	7,362	457	128,646	6,649	2,327,069	74	284,717
Earthquake (Annualized Loss - Includes shaking, liquefaction and landslide components)	56,522*	15,776*	4,440,944*	892*	3,997,676*	0*	0*
Flood (Loss)							
100 Year	2,094	152	42,788	750	262,509	17	14,926
500 Year	4,801	915	257,573	3,297	1,153,905	62	63,798
Rain-Induced Landslide							
High Risk	0	0	0	0	0	0	0
Moderate Risk	6	2	563	0	0	1	339
Tsunami	1,306	0	0	5	22,409	5	60,384

Note: *Represents best data available at time of analysis

8. 2020 National City Emergency Operations Plan.

9. 2018 San Diego County Multi-Jurisdictional Hazard Mitigation Plan.

Building and Target Hazards

A community risk and vulnerability assessment will evaluate the community, and regarding buildings, it will review all buildings and the risks associated with each property segregating the property as either a high-, medium-, or low-hazard depending on factors such as the life and building content hazard, and the potential fire flow and staffing required to mitigate an emergency in the specific property. According to the NFPA *Fire Protection Handbook*, these hazards are defined as:

High-hazard occupancies: Schools, hospitals, nursing homes, explosives plants, refineries, high-rise buildings, and other high life-hazard (vulnerable population) or large fire-potential occupancies.

Medium-hazard occupancies: Apartments, offices, and mercantile and industrial occupancies not normally requiring extensive rescue by firefighting forces.

Low-hazard occupancies: One-, two-, or three-family dwellings and scattered small business and industrial occupancies.¹⁰

The predominant building type/building risk in National City is single-family detached dwellings (*low-hazard*). The primary construction type for residential structures is Type V-B, which does not require a fire resistance rating for any of the building elements (typically wood frame).

Multifamily, apartments, and condominiums (vertical density) represent a large percent of the city's housing stock. Typical construction is mixed and includes fire resistive, ordinary, non-fire resistive, wood frame with one-hour fire rating, and protected combustible. Some apartment and condominium complexes include a multibuilding footprint. The city has an assortment of manufactured homes as well (small percentage), which are typically made of light metal/wood construction with various exterior coverings. Of greater risk is the vertical housing that exists in the city, which not only creates much higher occupant density, but also requires greater response resources if a fire breaks out, particularly to manage the life safety component, even in cold smoke conditions.

The strip mall inventory consists of non-fire resistive, fire resistive (one-hour fire rating), and protected combustible construction (one-hour fire rating). The commercial/industrial structure building inventory is ordinary (block/brick) construction, wood frame with composite siding, and masonry non-combustible.

National City has the following building types:

- Single-family homes, 9,507 (highest total building count at 53.9 percent).¹¹
- Multifamily units (apartments, condominiums, some vertical), 7,636 units (43.3 percent).¹²
- Manufactured homes, 416.¹³
- Professional business, single and multi-story.
- Commercial and industrial buildings.

National City has at least 167 commercial buildings of which 56 have ISO fire flows of 2000 gpm or higher and 13 that have fire flows of 3,500 gpm or higher.
Source: 2009 National City Standard of Cover-Citygate Assoc. LLC

10. Cote, Grant, Hall & Solomon, eds., *Fire Protection Handbook* (Quincy, MA: National Fire Protection Association, 2008), 12.

11. Census Reporter, National City, Calif.

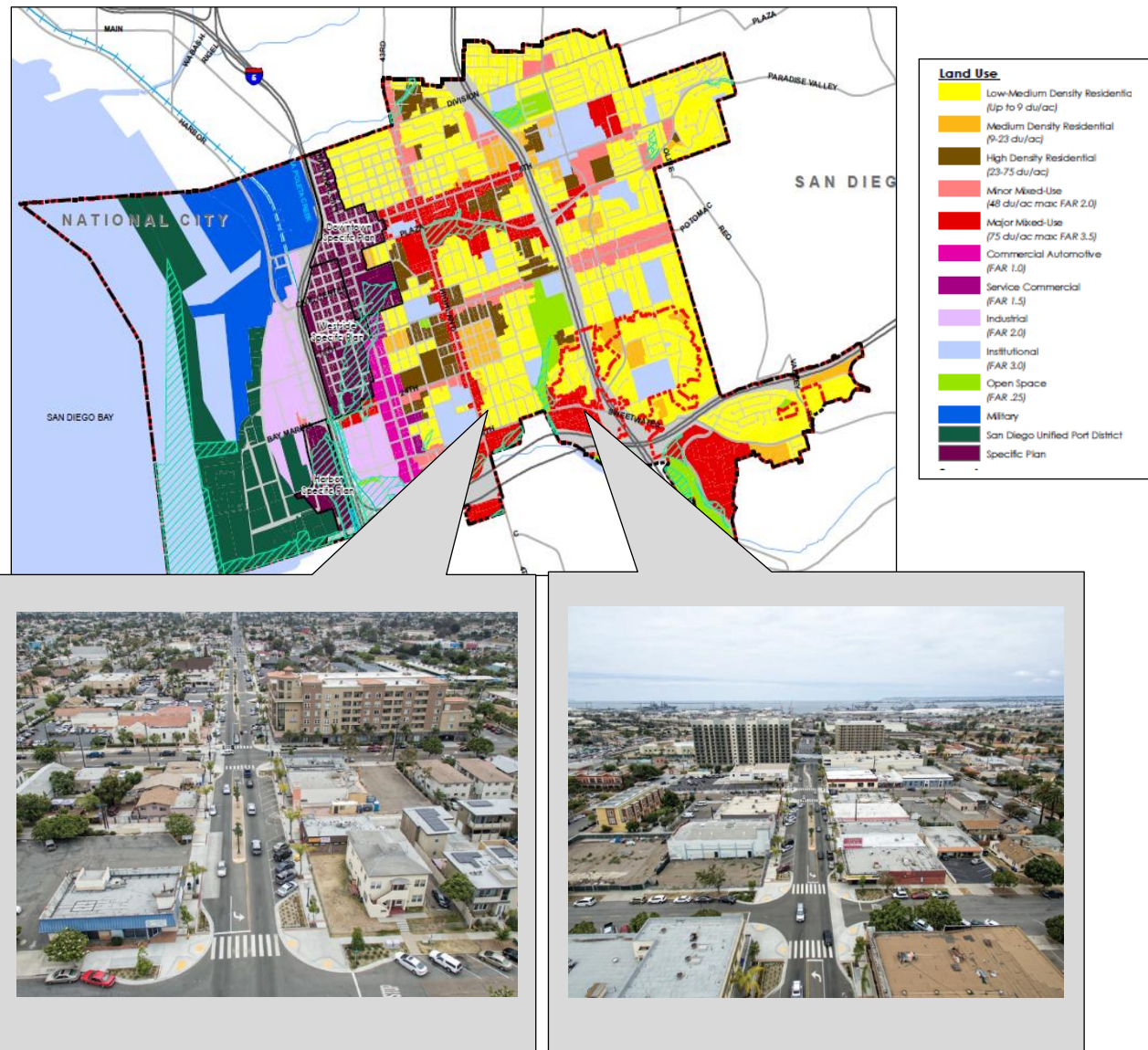
12. Ibid.

13. Ibid.

- Strip malls.
- Assisted living/long-term care buildings/homes (multiple facilities and homes in the city).
- Public education structures (elementary, junior, and high school buildings).
- Public government buildings.
- High-rise buildings.

The next figure illustrates the existing land use map for the city, which indicates the type of building risk and its general location, along with two aerial views of the landscape that illustrate further the building types and risk.¹⁴

FIGURE 3-1: National City Existing Land Use Map



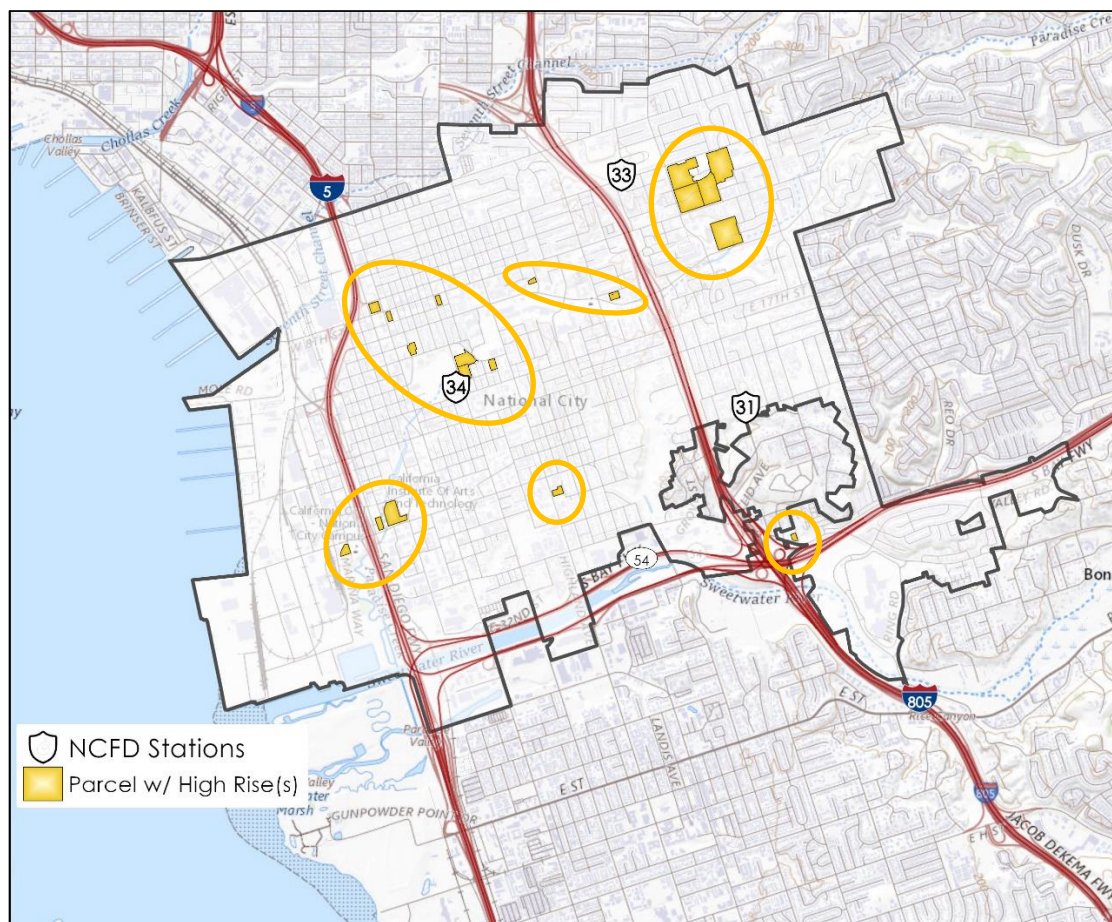
14. National City 2011 General Plan.

In terms of identifying target hazards, consideration must be given to the activities that take place (public assembly, life safety vulnerability, manufacturing, processing, etc.), the number and types of occupants (elderly, youth, handicapped etc.), and other specific aspects related to the construction of the structure. National City has more than 2,700 occupancies that the NCFD considers target hazards such as:

- High-rise target hazards (life safety) of which there are mixed occupancy types and include housing units.
- Hospital/medical center target hazard (Paradise Valley Hospital).
- Educational/school/public assembly target hazard (life safety).
- Mercantile/business/industrial (life safety, hazardous storage and or processes).
- Long-term and assisted care target hazards (life safety, vulnerable population).
- Government business target hazards (life safety, continuity of operations).
- Private business target hazards (life safety).

The following figure illustrates the location of high-rise building risks in the city.

FIGURE 3-2: High-Rise Building Risk Locations



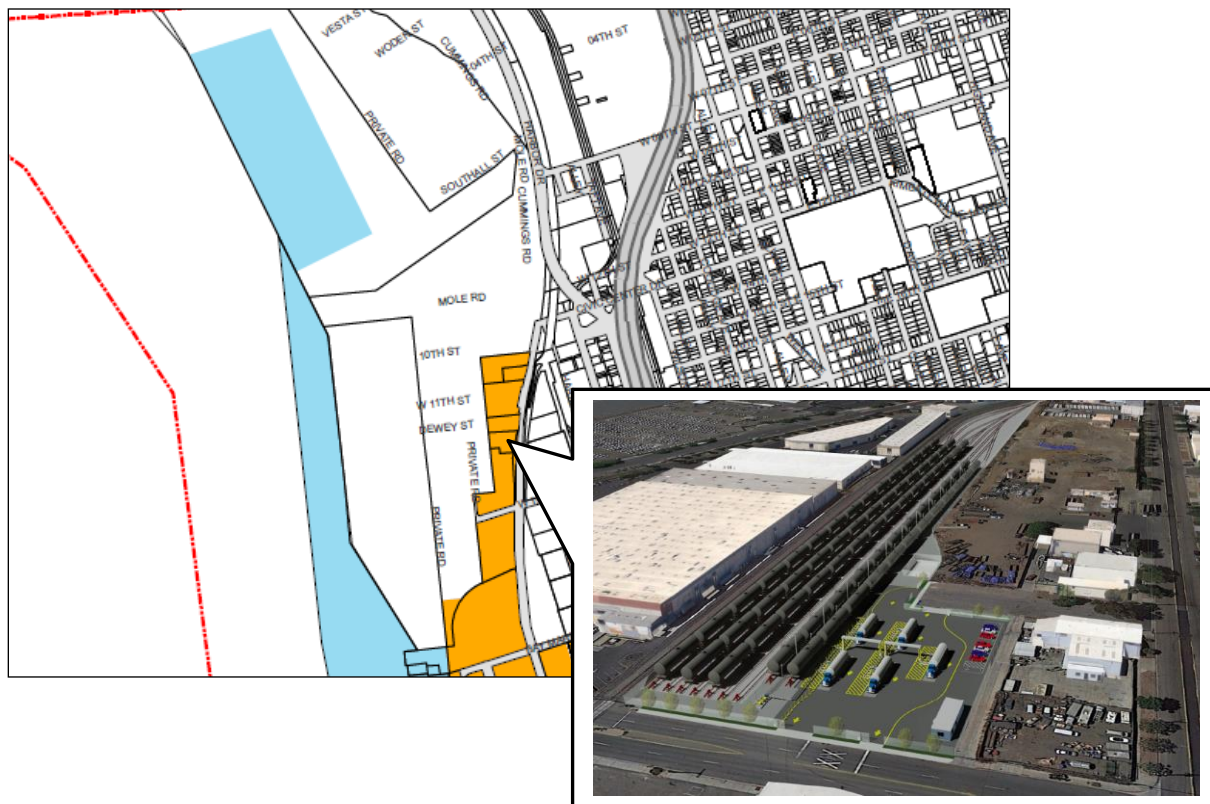
The city has a mix of low- and medium-risk structures that make up the majority of the target hazard risk. High-hazard/high rise building risks are noted in this section as well.

Building risks, associated population, and other factors as discussed include assisted/long-term care facilities, residential structures housing a vulnerable population, hospital/medical center, residential structures more than three stories in height, public assembly structures when occupied, and those mercantile occupancies that have hazardous materials used in processes or that are stored in large quantities.

Future growth calls for vertical density (multifamily/unit) structures to include a 22-story building. The building risk outside of single-family dwellings, particularly those of multi-unit and multi-story residential buildings pose additional firefighting risk in terms of life safety, ability to reach the seat of the fire quickly, and assembling an Effective Response Force needed to mitigate an emergency in structures such as these. Even small fires in these structures create cold smoke issues for multiple units, all requiring some level of mitigation for life safety and smoke removal, or even occupant removal from and by the fire department.

The city also has a potential future risk that is worth noting here. USD Clean Fuels and Plastic Express (USDCF/PEX) are working with the city to locate a biofuels transloading site on the current Pacific Steel property site in the city. This site is situated west of the I-5 corridor in the industrial section of the city and east of the Port of San Diego property (see the next figure). This site will include transloading of biofuels onto rail tank cars and tractor trailer tank trucks. The project is designed with many safety features and will meet state building and fire prevention codes. Fuel transloading, hazardous materials, and transportation risks (rail, rail at-grade crossings, road transportation) discussed herein will be present with this facility.

FIGURE 3-3: USDCF/PEX Biofuels Transloading Project Location

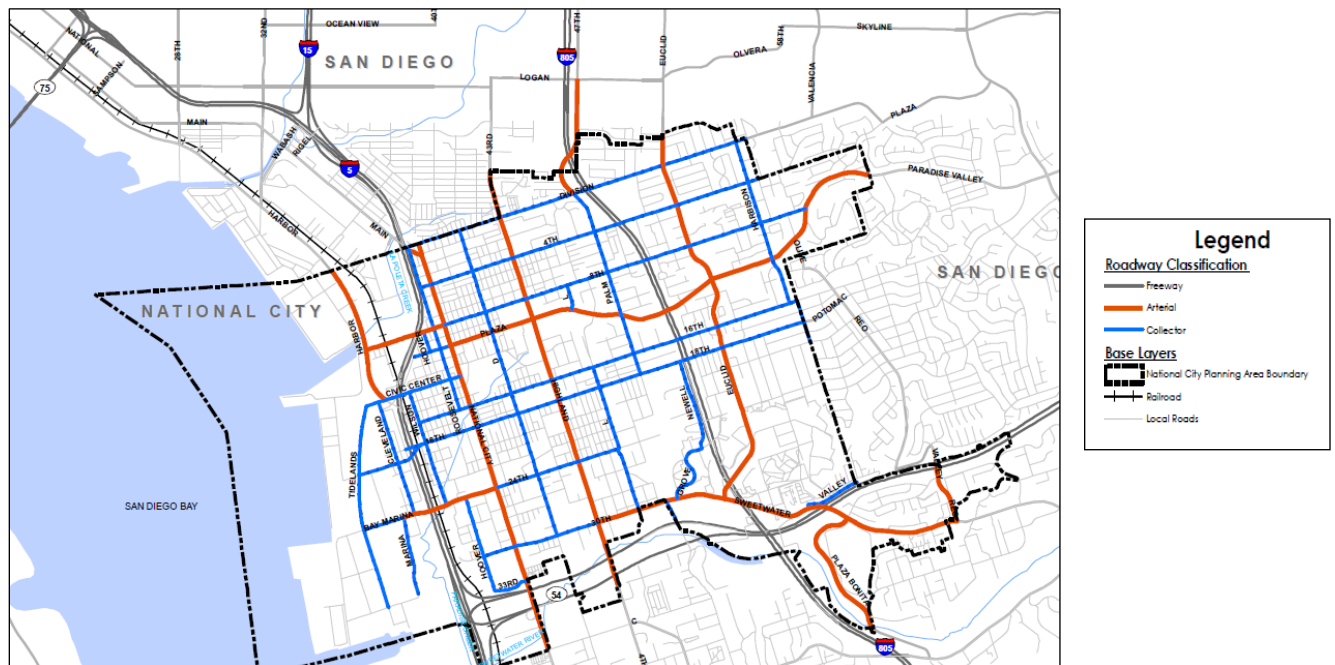


Transportation Factors

The road network in National City is typical of cities in the region. In National City this includes freeways, which are high-speed, high capacity, and of limited access; arterial streets, which carry high volumes of traffic and are typically four lanes with synchronized signals; collector streets, which provide connection to arterial roads and local street networks as well as residential and commercial land uses; and local streets, which provide a direct road network to property and move traffic through neighborhoods and business communities.¹⁵

At the time of the 2011 General Plan, the city had 110 miles of paved roads, with 15 arterial and 30 collector roads. National City has also designated certain truck routes (primary and alternate) designed to route trucks to and from their likely business destinations and to major freeways. The following figure illustrates the National City transportation road network.

FIGURE 3-4: National City Road Network



The San Diego Metropolitan Transit System (MTS) operates fixed bus routes in the city. There are ten bus routes with 205 individual bus stops. The city also has an MTS trolley line (Blue Line) that runs from San Diego City to the U.S.-Mexico Border. There are two stops in National City. According to the March 2021 *Transportation Elements Draft Report*, National City residents rely more on public transportation such as the MTS bus and trolley systems than other commuters in San Diego County. Bus and trolley accidents during populated rides pose a mass casualty response risk if multiple riders are injured.

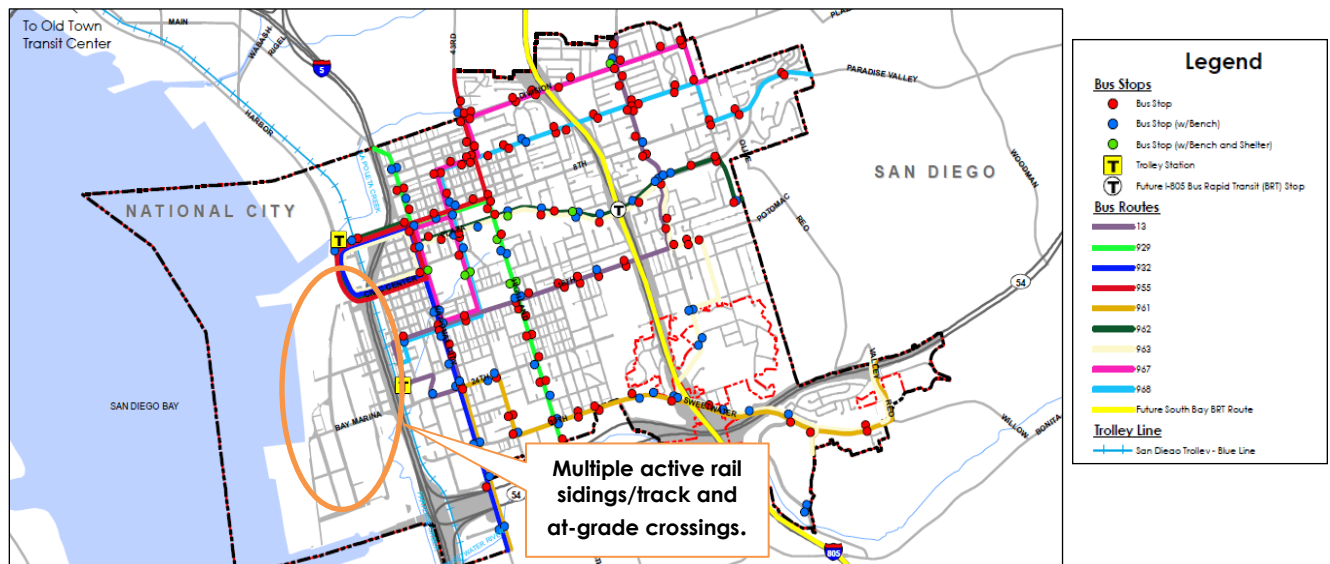
Active railroad lines other than the trolley system are also present in the city. The primary active rail lines are the Burlington Northern Santa Fe (BNSF) and the San Diego and Imperial Valley Railway (SDIV). These rail lines operate on and share track right-of-way with the MTS trolley system. SDIV trains are operated primarily at night along the main line when the trolley service is not operating. This includes to and from the port and to and from other destinations. The primary

15. National City 2011 General Plan.

commodities hauled by the SDIV are petroleum products, agricultural products, and wood pulp. Other commodities transported in and through National City are automobiles and containers originating through the Port of San Diego. While not all these commodities may be considered hazardous materials, fires involving these commodities can produce smoke and other products of combustion risks that may be hazardous to health. Hazardous materials themselves present hazards to health risks if being transported and involved in a rail accident. At-grade crossings exist in the city and pose transportation accident risks.

The next figure illustrates the National City mass transit system.

FIGURE 3-5: National City Mass Transit System



The road and transportation network described herein poses risks for vehicular accidents, some at medium to greater than medium speeds, as well as vehicular-versus-pedestrian risks. There are additional transportation risks since tractor-trailer and other commercial vehicles traverse the roadways of National City to deliver mixed commodities to business locations. Fires involving these products can produce smoke and other products of combustion risks that may be hazardous to health.

Port of San Diego

The Port of San Diego (Port) occupies approximately 7 percent of the city's land area. There are significant risks on the Port property, which include:

- Significant rail traffic on Port property and significant rail traffic not directly on Port property but that serves commercial business on Port property and travels through the city. This rail has multiple at-grade crossings which pose a traffic risk, and rail cars that transport combustibles and other hazards the NCFD will respond to and mitigate.
- The Port property in National City has large footprint buildings that are several thousand square feet in size, and although considered single story have the ceiling height of multistory structures. These buildings have processes and storage that are combustible and hazardous. Larger footprint buildings pose additional building risks to the NCFD in terms of mass storage of commodities and hazardous/combustible materials utilized in work processes, and

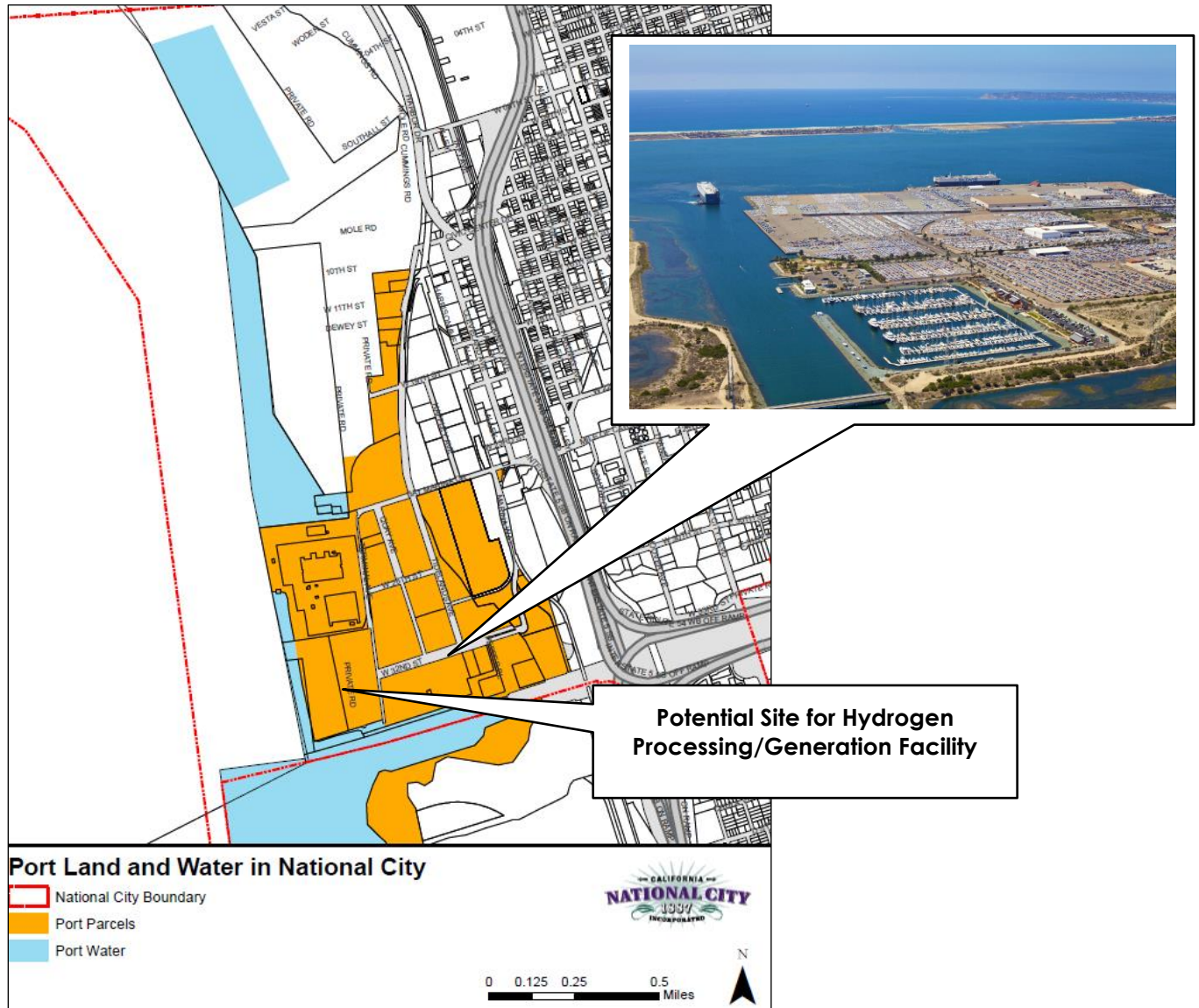
considerable waterflow requirements based on the size of the building footprint, commodities stored, and mercantile processes being conducted.

These buildings are typically built of fire resistive structural members and are sprinklered, but contain internally combustible accessories, materials, storage, processes, and internal structures. While the life-safety hazard normally will not require extensive rescue by firefighting forces (in terms of the number of people on premises at one time to be rescued), the scope and complications of the larger footprint to be covered by initial attack lines and in a search and rescue undertaking raise these types of structures to a high-hazard building risk.

- The Port property has other commercial and mercantile properties, although not large footprint buildings, which pose building and property risk due to the on-site storage (lumber, petroleum products, vehicles, hazardous materials) as well as business processes and storage in the interior of property buildings that are combustible and hazardous. Not all of these buildings have fire protection systems. These buildings are of medium to high risk based on building/property content. These occupancies also support heavy vehicles that move product to and from these properties, posing traffic and hazard risks. Included on Port property is a small retail/restaurant area with significant private vessel docking and boat marina slips.
- Proposed additions to Port property include:
 - Hydrogen Processing Plant south of the Pasha property. If this project is realized, this will be the largest hydrogen processing plant in the nation, according to NCFD staff. Transport of this product will be by marine, rail, and over-the-road vehicles. This facility will be of high/special risk hazard, and all transportation modes will be of high/special risk as well.
 - Hotel(s), restaurants, RV Park. Each of these brings certain building and life-safety risks. Hotels are of a higher risk as they include vertical density. Restaurants are assembly classifications, which raise the life-safety risk when occupied. RV parks, although seemingly a low or no risk hazard, actually are, in that RVs are combustible and when on fire burn rather rapidly because of the interior combustibles. There is also the hazard of on-board fuel (gasoline or diesel fuels, and pressurized gas for cooking). One additional risk is proximity from RV to RV, which creates exposure hazards (when one RV is on fire it typically spreads to another exposed RV).

The next figure illustrates the Port property within National City boundaries.

FIGURE 3-6: Port of San Diego in National City



Fire and Fire-Related Risk

An indication of the community's fire risk is the type and number of fire-related incidents the fire department responds to. CPSM conducted a data analysis for this project that analyzed NCFD incident responses and workload.

The following table details the call types and call type totals for these types of fire-related risks for 2019 and 2020.

TABLE 3-2: Fire Call Types, 2019 and 2020

Call Type	2019		2020	
	Total Calls	Calls per Day	Total Calls	Calls per Day
False alarm	318	0.9	216	0.6
Good intent	56	0.2	81	0.2
Hazard	48	0.1	33	0.1
Outside fire	125	0.3	162	0.4
Public service	121	0.3	139	0.4
Structure fire	31	0.1	29	0.1
Fire Total	699	1.9	660	1.8

EMS Risk

As with fire risks, an indication of the community's pre-hospital emergency medical risk is the type and number of EMS calls to which the fire department responds. The following table outlines the call types and call type totals for these types of EMS risks.

TABLE 3-3: EMS Call Types, 2019 and 2020

Call Type	2019		2020	
	Total Calls	Calls per Day	Total Calls	Calls per Day
Breathing difficulty	722	2.0	674	1.8
Cardiac and stroke	779	2.1	740	2.0
Fall and injury	999	2.7	952	2.6
Illness and other	1,344	3.7	1,303	3.6
MVA	407	1.1	349	1.0
Overdose and psychiatric	151	0.4	171	0.5
Seizure and unconsciousness	738	2.0	620	1.7
EMS Total	5,140	14.1	4,809	13.1

National City utilizes a private EMS service for EMS transport, which is discussed in a separate section in this report. Here though, we show the EMS transport demand by the private EMS service, which links to the overall EMS risk factor in National City. The next two tables describe the EMS ground transport demand in the city for 2019 and 2020.

§ § §

TABLE 3-4: AMR Calls by Call Type, 2019 and 2020

Call Type	Number of Calls		Calls per Day	
	2019	2020	2019	2020
Breathing difficulty	815	758	2.2	2.1
Cardiac and stroke	881	864	2.4	2.4
Fall and injury	1,296	1,229	3.6	3.4
Illness and other	2,453	2,421	6.7	6.6
MVA	677	589	1.9	1.6
Overdose and psychiatric	266	286	0.7	0.8
Seizure and unconsciousness	867	726	2.4	2.0
EMS Total	7,255	6,873	19.9	18.8
Fire & FD assist	73	72	0.2	0.2
Total	7,328	6,945	20.1	19.0

TABLE 3-5: Transport Calls by Call Type by AMR EMS Service for 2019

Call Type	Number of Calls			Conversion Rate, Calls to Transports
	Non-transport	Transport	Total	
Breathing difficulty	167	648	815	79.5
Cardiac and stroke	183	698	881	79.2
Fall and injury	458	838	1,296	64.7
Illness and other	846	1,607	2,453	65.5
MVA	422	255	677	37.7
Overdose and psychiatric	116	150	266	56.4
Seizure and unconsciousness	232	635	867	73.2
EMS Transport Total	2,424	4,831	7,255	66.6

FIRE AND EMS INCIDENT DEMAND

Analyzing where the fire and EMS incidents occur, and the demand density of fire and EMS incidents, helps to determine adequate fire management zone resource assignment and deployment.

The following figures illustrate fire and EMS demand in the NCFD fire management zone. These include fire incidents (structural and outside fires); other types of fire-related incidents such as good intent and public service calls, which are calls for service such as smoke scares (no fire), wires down, lock outs, water leaks, etc.; false alarms (typically fire alarms); and EMS incident demand that includes all EMS incidents, breathing difficulty and cardiac related, and motor vehicle accidents. All demand maps are the aggregate of 2019 and 2020 responses. Demand maps labeled with "Runs" show demand of multiple NCFD unit response.

FIGURE 3-7: NCFD In-City Fire Incident Demand (Structure and Outside Fires)

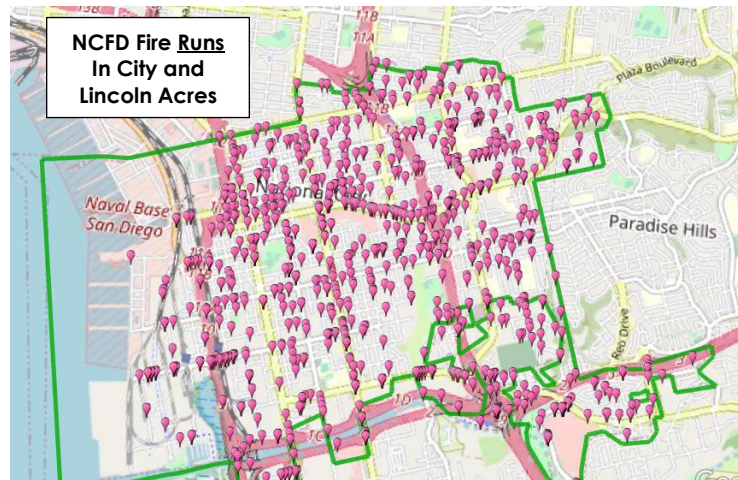
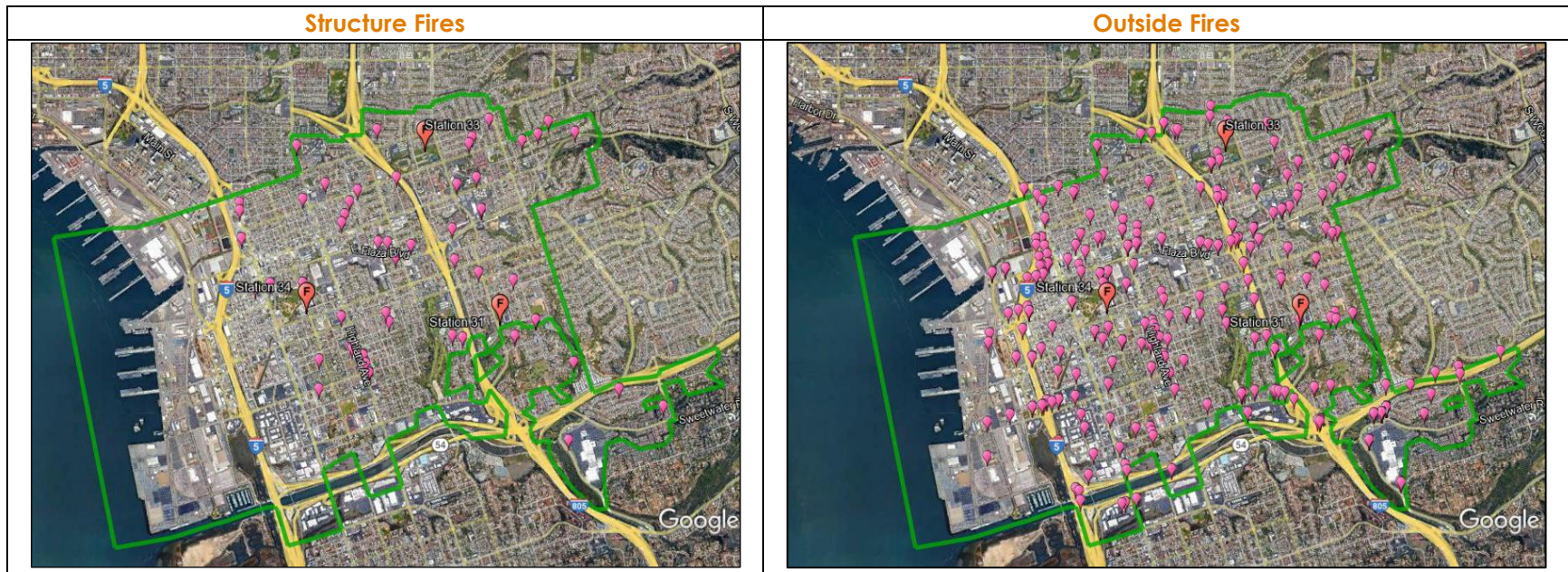
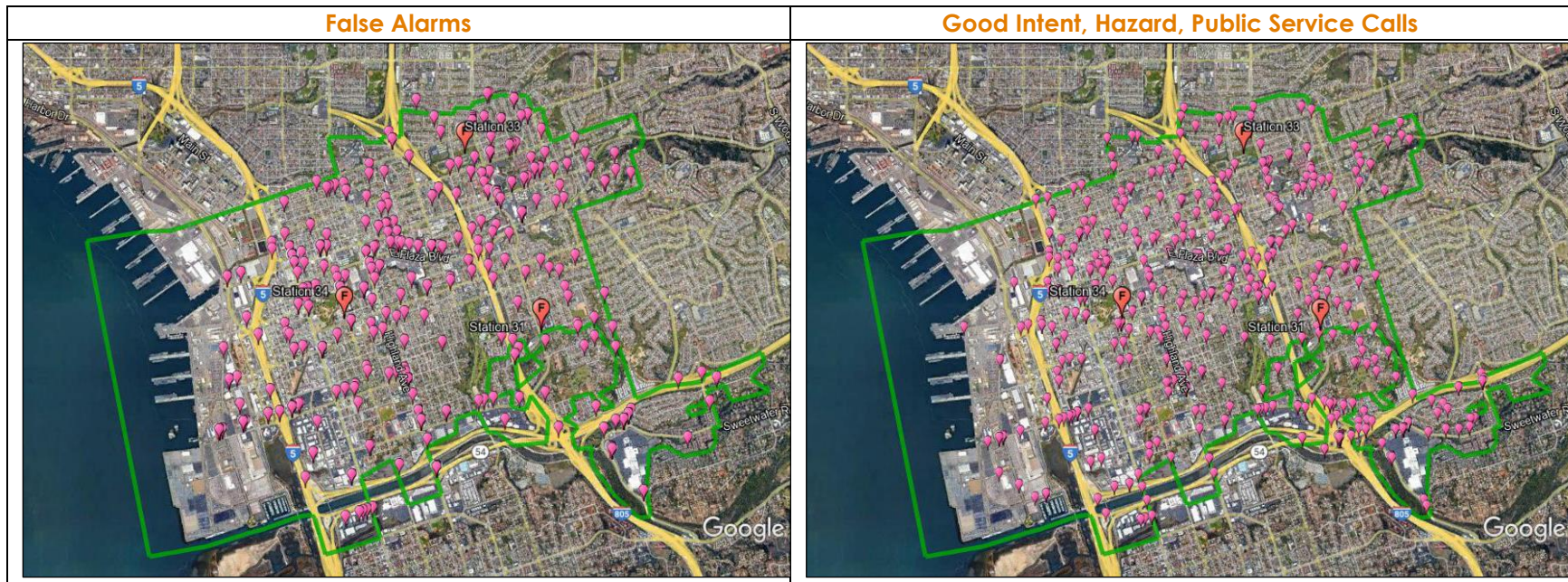


FIGURE 3-8: NCFD In-City False (Fire) Alarms, Good Intent, Hazard, Public Service Call Demand



NCFD Fire Runs
In City and
Lincoln Acres

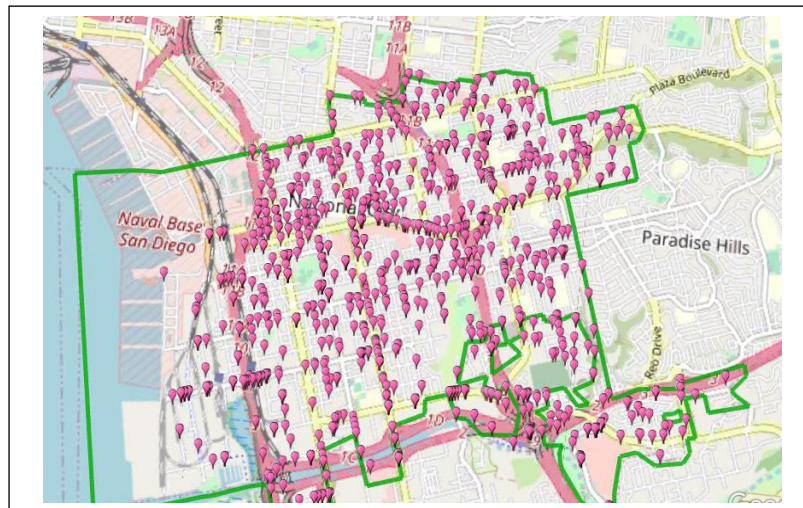


FIGURE 3-9: NCFD In-City EMS High Acuity Demand (Breathing Difficulty, Cardiac and Stroke and MVA)

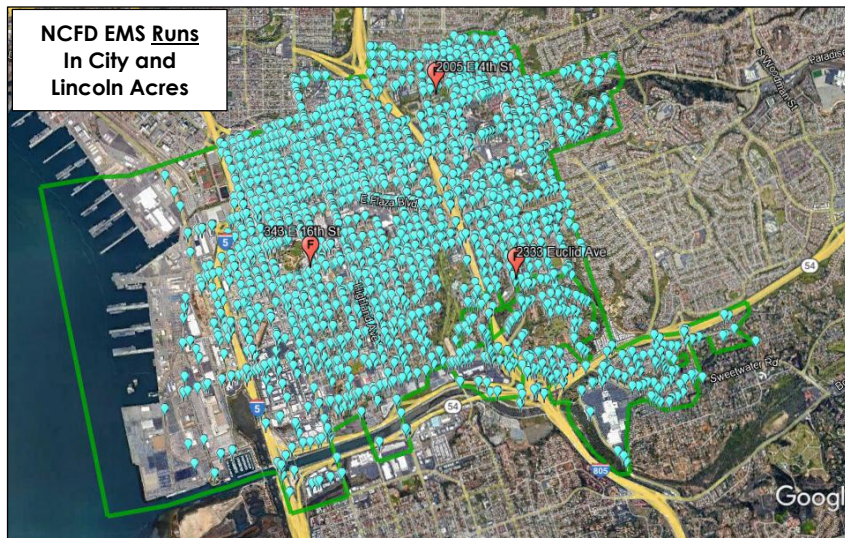
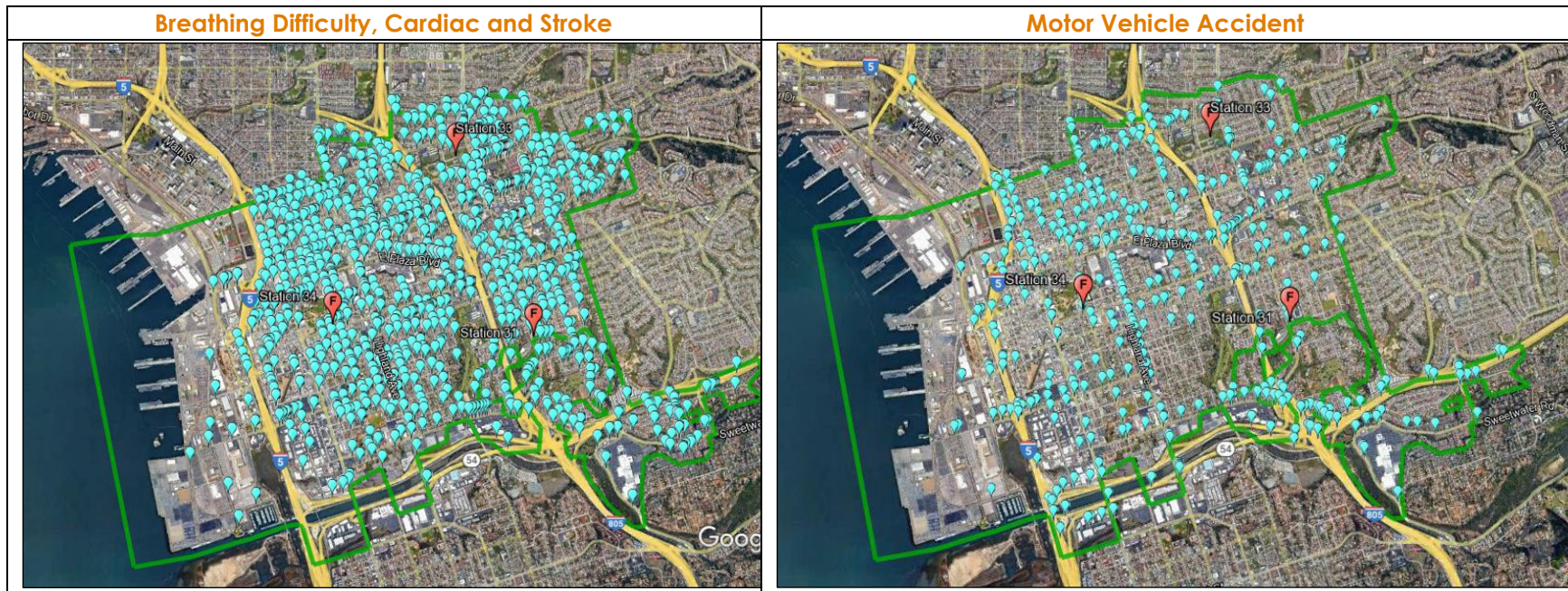
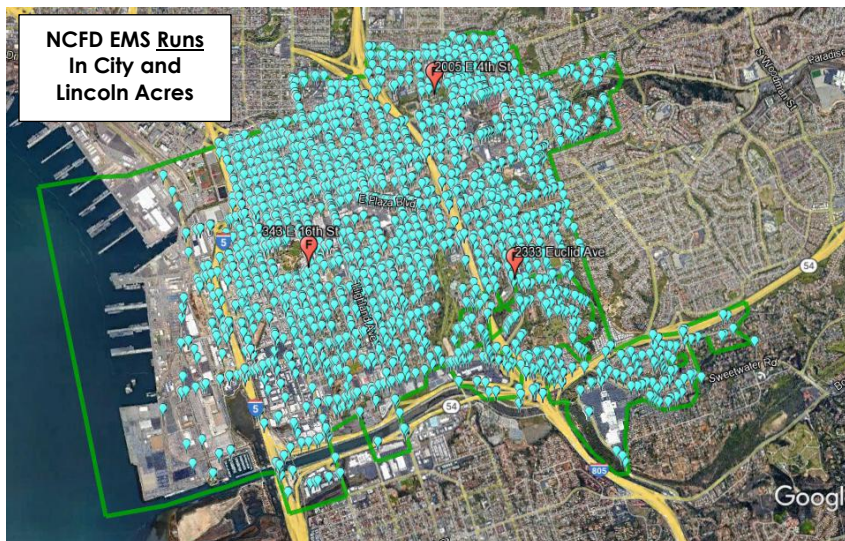
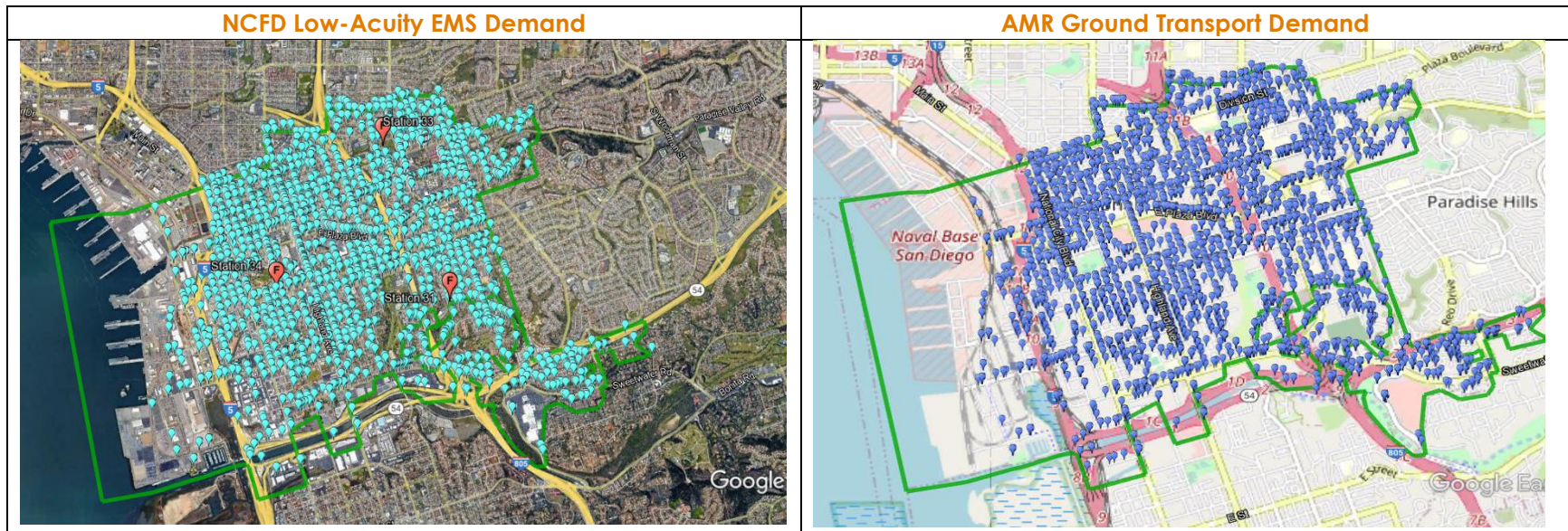


FIGURE 3-10: NCFD In-City EMS Demand and AMR Ground Transport Demand



ISO RATING

The ISO is a national, not-for-profit organization that collects and evaluates information from communities across the United States regarding their capabilities to combat building fires. ISO conducts field evaluations in an effort to rate communities and their relative ability to provide fire protection and mitigate fire risk. This evaluation allows ISO to determine and publish the Public Protection Classification (PPC). The data collected from a community is analyzed and applied to ISO's Fire Suppression Rating Schedule (FSRS) from which a Public Protection Classification (PPC) grade is assigned to a community (1 to 10).

A Class 1 (highest classification/lowest numerical score) represents an exemplary community fire suppression program that includes all of the components outlined below. A Class 10 indicates that the community's fire suppression program does not meet ISO's minimum criteria. It is important to understand the PPC is not just a fire department classification, but a compilation of community services that include the fire department, the emergency communications center, and the community's potable water supply system operator.¹⁶

The lower score indicates a more favorable rating which potentially translates into lower insurance premiums for the business owner and homeowner. This lower classification makes the community more attractive from an insurance risk perspective. How the PPC for each community affects business and homeowners can be complicated because each insurance underwriter is free to utilize the information as they deem appropriate. Overall, many factors feed into the compilation of an insurance premium, not just the PPC.

A community's PPC grade depends on:

- **Needed Fire Flows** (building locations used to determine the theoretical amount of water necessary for fire suppression purposes).
- **Emergency Communications** (10 percent of the evaluation).
- **Fire Department** (50 percent of the evaluation).
- **Water Supply** (40 percent of the evaluation).

The City of National City has an ISO rating of **Class 02, the second-highest rating achievable**. This rating became effective in March 2019. The final rating included the following credit by category:

- **Emergency Communications:** 9.14 earned credit points/10.00 credit points available.
- **Fire Department:** 40.90 earned credit points/50.00 credit points available.
- **Water Supply:** 36.85 earned credit points/40.00 credit points available.
- **Community Risk Reduction** (Fire Prevention/Inspection, Public Education, and Fire Investigation activities): 3.31 earned credit points/5.50 credit points available.

Overall, the community PPC rating yielded 88.14 earned credit points out of 105.50 credit points available. There was a 2.06 point diversion reduction assessed as well, which is automatically calculated based on the relative difference between the fire department and water supply scores. **80.00 points or more qualify a community for a rating of 2. National City is on the higher end of this classification.**

16. NCFD ISO PPC report; March 2019.

The following figures illustrate the dispersion of PPC ratings across the United States and in California.

FIGURE 3-11: PPC Ratings in the United States¹⁷

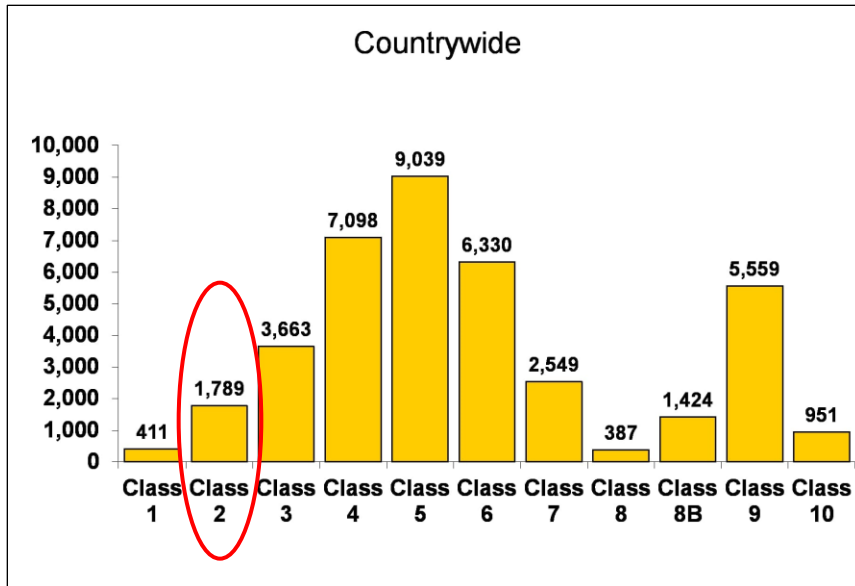
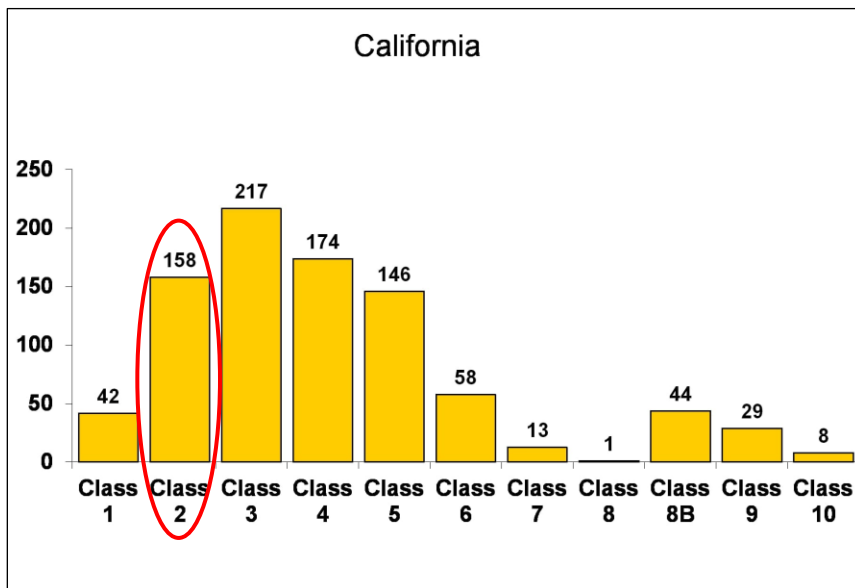


FIGURE 3-12: PPC Ratings in California¹⁸



Areas of scoring that should be reviewed further internally by the city and the NCFD, and which can have the most impact on individual areas evaluated and scored and that subsequently affect total section scoring include:

17. <https://www.isomitigation.com/ppc/program-works/facts-and-figures-about-ppc-codes-around-the-country/>

18. Ibid.

- Training: #581 (H) Pre-Fire Planning Inspections (0.35/12 credits)
 - For maximum credit, pre-fire planning inspections of each commercial, industrial, institutional, and other similar type building (all buildings except one- to four-family dwellings) should be made annually by company members. Pre-fire planning inspections are company level walk-throughs of commercial, industrial, institutional, hotels/motels, and larger footprint buildings to become familiar with floor plans, hose connections, means of egress, concentrations of population, hazardous materials storage, and the like. Typically fire departments have templates they fill in while conducting these pre-fire plan inspections that include pertinent owner/occupant information, sketched floor plans, hydrant locations, fire department connections, elevator locations, hazardous storage, or process locations in the building etc. Another purpose of a pre-fire plan is its use when an actual incident is occurring at the target hazard site or building. In this case the incident commander has at his/her disposal vital information that he/she can reference when making incident decisions. A record of inspections is important as well to gain appropriate credits.
- Water Supply: #630, #631 Credit for Inspection and Flow Testing (1.60/7.00 credits).
 - This item contemplates fire hydrant inspection and testing frequency in the city, and the completeness of the inspections, to include documentation. This score indicates the hydrants have not been inspected or flow tested on a regular basis.
- Community Risk Reduction: #1025 Credit for Fire Prevention Code Adoption and Enforcement.
 - Evaluation of Fire Prevention Staffing (3.23/8.0 credits).
- Community Risk Reduction: #1044 Credit for Fire Investigation Programs (7.40/20.0 credits).

Recommendation:

- CPSM recommends the NCFD review and address, to the extent possible, deficiencies in the current ISO Public Protection Classification report (Fire Department Section) as outlined in this analysis. This includes, and given the identified building risks in the city, ensuring company personnel conduct (and document for future ISO reviews) some level of commercial, industrial, institutional, and other similar type buildings (all buildings except one- to four-family dwellings) familiarization and pre-plan information gathering; work with Sweetwater Authority to ensure the fire hydrants are inspected and flow-tested on a more regular basis; address Community Risk Reduction staffing and make adjustments to staffing to ensure current (and future) inspectable properties (2,700 total current) are receiving annualized (where required) inspections, and those not requiring annualized inspections receive timely inspections in accordance with applicable laws and standards, and as established by the Fire Marshal. Addressing the Community Risk Reduction deficiency will require additional staffing, to the extent possible with available funding, which has an estimated cost of \$87,500 to \$117,000 per Community Risk Reduction inspector, dependent on placement in the pay range. (Recommendation No. 5.)

COMMUNITY LOSS AND SAVE INFORMATION

Fire loss is an estimation of the total loss from a fire to the structure and contents in terms of replacement. Fire loss includes contents damaged by fire, smoke, water, and overhaul. Fire loss does not include indirect loss, such as business interruption.

In a 2021 report published by the National Fire Protection Association on trends and patterns of U.S. fire losses, it was determined that home fires still cause the majority of all civilian fire deaths, civilian injuries, and property loss due to fire. Key findings from this report include:¹⁹

- Public fire departments responded to 1,338,500 fires in 2020, a 7.5-percent increase from the previous year.
- 490,500 fires occurred in structures (37 percent). Of these fires, 379,500 occurred in residential structures and 86,000 occurred in apartments or multifamily structures.
- 2,230 civilian fire deaths occurred in residential fires, and 350 deaths occurred in apartments or multifamily structures.
- Home fires were responsible for 11,500 civilian injuries.
- An estimated \$21.9 billion in direct property damage occurred as a result of fire in 2020 (includes fires in the California Wildland Urban Interface and a large loss naval ship fire in California).

The next table describes National City fire loss in terms of dollars for the years indicated.

TABLE 3-6: Content and Property Loss, Structure and Outside Fires, 2016–2020

2016	2017	2018	2019	2020
\$870,370	\$963,900	\$440,050	\$1,406,300 ²⁰	\$522,760

AUTOMATIC-MUTUAL AID

The NCFD primarily receives and provides fire services automatic aid with:

- San Diego City Fire Department.
- Bonita-Sunnyside Fire Protection District.
- Chula Vista City Fire Department.

The primary purpose of automatic aid is the response of primary units to multi-company response incidents regardless of jurisdiction, where another jurisdiction may be closer by location, and to supplement an initial alarm assignment, particularly to multi-unit responses, to ensure an Effective Response Force is assembled to mitigate the incident.

The next table illustrates the response metrics for certain fire structural fire responses in the metro San Diego region. The NCFD staffs two engines, one truck, and one quick response squad. By the metrics in the next table, it can be seen that the NCFD relies heavily on automatic aid from surrounding fire departments.

19. Fire Loss in the United States During 2020, National Fire Protection Association.

20. Includes fire loss of \$1,077,500 in category 14b. Fires in Other Vehicles (planes, trains, ships, construction, or farm vehicles, etc.).

TABLE 3-7: San Diego Metro Zone Response Plan Matrix

STRUCTURE RESIDENTIAL											
1ST ALARM						2ND ALARM					
NAT	SND	IMP	POW	CHV	CRD	NAT	SND	IMP	POW	CHV	CRD
4 E	4 E	4 E	4 E	4 E	4 E	4 E	E 4	4 E	E 4	4 E	4 E
1 T	1 T	1 T	1 T	1 T	1 T	1 T	1 T	1 T	2 T	2 T	1 T
2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC
1 ALS	1 ALS	1 ALS	1 ALS	USAR53	1 ALS	1 R	1 ALS	1 R	1R	CVEMS1	
				1 ALS*		1 R			MC1		
				*Working Fire		MC1					
						LA1					
						SC1					
						MAST					
3RD ALARM						4TH ALARM					
NAT	SND	IMP	POW	CHV	CRD	NAT	SND	IMP	POW	CHV	CRD
4 E	E 4	4 E	4 E	4 E	4 E	4 E	E 4	4 E	4 E	4 E	4 E
1 T	1 T	1 T	1 T	2 T	1 T	1 T	1 T	1 T	1 T	2 T	1 T
2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	1 BC	2 BC	2 BC
	1 ALS		COM1			1 ALS					
	COM1					COM1					
STRUCTURE COMMERCIAL											
1ST ALARM						2ND ALARM					
NAT	SND	IMP	POW	CHV	CRD	NAT	SND	IMP	POW	CHV	CRD
4 E	E 4	4 E	4 E	4 E	4 E	4 E	E 4	4 E	4 E	4 E	4 E
2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T
2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	1 BC	2 BC	2 BC
1 ALS	1 ALS	1 ALS	1 ALS	USAR53	1 ALS	1 R	1 ALS	1 ALS	1 R	1 ALS	
				1 ALS*		1 ALS	1 R		1 ALS	CVEMS1	
				*Working Fire		1 R			COM1		
						1 LA					
						1 FM					
						MAST					
						CPTR					
						MC1					
						SC1					
3RD ALARM						4TH ALARM					
NAT	SND	IMP	POW	CHV	CRD	NAT	SND	IMP	POW	CHV	CRD
4 E	E 4	4 E	4 E	4 E	4 E	4 E	E 4	4 E	4 E	4 E	4 E
2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T
2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	1 BC	1 BC	2 BC	2 BC
	1 ALS					1 ALS			CPTR1		

STRUCTURE HIRSE											
1ST ALARM						2ND ALARM					
NAT	SND	IMP	POW	CHV	CRD	NAT	SND	IMP	POW	CHV	CRD
5 E	5 E	5 E	5 E	5 E	4 E	5 E	5 E	5 E	4 E	5 E	4 E
2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T
2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC
1 R	1 R			1 R	USAR53	1 R	1 R			1 LA	1 R
1 ALS	1 ALS			1 ALS	TS3	1 ALS	1 ALS			COM1	1 ALS
					1 ALS*		E26/E9			MC1	CVEMS1
					*Working Fire		CPTR				
							COM1				
							MC1				
							1 LA				
							SC1				
							MAST				
3RD ALARM						4TH ALARM					
NAT	SND	IMP	POW	CHV	CRD	NAT	SND	IMP	POW	CHV	CRD
5 E	5 E	5 E	4 E	5 E	4 E	5 E	5 E	5 E	4 E	5 E	4 E
2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T	2 T
2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC	2 BC
	1 ALS					1 ALS					

The next table depicts the aid NCFD received from neighboring departments where the unit actually arrived on scene in National City.

TABLE 3-8: Aid Received Actual Arrivals by Agency, First Due Area, 2019 and 2020

Agency	2019			2020		
	First Due Area		Total	First Due Area		Total
	31	34		31	34	
Bonita FD	75	0	75	61	1	62
Coronado FD	0	1	1	0	0	0
Chula Vista FD	95	131	226	121	159	280
Lemon Grove FD	0	0	0	0	1	1
San Diego FD	326	207	533	372	257	629
Total	496	339	835	554	418	972

The next three tables detail the responses that National City provided to areas outside of the municipal boundaries in 2019 and 2020.

TABLE 3-9: Aid Given Workload, Actual Arrival by NCFD, 2019 and 2020

District	2019			2020		
	Calls	Runs	Hours	Calls	Runs	Hours
San Diego City	1,323	1,495	494.5	1,328	1,525	541.6
Chula Vista	699	864	225.1	653	813	224.8
San Diego County	101	105	56.8	77	83	45.1
Imperial Beach	21	21	4.5	21	25	5.8
Coronado	7	9	4.4	10	13	5.6
Lemon Grove	3	3	0.5			
Fresno County *				1	3	752.9
Total	2,154	2,497	785.7	2,090	2,462	1,575.7

One area of particular interest is Lincoln Acres. While not officially part of National City, it is an unincorporated area of San Diego County that is entirely enclosed within National City's boundaries, and to which the NCFD provides initial response. Lincoln Acres has been included in all prior workload tables for NCFD. The next table calls out specifically the NCFD workload in Lincoln Acres.

TABLE 3-10: Calls and Workload in Lincoln Acres by Call Type, 2019 and 2020

Call Type	2019			2020		
	Calls	Hours	Runs	Calls	Hours	Runs
Breathing difficulty	16	20.7	34	16	23.7	35
Cardiac and stroke	19	30.7	46	21	27.7	48
Fall and injury	16	23.9	35	15	24.4	34
Illness and other	23	31.4	54	31	42.6	67
MVA	23	30.4	74	31	30.4	93
OD	2	2.0	4	6	6.6	13
Seizure and UNC	14	19.7	29	15	23.2	31
EMS Total	113	158.8	276	135	178.6	321
False alarm	5	1.8	9	5	7.0	15
Good intent	3	2.6	5	6	5.1	24
Hazard	1	0.1	1	4	2.3	10
Outside fire	5	5.6	20	7	12.5	20
Public service	5	1.6	6	3	0.9	3
Structure fire	4	42.0	36	0	0.0	0
Fire Total	23	53.8	77	25	27.7	72
Canceled	28	23.7	77	41	34.9	100
Total	164	236.2	430	201	241.2	493

Another area of particular interest is Paradise Hills, an urban neighborhood in the southeast portion of the City of San Diego, and to which the NCFD provides automatic aid on a regular basis. The next table shows the workload of the NCFD into Paradise Hills.

TABLE 3-11: Calls and Workload in Paradise Hills by Call Type. 2019 and 2020

Call Type	2019			2020		
	Calls	Hours	Runs	Calls	Hours	Runs
Breathing difficulty	95	31.3	95	110	45.1	111
Cardiac and stroke	116	46.2	116	107	48.2	108
Fall and injury	91	31.6	94	99	36.2	102
Illness and other	120	47.6	128	127	48.2	128
MVA	17	8.3	20	23	7.5	28
OD	7	2.2	7	14	5.9	14
Seizure and UNC	93	39.9	94	73	28.8	73
EMS Total	539	207.3	554	553	219.9	564
False alarm	19	7.1	19	21	5.9	26
Good intent	2	0.4	2	7	1.4	7
Hazard	3	1.7	6	4	19.3	9
Outside fire	6	3.2	6	6	2.6	9
Public service	9	2.6	9	7	2.8	7
Structure fire	12	7.5	18	13	6.8	20
Fire Total	51	22.5	60	58	38.8	78
Canceled	73	12.3	99	93	19.1	129
Total	663	242.0	713	704	277.9	771

Key takeaways from the auto/mutual aid response data tells us:

- The NCFD receives the largest number of auto/mutual aid responses from the City of San Diego, and provides the greatest amount of response aid to San Digo by a greater than a 2 to 1 ratio. **The NCFD serves as the de facto fire department for Paradise Hills in San Diego.**
- The NCFD also provides response aid to Chula Vista at a greater than 2 to 1 ratio.

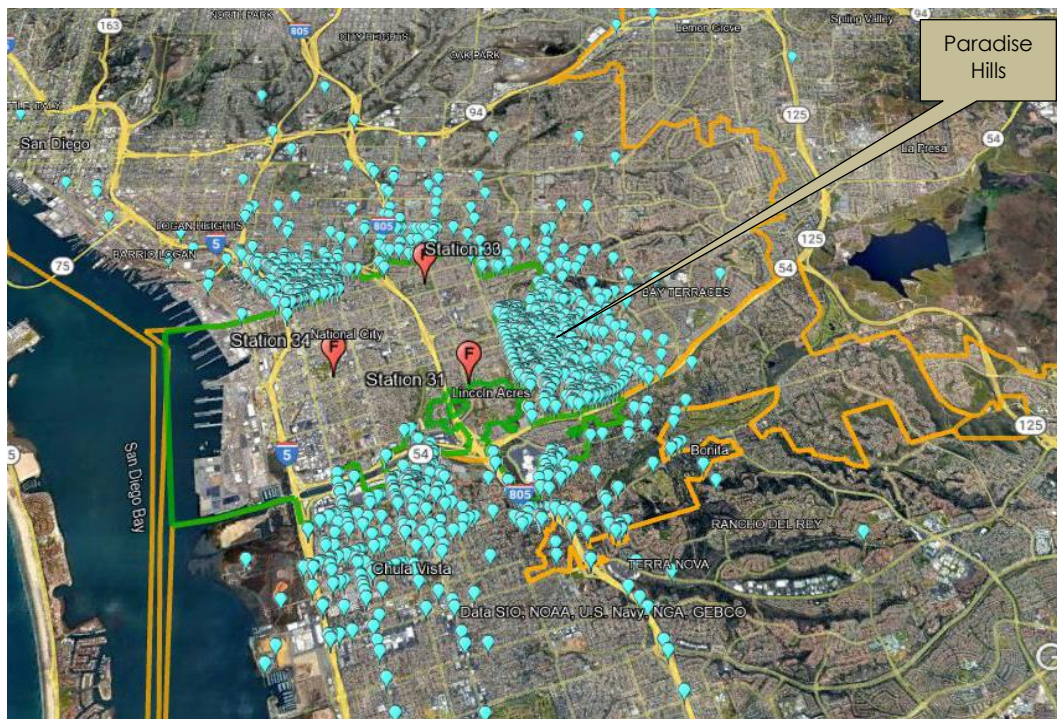
The importance of auto/mutual aid cannot be stressed enough, particularly for small fire departments that have the population density, building, and hazard risks such as that in National City, and which do not have the ability to assemble an Effective Response Force with on-duty equipment and staffing. However, where the NCFD is the de facto fire department for San Diego City for the Paradise Hills district, this goes beyond the concept of automatic/mutual aid.

The next figure shows the demand areas for auto/mutual aid provided by the NCFD as described in the tables above.

FIGURE 3-13: NCFD Structure and Outside Fire Auto/Mutual Aid Demand Map (Out of City)



FIGURE 3-14: NCFD EMS Auto/Mutual Aid Demand Map (Out of City)



RESILIENCY

Resiliency as defined by the Center for Public Safety Excellence (CPSE) in the Fire and Emergency Service Self-Assessment Manual (FESSAM), Ninth Edition, is: "An organization's ability to quickly recover from an incident or events, or to adjust easily to changing needs or requirements." Greater resiliency can be achieved by constant review and analysis of the response system and focuses on three key components:

- Resistance: The ability to deploy only resources necessary to control an incident and bring it to termination safely and effectively.
- Absorption: The ability of the agency to quickly add or duplicate resources necessary to maintain service levels during heavy call volume or incidents of high resource demand.
- Restoration: The agency's ability to quickly return to a state of normalcy.

Resistance is controlled by the NCFD through staffing and response protocol, and with NCFD resources dependent on the level of staffing and units available at the time of the alarm.

Absorption is accomplished through availability to respond by NCFD units and through regional auto aid resources. This is aided through the computer-aided dispatch at the regional fire dispatch center.

Restoration is managed by NCFD unit availability as simultaneous calls occur, the availability of regional auto aid resources, recall of staff to staff fire units during campaign events when warranted, and backfilling NCFD stations when needed through the computer-aided dispatch at the regional fire dispatch center.

The following tables and figure analyze NCFD resiliency. In this analysis, CPSM included all 9,298 calls that occurred inside and outside National City in the data analysis study period. We did this because NCFD is part of a regional auto/mutual aid system, so responses outside of the city impact resiliency of the department to respond to calls inside of the city.

TABLE 3-12: Call Workload by NCFD Units, 2019 and 2020

Station	Unit	Unit Type	2019		2020	
			Hours	Runs	Hours	Runs
31	NCE31	Engine	915.3	3,031 8.3/day	916.6	2,989 8.2/day
	NCE231	Engine	0.6	3		
	Total		915.9	3,034	916.6	2,989
33	NCSQ33	Squad	742.2	2,201 6.0/day	696.3	2,098 5.7/day
34	B57	Battalion	145.2	462	182.8	460
	NCE34	Engine	1,011.5	3,495 9.6/day	1,711.0	3,152 8.6/day
	NCE234	Engine	10.8	1	113.3	368
	NCT34	Truck	280.0	1,046 2.9/day	275.9	935 2.6/day
Total		1,447.5	5,004	2,282.9	4,915	
Total			3,105.6	10,239	3,895.8	10,002

FIGURE 3-15: Calls by Hour of Day

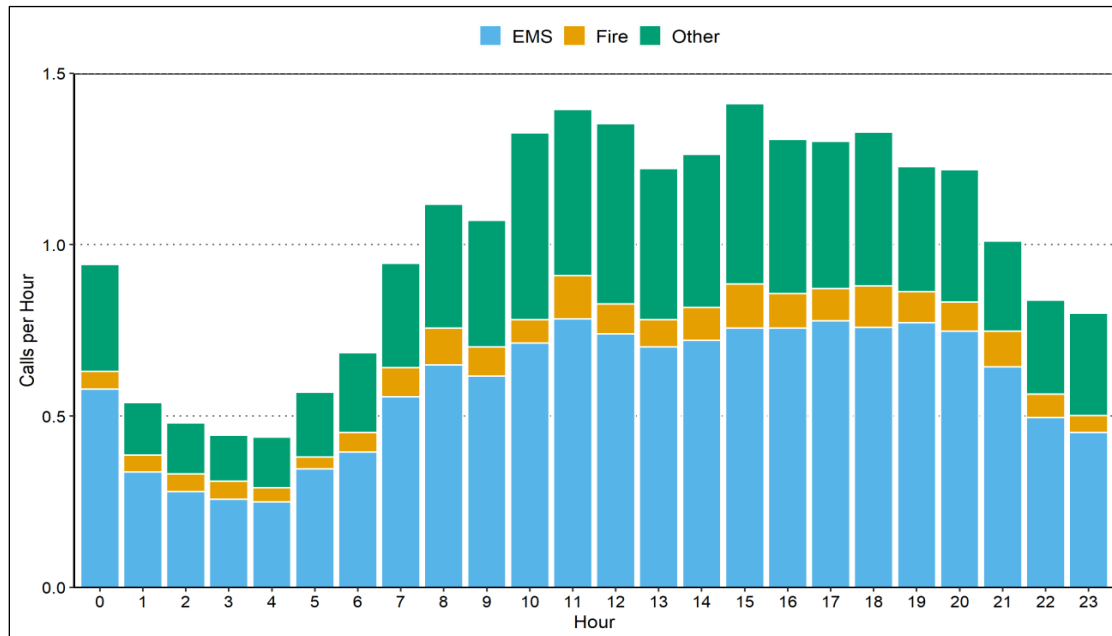


TABLE 3-13: Trend of Frequency of Overlapping Calls

Station	Scenario	Number of Calls	Percent of All Calls	Total Hours
31	No overlapped call	2,862	87.1	995.8
	Overlapped with one call	380	11.6	65.9
	Overlapped with two calls	41	1.2	4.8
	Overlapped with three calls	3	0.1	0.5
34	No overlapped call	3,289	85.3	1,048.1
	Overlapped with one call	505	13.1	87.6
	Overlapped with two calls	55	1.4	7.6
	Overlapped with three calls	7	0.2	0.6
	Overlapped with four calls	2	0.1	0.0
Outside	No overlapped call	1,968	91.4	631.1
	Overlapped with one call	173	8.0	34.3
	Overlapped with two calls	13	0.6	1.3

TABLE 3-14: Station Availability to Respond to Calls

Station	Calls in Area	First Due Responded	First Due Arrived	First Due First	Percent Responded	Percent Arrived	Percent First
31	3,063	1,430	1,347	1,270	46.7	44.0	41.5
34	3,508	2,700	2,639	2,588	77.0	75.2	73.8
Total	6,571	4,130	3,986	3,858	62.9	60.7	58.7

TABLE 3-15: Trend of Frequency Distribution of the Number of Calls

Calls in an Hour	Frequency	Percentage
0	3,297	37.6
1	2,938	33.5
2	1,641	18.7
3	582	6.6
4	217	2.5
5	62	0.7
6+	23	0.3
Total	8,760	100.0

Regarding the NCFD's resiliency to respond to calls, analysis of these tables and figure tells us:

- The peak call time is consistently between 10:00 a.m. and 8:00 p.m.
- E34 has the highest workload in terms of runs for 2019 and 2020 followed closely by E31.
- Overall, in 2019, all four first response units aggregately averaged 27 runs per day. In 2020, all four first response units averaged 25 runs per day.
- 13 percent of the time the E31 fire management zone has an overlapped call. The greatest percentage of the time the zone is overlapped with one call.
- 15 percent of the time the E34 fire management zone has an overlapped call. The greatest percentage of the time the zone is overlapped with one call.
 - 9 percent of the time when a NCFD unit is on an auto/mutual aid run, their district is overlapped with a call. The greatest percentage of the time the zone is overlapped with one call.
 - Aggregately, 28 percent of the time the E31 and E34 fire management zones have an overlapped call. The greatest percentage of the time the zones are overlapped with one call.
- 62 percent of the time one to six-plus calls occur in an hour. The greatest percent of the time (33.5 percent) one call occurs in an hour and the second gretaest percent of the time (18.7 percent) two calls occur in an hour.
- E31 as a single apparatus station and due to the demand in this fire management zone arrived on scene in its first due district only 41.5 percent of the time. The E34 fire management zone was markedly better (73.8 percent). This is because two units (E34, T34) are available to respond out of this station.

The NCFD does have resilliency issues as detailed above. Specifically the workload of the engine companies, aggregate percent of the time each fire management zone has an overlapped call, ability to arrive first in their specific fire management zone due to being out of position due to a previous call or on another call, and that over 50 percent of the day one or two calls occur in an hour that are either single appratus or multiple appratus responses.

One resiliency element the NCFD has built in is the implementation of Squad 33. This unit primarily responds to EMS and lower acuity fire calls for service, which account for a sizable percentage of calls to which the NCFD responds in the city. In 2019, Squad 33 responded to 2,201 runs (21 percent of the NCFD total) and in 2020 this unit responded to 2,098 runs (21 percent of the NCFD total). The greatest percentage of runs Squad 33 made were EMS in each year. Squad 33 did

respond to fire incidents as well, when available, as added staffing to assist in the assembling of an Effective Response Force.

Deploying a unit such as this for specific calls and to augment the assembling of an Effective Response Force for building fires when the unit is available, **is a best practice.**

When implementing this type of unit, which is designed to reduce workload on engine and ladder companies, it is important to measure its efficiency as a single responding company. CPSM analyzed this in the following table. The NCFD Squad program is extremely efficient! In 2019 the Squad arrived with an Engine (dual response) only 8 percent of the time. In 2020 the dual response/arrival occurred on 10 percent of the calls the Squad responded to.

The next table describes the workload for Squad 33 in 2019 and 2020.

TABLE 3-16: Squad 33 Workload in 2019 and 2020

Run Type	2019			2020		
	Dispatched	Arrived	Arrived with Engine	Dispatched	Arrived	Arrived with Engine
Breathing difficulty	273	269	0	278	273	3
Cardiac and stroke	285	279	31	293	283	41
Fall and injury	412	406	2	380	367	6
Illness and other	433	420	10	386	362	8
MVA	86	73	25	66	59	26
OD	47	41	0	55	52	1
Seizure and UNC	237	232	5	215	213	9
EMS Total	1,773	1,720	73	1,673	1,609	94
False alarm	76	66	29	65	56	27
Good intent	12	10	2	20	16	9
Hazard	13	10	5	10	8	4
Outside fire	29	27	18	28	21	11
Public service	37	34	3	33	27	10
Structure fire	23	22	20	23	20	20
Fire Total	190	169	77	179	148	81
Canceled	229	111	9	237	90	12
Aid given	9	5	1	9	2	0
Total	2,201	2,005	160	2,098	1,849	187

Recommendation:

- CPSM recommends the NCFD continue with the Squad program as designed, due to the efficiencies and effectiveness this unit has produced for the city. CPSM further recommends the NCFD monitor dual responses (Squad/Engine) and make any necessary adjustments to maintain a 10 percent ratio. (Recommendation No. 6.)

RISK CATEGORIZATION

A comprehensive risk assessment is a critical aspect of creating standards of cover and can assist the NCFD in quantifying the risks that it faces. Once those risks are known, the department is better equipped to determine if the current response resources are sufficiently staffed, equipped, trained, and positioned.

In this component, the factors that drive the service needs are examined and then link directly to discussions regarding the assembling of an effective response force (ERF) and when contemplating the response capabilities needed to adequately address the existing risks, which encompasses the component of critical tasking.

The risks that the department faces can be natural or manufactured and may be affected by the changing demographics of the community served. With the information available from the CPSM data analysis, the NCFD, the city, and public research, CPSM and the NCFD can begin an analysis of the city's risks and can begin working towards recommendations and strategies to mitigate and minimize their effects. This section contains an analysis of the various risks considered within the NCFD's service area.

Risk is often categorized in three ways: consequence of the event on the community, the probability the event will occur in the community, and the impact on the fire department. The following three tables look at the probability of the event occurring (Table 3-16) which ranges from unlikely to frequent; consequence to the community (Table 3-17), which is categorized as ranging from insignificant to catastrophic; and the impact to the organization (Table 3-18), which ranges from insignificant to catastrophic.

TABLE 3-17: Event Probability

Probability	Chance of Occurrence	Description	Risk Score
Unlikely	2%-25%	Event may occur only in exceptional circumstances.	2
Possible	26%-50%	Event could occur at some time and/or no recorded incidents. Little opportunity, reason, or means to occur.	4
Probable	51%-75%	Event should occur at some time and/or few, infrequent, random recorded incidents, or little anecdotal evidence. Some opportunity, reason, or means to occur; may occur.	6
Highly Probable	76%-90%	Event will probably occur and/or regular recorded incidents and strong anecdotal evidence. Considerable opportunity, means, reason to occur.	8
Frequent	90%-100%	Event is expected to occur. High level of recorded incidents and/or very strong anecdotal evidence.	10

TABLE 3-18: Consequence to Community Matrix

Impact	Consequence Categories	Description	Risk Score
Insignificant	Life Safety	<ul style="list-style-type: none"> 1 or 2 people affected, minor injuries, minor property damage, and no environmental impact. 	2
Minor	Life Safety	<ul style="list-style-type: none"> Small number of people affected, no fatalities, and small number of minor injuries with first aid treatment. Minor displacement of people for <6 hours and minor personal support required. Minor localized disruption to community services or infrastructure for <6 hours. Minor impact on environment with no lasting effects. 	4
	Economic and Infrastructure		
	Environmental		
Moderate	Life Safety	<ul style="list-style-type: none"> Limited number of people affected (11 to 25), no fatalities, but some hospitalization and medical treatment required. Localized displacement of small number of people for 6 to 24 hours. Personal support satisfied through local arrangements. Localized damage is rectified by routine arrangements. Normal community functioning with some inconvenience. Some impact on environment with short-term effects or small impact on environment with long-term effects. 	6
	Economic and Infrastructure		
	Environmental		
Significant	Life Safety	<ul style="list-style-type: none"> Significant number of people (>25) in affected area impacted with multiple fatalities, multiple serious or extensive injuries, and significant hospitalization. Large number of people displaced for 6 to 24 hours or possibly beyond. External resources required for personal support. Significant damage that requires external resources. Community only partially functioning, some services unavailable. Significant impact on environment with medium- to long-term effects. 	8
	Economic and Infrastructure		
	Environmental		
Catastrophic	Life Safety	<ul style="list-style-type: none"> Very large number of people in affected area(s) impacted with significant numbers of fatalities, large number of people requiring hospitalization; serious injuries with long-term effects. General and widespread displacement for prolonged duration; extensive personal support required. Extensive damage to properties in affected area requiring major demolition. Serious damage to infrastructure. Significant disruption to, or loss of, key services for prolonged period. Community unable to function without significant support. Significant long-term impact on environment and/or permanent damage. 	10
	Economic and Infrastructure		
	Environmental		

TABLE 3-19: Impact on NCFD

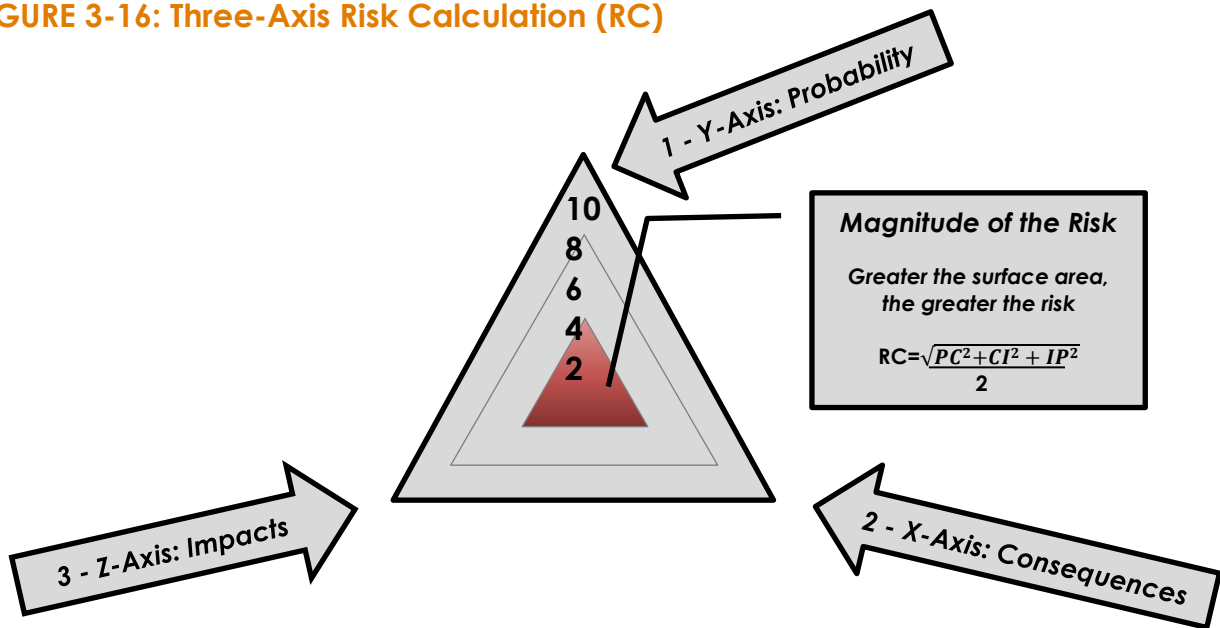
Impact	Impact Categories	Description	Risk Score
Insignificant	Personnel and Resources	One apparatus out of service for period not to exceed one hour.	2
Minor	Personnel and Resources	More than one but not more than two apparatus out of service for a period not to exceed one hour.	4
Moderate	Personnel and Resources	More than 50 percent of available resources committed to incident for over 30 minutes.	6
Significant	Personnel and Resources	More than 75 percent of available resources committed to an incident for over 30 minutes.	8
Catastrophic	Personnel, Resources, and Facilities	More than 90 percent of available resources committed to incident for more than two hours or event which limits the ability of resources to respond.	10

This section also contains an analysis of the various risks considered in the city. In this analysis, information presented and reviewed in this section (All-Hazards Risk Assessment of the Community) have been considered. Risk is categorized as Low, Moderate, High, or Special.

Prior risk analysis has only attempted to evaluate two factors of risk: probability and consequence. Contemporary risk analysis considers the impact of each risk to the organization, thus creating a three-axis approach to evaluating risk as depicted in the following figure. A contemporary risk analysis now includes probability, consequences to the community, and impact on the organization, in this case the NCFD.

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FIGURE 3-16: Three-Axis Risk Calculation (RC)



The following factors/hazards were identified and considered:

- **Demographic factors** such as age, socio-economic, vulnerability.
- **Natural hazards** such as flooding, wind events, wildland fires.
- **Manufactured hazards** such as rail lines, roads and intersections, target hazards.
- **Structural/building risks.**
- **Fire and EMS incident numbers and density.**

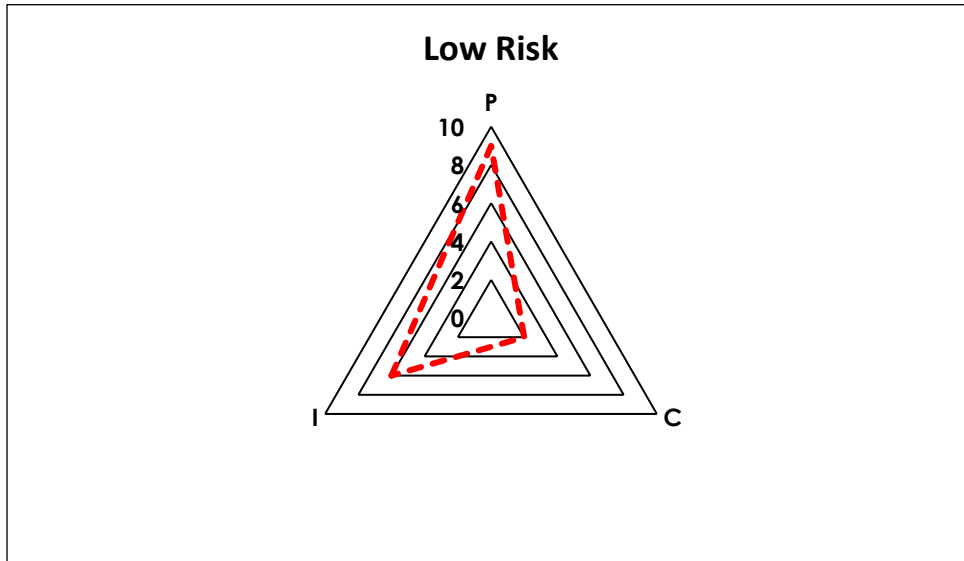
The assessment of each factor and hazard as listed below took into consideration the likelihood of the event, the impact on the city itself, and the impact on NCFD's ability to deliver emergency services, which includes NCFD resiliency and automatic aid capabilities as well. The list is not all inclusive but includes categories most common or that may present to the city and the NCFD.

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Low Risk

- Automatic fire/false alarms.
- Low acuity-BLS EMS Incidents.
- Low-risk environmental event.
- Motor vehicle accident (MVA).
- Good intent/hazard/public service fire incidents with no life-safety exposure.
- Outside fires such as grass, rubbish, dumpster, vehicle with no structural/life-safety exposure.

FIGURE 3-17: Low Risk

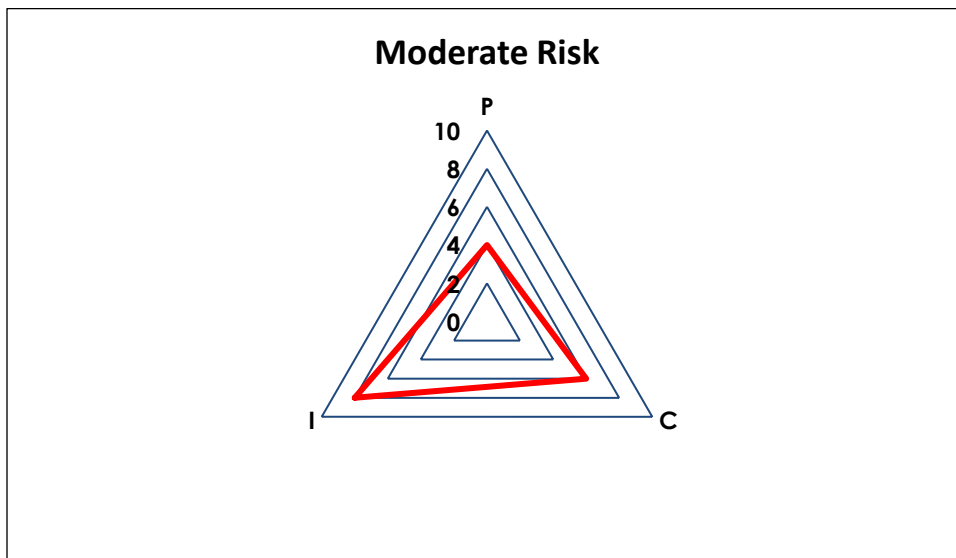


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Moderate Risk

- Fire incident in a single-family dwelling where fire and smoke or smoke is visible, indicating a working fire.
- Suspicious substance investigation involving multiple fire companies and law enforcement agencies.
- ALS EMS incident.
- MVA with entrapment of passengers.
- Grass/brush fire with structural endangerment/exposure.
- Low-angle rescue involving ropes and rope rescue equipment and resources.
- Surface water rescue.
- Good intent/hazard/public service fire incidents with life-safety exposure.
- Rail event with no release of product or fire, and no threat to life safety.

FIGURE 3-18: Moderate Risk

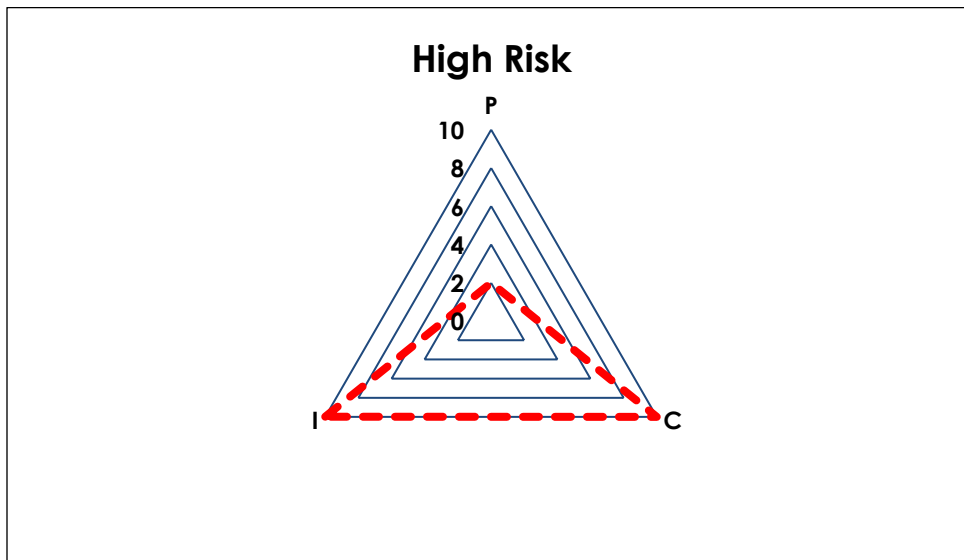


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High Risk

- Working fire in a target hazard.
- Cardiac arrest.
- Mass casualty incident of more than 10 patients but fewer than 25 patients.
- Confined space rescue.
- Structural collapse involving life-safety exposure.
- High-angle rescue involving ropes and rope rescue equipment.
- Trench rescue.
- Suspicious substance incident with multiple injuries.
- Industrial leak of hazardous materials that causes exposure to persons or threatens life safety.
- Weather event that creates widespread flooding, heavy winds, building damage, and/or life-safety exposure.

FIGURE 3-19: High Risk

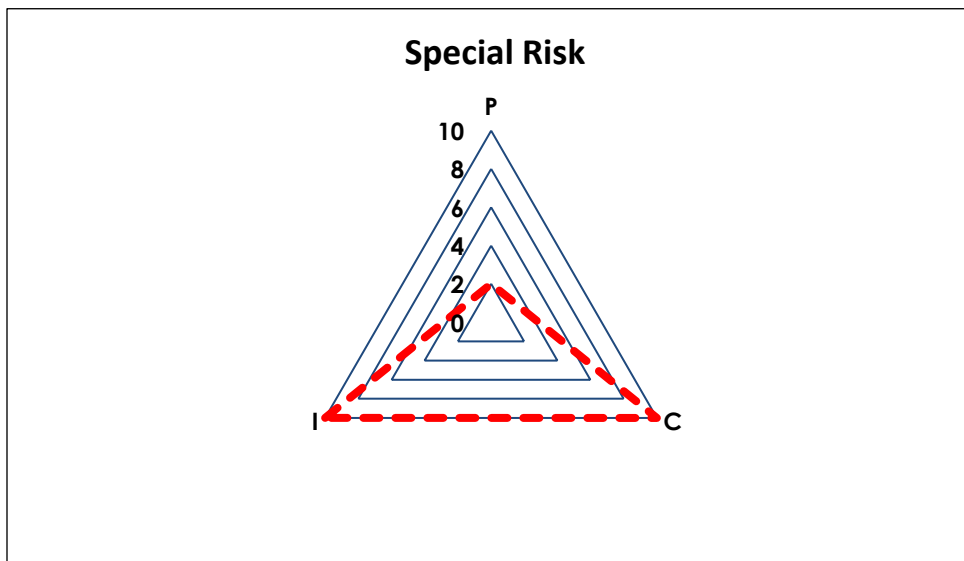


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Special Risk

- Working fire in a structure of more than three floors.
- Fire at an industrial building or complex with hazardous materials.
- Fire in an occupied targeted hazard with special life-safety risks such as age, medical condition, or other identified vulnerabilities.
- Mass casualty incident of more than 25 patients.
- Rail or transportation incident that causes life-safety exposure or threatens life safety through the release of hazardous smoke or materials and evacuation of residential and business occupancies.
- Explosion in a building that causes exposure to persons or threatens life safety or outside of a building that creates exposure to occupied buildings or threatens life safety.
- Massive river/estuary flooding, fire in a correctional or medical institution, high-impact environmental event, pandemic.
- Mass gathering with threat fire and threat to life safety or other civil unrest, weapons of mass destruction release.

FIGURE 3-20: Special Risk



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SECTION 4. STAFFING, DEPLOYMENT, AND PERFORMANCE

When exploring staffing and deployment of fire departments it makes the most sense to design an operational strategy around the actual circumstances that exist in the community and the fire and risk problems that are identified. The strategic and tactical challenges presented by the widely varied hazards that a fire department protects against are identified and planned for through a community risk analysis as described in this report. It is ultimately the responsibility of elected officials working closely with a local government's senior management and Fire Chief to staff and deploy a fire department to the extent possible with available financing to manage the community risk through well-defined operational service goals.

The staffing of fire and EMS companies is a never-ending focus of attention among fire service and governmental leadership. While NFPA 1710 and OSHA provide guidelines (and to some extent the law, specifically OSHA in OSHA states) as to the level of staffing and response of personnel, the adoption of these documents varies from state to state and department to department. NFPA 1710 addresses the recommended staffing in terms of specific types of occupancies and building risks. The needed staffing to conduct the critical tasks for each specific occupancy and risk are defined as an *Effective Response Force* (ERF). The ERF for each of these occupancies is detailed in NFPA 1710 (2020 edition), section 5.2.4, Deployment, and further discussed in this section.

CPSM has researched and compiled eleven staffing and deployment topics we consider to be among the leading industry standards the fire service follows and utilizes when making decisions about staffing and deployment of fire resources. These are:

All-Hazard Risk Assessment of the Community: A fire department collects and organizes risk evaluation information about community risk (population and demographics; environmental; transportation; fire and EMS call demand and call types) and individual property types. The all-hazard community risk and community assessment is used to evaluate the community. With regard to individual property types, the assessment is used to measure all property and the risk associated with that property and then segregate the property as either a high-, medium-, or low-hazard risk depending on factors such as the life and building content hazard, the potential fire flow, and the staffing and apparatus types required to mitigate an emergency in the specific property. Factors such as fire protection systems are considered in each building evaluation. Included in this assessment should be both a structural and nonstructural (weather, wildland-urban interface, transportation routes, rail, mass-transit, etc.) analysis. All factors are then analyzed and the probability of an event occurring, the impact on the fire department, and the consequences on the community are measured and scored.

Population, Demographics, and Socio-economic Factors of a Community: Population and population density is a primary driver of calls for local government service, particularly public safety. The risk from fire is not the same for everyone, with studies telling us age, gender, race, socio-economic factors, and what region in the country one might live in contribute to the risk of death from fire. Studies also tell us these same factors affect demand for EMS, such as the increased use of hospital emergency departments by uninsured or underinsured patients, who rely on emergency services for their primary and emergency care and utilize pre-hospital EMS transport systems as their entry point.

Call Demand: Demand is made up of the types of calls to which fire and EMS units are responding and the location of the calls. This drives workload and station staffing and apparatus considerations. Higher population centers with increased demand and building risk require greater resources.

Workload of Units: This factor involves the types of calls to which units are responding and the workload of each unit in the deployment model. This defines what resources are needed and where; it links to demand and station location, or in a dynamic deployed system, the area(s) in which to post units, and the resiliency of the fire department to respond to multiple calls for service at once or calls for service that require multiple units to respond due to the higher risk.

Travel Times from Fire Stations: Analyzes the ability to cover the fire management zone/response district in a reasonable and acceptable travel time when measured against national benchmarks such as NFPA 1710, 1720, and the ISO-FSRs engine and ladder company grading parameters. This metric links to demand, risk assessment, unit workload, and resiliency.

NFPA Standards, ISO, OSHA, State OSHA requirements (and other national benchmarking).

EMS Demand: Community demand; demand on available units and crews; hospital off-load wait times; demand on non-EMS transport units responding to calls for service (fire/police units); availability of crews in departments that utilize cross-trained EMS staff to perform fire suppression.

Critical Tasking: On-scene capabilities to control and mitigate emergencies is determined by staffing and deployment of certain resources for low-, medium-, and high-risk responses. Critical tasking is the individual or team level task that is required to be performed by on-scene personnel based on the type of incident the firefighting and EMS force is responding to. Critical tasks are to the greatest extent performed simultaneously for a more effective operation aimed at increased firefighter and the public's safety. Those risks/incidents that require more critical tasks to be performed simultaneously drive a larger response force. An example of simultaneous critical tasking is a search and rescue crew and a ventilation crew operating while a crew or crews are advancing attack lines.

Effective Response Force: The ability of the jurisdiction to assemble the necessary personnel on the scene to perform the critical tasks necessary in rapid sequence to mitigate the emergency. The speed, efficiency, and safety of on-scene operations are dependent upon the number of firefighters performing the tasks. If fewer firefighters are available to complete critical on-scene tasks, those tasks will require more time to complete and impact overall operations and the safety of firefighters and the public, and in some cases intensify the spread of fire or the inability to mitigate the non-fire emergency.

Innovations in Staffing and Deployable Apparatus: This is the fire department's ability and willingness to develop and deploy innovative apparatus (combining two apparatus functions into one to maximize available staffing, as an example). Deploying quick response vehicles (light vehicles equipped with medical equipment and some light fire suppression capabilities) on those lower acuity calls (typically the largest percentage of calls) that do not require heavy fire apparatus.

Community Expectations: The gathering of input and feedback from the community, then measuring, understanding, and developing goals and objectives to meet community expectations.

Ability to Fund: The community's understanding of, and its ability and willingness to fund fire and EMS services, while considering how budgetary revenues are divided up to meet all community's expectations.

NFPA 1710 AND TWO-IN/TWO-OUT

National Fire Protection Association (NFPA) standards are consensus standards; they are not mandates nor are they the law. Many cities and countries strive to achieve these standards to the extent possible without causing an adverse fiscal impact to the community and use these standards as benchmarks and service delivery goals.

NFPA 1710 outlines organization and deployment of operations by career, and primarily career fire and rescue organizations.²¹ It serves as a benchmark to measure staffing and deployment of resources to certain structures and emergencies.

According to NFPA 1710, fire departments should base their capabilities on a formal all-hazards community risk assessment, as discussed earlier in this report, and taking into consideration:²²

- Life hazard to the population protected.
- Provisions for safe and effective firefighting performance conditions for the firefighters.
- Potential property loss.
- Nature, configuration, hazards, and internal protection of the properties involved.
- Types of fireground tactics and evolutions employed as standard procedure, type of apparatus used, and results expected to be obtained at the fire scene.

According to NFPA 1710, if a community follows this standard, engine and ladder companies shall be staffed with a minimum of four on-duty members.²³ Additional staffing parameters in this standard for engine and ladder companies is based on geographical isolation and tactical hazards, and increases each to five or six as a minimum.²⁴ This staffing configuration is designed to ensure a fire department can efficiently assemble an effective response force for each risk the department may encounter and complete the critical tasking necessary on building fires and other emergency incidents simultaneously to the extent possible. **NFPA 1710 permits fire departments to use established automatic aid and mutual aid agreements to comply with the assembling of on-scene personnel to complete critical tasks as outlined in the standard.**

Another consideration, and one that links to critical tasking and assembling an effective response force, is that of two-in/two-out regulations. Essentially, prior to starting any fire attack in an immediately dangerous to life and health (IDLH) environment [with no confirmed rescue in progress], the initial two-person entry team shall ensure that there are sufficient resources on-scene to establish a two-person initial rapid intervention team (IRIT) located outside of the building.

This critical tasking model has its genesis with the Occupational Safety and Health Administration, specifically 29 CFR 1910.134(g)(4). The California State Plan also applies to state and local government employers. Federal OSHA covers the issues not covered by the California State Plan.²⁵ The federal rule (29 CFR 1910.134(g)(4)) applies to the NCFD.

21. NFPA 1710 is a nationally recognized standard, but it has not been adopted as a mandatory regulation by the federal government or the State of California. It is a valuable resource for establishing and measuring performance objectives for the City of National City but should not be the only determining factor when making local decisions about the city's fire services.

22. NFPA 1710, 5.2.1.1, 5.2.2.2

23. NFPA 1710, 5.2.3.1.1; 5.2.3.2.1

24. NFPA 1710, 5.2.3.1.2, 5.2.3.1.2.1, 5.2.3.2.2, 5.3.2.3.2.1

25. California State Plan | Occupational Safety and Health Administration (osha.gov)

CFR 1910.134: Procedures for interior structural firefighting. The employer shall ensure that:

(i) At least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times;

(ii) At least two employees are located outside the IDLH atmosphere; and

(iii) All employees engaged in interior structural firefighting use SCBAs.²⁶

According to the standard, one of the two individuals located outside the IDLH atmosphere may be assigned to an additional role, such as incident commander in charge of the emergency or safety officer, so long as this individual is able to perform assistance or rescue activities without jeopardizing the safety or health of any firefighter working at the incident.

NFPA 1500, *Standard on Fire Department Occupational Health, Safety, and Wellness*, 2021 Edition, has similar language as CFR 1910.134(g)(4) to address the issue of two-in/two-out, stating *the initial stages of the incident where only one crew is operating in the hazardous area of a working structural fire, a minimum of four individuals shall be required consisting of two members working as a crew in the hazardous area and two standby members present outside this hazard area available for assistance or rescue at emergency operations where entry into the danger area is required.*²⁷

NFPA 1500 also speaks to the utilization of the two-out personnel in the context of the health and safety of the firefighters working at the incident. *The assignment of any personnel including the incident commander, the safety officer, or operations of fire apparatus, shall not be permitted as standby personnel if by abandoning their critical task(s) to assist, or if necessary, perform rescue, this clearly jeopardizes the safety and health of any firefighter working at the incident.*²⁸

In order to meet CFR 1910.134(g)(4), and NFPA 1500, the NCFD must utilize two personnel to commit to interior fire attack while two firefighters remain out of the hazardous area or immediately dangerous to life and health (IDLH) area to form the Initial Rapid Intervention Team (IRIT), while attack lines are charged, and a continuous water supply is established.

However, NFPA 1500 allows for fewer than four personnel under specific circumstances. It states: *Initial attack operations shall be organized to ensure that if on arrival at the emergency scene, initial attack personnel find an imminent life-threatening situation where immediate action could prevent the loss of life or serious injury, such action shall be permitted with fewer than four personnel.*²⁹

CFR 1910.134(g)(4) also states that nothing in section (g) is meant to preclude firefighters from performing emergency rescue activities before an entire team has assembled.³⁰

It is also important to note that the OSHA standard (and NFPA 1710) specifically references "interior firefighting." Firefighting activities that are performed from the exterior of the building are not regulated by this portion of the OSHA standard. However, in the end, the ability to assemble adequate personnel, along with appropriate apparatus, on the scene of a structure fire, is critical to operational success and firefighter safety.

26. CFR 1910.134 (g) 4

27. NFPA 1500, 2021, 8.8.2.

28. NFPA 1500, 2021, 8.8.2.5.

29. NFPA 1500, 2021 8.8.2.10.

30. CFR 190.134, (g).

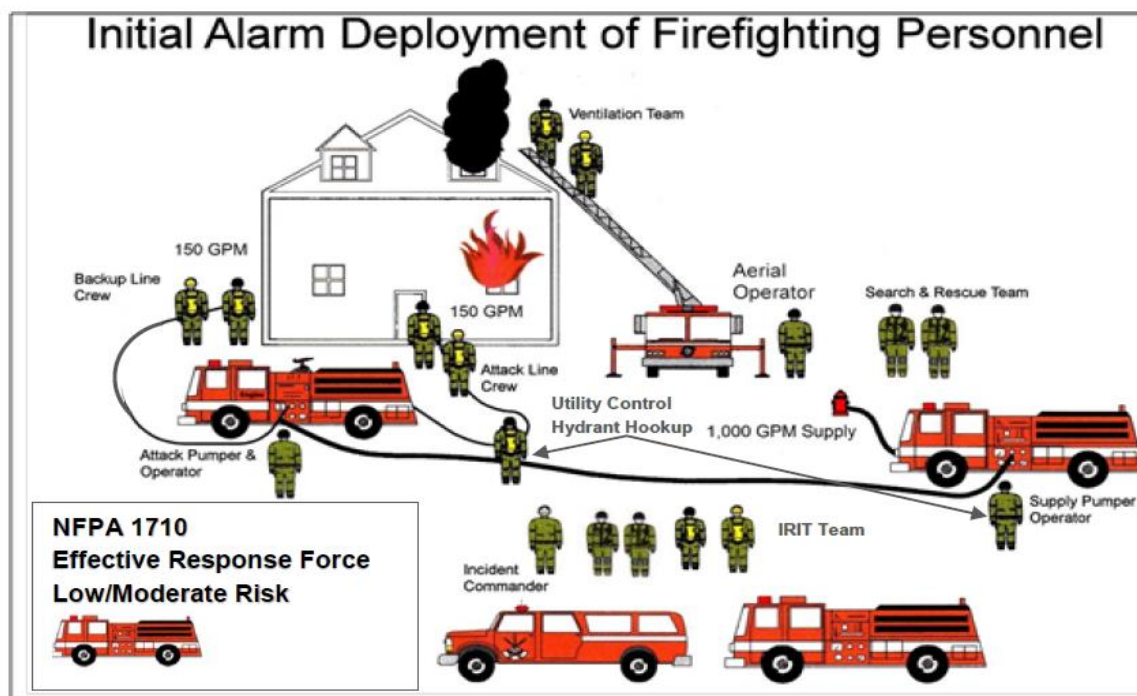
EFFECTIVE RESPONSE FORCE AND CRITICAL TASKING

Critical tasks are those activities that must be conducted on time and preferably simultaneously by responders at emergency incidents to control the situation and minimize/stop loss (property and life-safety). Critical tasking for fire operations is the minimum number of personnel needed to perform the tasks needed to effectively control and mitigate a fire or other emergency. To be effective, critical tasking must assign enough personnel so that all identified functions can be performed simultaneously. However, it is important to note that initial response personnel may manage secondary support functions once they have completed their primary assignment. Thus, while an incident may end up requiring a greater commitment of resources or a specialized response, a properly executed critical tasking assignment will provide adequate resources to immediately begin bringing the incident under control.

The specific number of people required to perform all the critical tasks associated with an identified risk or incident type is referred to as an Effective Response Force (ERF). The goal is to deliver an ERF within a prescribed period. NFPA 1710 provides the benchmarks for effective response forces.

The next figure illustrates an ERF for a single family dwelling as outlined in NFPA 1710 (which is 16 personnel, 17 if the aerial device is in operation).

FIGURE 4-1: Effective Response Force for Single-Family Dwelling Fire



NCFD Staffing Model

The NCFD has three operational shifts, A, B, and C. Each of the shifts is staffed with five firefighters, three engineers, four captains (company officer), and one Battalion Chief (shift commander), for an on-duty operational response force of 13 personnel.

The following table details the positions for each shift.

TABLE 4-1: NCFD Shift Matrix

A Shift (24-Hour Shift)	B Shift (24-Hour Shift)	C Shift (24-Hour Shift)
E31 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 1 Firefighter 	E31 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 1 Firefighter 	E31 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 1 Firefighter
E34 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 1 Firefighter 	E34 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 1 Firefighter 	E34 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 1 Firefighter
L34 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 2 Firefighters 	L34 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 2 Firefighters 	L34 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Engineer ■ 2 Firefighters
Squad 33 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Firefighter 	Squad 33 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Firefighter 	Squad 33 <ul style="list-style-type: none"> ■ 1 Captain ■ 1 Firefighter
<ul style="list-style-type: none"> ■ BC: 1 Battalion Chief 	<ul style="list-style-type: none"> ■ BC: 1 Battalion Chief 	<ul style="list-style-type: none"> ■ BC: 1 Battalion Chief

The following discussion and tables will outline how critical tasking and assembling an effective response force is first measured in NFPA 1710, and how the NCFD is benchmarked against this standard for the building types existing in National City. This discussion will cover single-family dwelling buildings, open-air strip mall buildings, and apartment buildings as outlined in the NFPA standard. As discussed above, for certain responses the NCFD relies on automatic aid to assemble an Effective Response Force. NCFD tables are built using the first alarm assignment in accordance with the San Diego Metro Zone Response Plan Matrix.

Single-Family Dwelling: NFPA 1710, 5.2.4.1

The initial full alarm assignment (ERF) to a structural fire in a typical 2,000 square-foot, two-story, single-family dwelling without a basement and with no exposures must provide for a minimum of 16 members (17 if an aerial device is used). The following table outlines the critical task matrix.

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TABLE 4-2: Effective Response Force for Single-Family Dwelling Fire

Critical Tasks	Personnel
Incident Command	1
Continuous Water Supply	1
Fire Attack via Two Handlines	4
Hydrant Hook Up – Forcible Entry – Utilities	2
Primary Search and Rescue	2
Ground Ladders and Ventilation	2
Aerial Operator if Aerial is Used	1
Establishment of IRIC (Initial Rapid Intervention Crew)	4
Total Effective Response Force	16 (17 If aerial is used)

The following table outlines how the NCFD assembles staffing and deployable resources as measured against NFPA 1710 benchmarking for an effective response force for a single-family dwelling fire. NCFD units are highlighted.

TABLE 4-3: NCFD Effective Response Force for Single-Family Dwelling Fire

Apparatus	Personnel
NCFD Battalion Chief	1
Auto Aid Battalion Chief	1
NCFD Engine	3
NCFD Engine	3
Auto Aid Engine	4
Auto Aid Engine	4
NCFD Ladder	4
1-ALS unit	2
Total NCFD ERF	22

**San Diego Metro Zone Response Plan Matrix
Residential Structure Fire**

1ST ALARM					
NAT	SND	IMP	POW	CHV	CRD
4 E	4 E	4 E	4 E	4 E	4 E
1 T	1 T	1 T	1 T	1 T	1 T
2 BC	2 BC	2 BC	2 BC	2 BC	2 BC
1 ALS	1 ALS	1 ALS	1 ALS	USAR53	1 ALS
				1 ALS*	
				*Workng Fire	

As a single responding agency, NCFD does not meet the minimum benchmarks of NFPA 1710 for an Effective Response Force for single-family dwelling fires. With regional automatic aid, the NCFD does meet this benchmark. **NFPA 1710 permits fire departments to use established automatic aid and mutual aid agreements to comply with section 5.2 of this standard.**³¹

Open-Air Strip Mall/Commercial, NFPA 5.2.4.2

The initial full alarm assignment (ERF) to a structural fire in a typical open-air strip center/commercial structure ranging from 13,000 square feet to 196,000 square feet in size must provide for a minimum of 27 members (28 if an aerial device is used). The following table outlines the critical tasking matrix for this type of fire. This can also be typed as a commercial building fire response.

31. NFPA 1710. 5.2.1.3

TABLE 4-4: Effective Response Force for Open-Air Strip Mall/Commercial Fire

Critical Tasks	Personnel
Incident Command	2
Continuous Water Supply	2
Fire Attack via Two Handlines	6
Hydrant Hook Up – Forcible Entry - Utilities	3
Primary Search and Rescue	4
Ground Ladders and Ventilation	4
Aerial Operator if Aerial is Used	1
Establishment of IRIC (Initial Rapid Intervention Crew)	4
Medical Care Team	2
Total Effective Response Force	27 (28 If aerial is used)

The following table outlines how the NCFD assembles staffing and deployable resources as measured against NFPA 1710 benchmarking for an effective response force for an open-air strip mall and commercial building fire. NCFD units are highlighted.

TABLE 4-5: NCFD Effective Response Force for Open-Air Strip Mall/Commercial Fire

Apparatus	Personnel
NCFD Battalion Chief	1
Auto Aid Battalion Chief	1
NCFD Engine	3
NCFD Engine	3
Auto Aid Engine	4
Auto Aid Engine	4
NCFD Ladder	4
Auto Aid Ladder	4
1 ALS unit	2
Total NCFD ERF	26

**San Diego Metro Zone Response Plan Matrix
Commercial Structure Fire**

1ST ALARM					
NAT	SND	IMP	POW	CHV	CRD
4 E	E 4	4 E	4 E	4 E	4 E
2 T	2 T	2 T	2 T	2 T	2 T
2 BC	2 BC	2 BC	2 BC	2 BC	2 BC
1 ALS	1 ALS	1 ALS	1 ALS	USAR53	1 ALS
				1 ALS*	
				**Working Fire	

As a single responding agency, NCFD does not meet the minimum benchmarks of NFPA 1710 for an Effective Response Force for an open-air strip mall fire. With regional automatic aid, the NCFD does not meet the benchmark (minus 2 FFs). **NFPA 1710 permits fire departments to use established automatic aid and mutual aid agreements to comply with section 5.2 of this standard.**³²

Apartment Building, NFPA 5.2.4.3

The initial full alarm assignment (ERF) to a structural fire in a typical 1,200 square-foot apartment within a three-story, garden-style apartment building must provide for a minimum of 27 members (28 if an aerial device is used). The following table outlines the critical tasking matrix for this type

32. NFPA 1710. 5.2.1.3

of building fire. The NCFD has no specific response matrix for apartment buildings, so we utilized the NFPA commercial fire ERF matrix as it has similar staffing.

TABLE 4-6: Effective Response Force for Apartment Building Fire

Critical Tasks	Personnel
Incident Command	2
Continuous Water Supply	2
Fire Attack via Two Handlines	6
Hydrant Hook Up – Forcible Entry – Utilities	3
Primary Search and Rescue	4
Ground Ladders and Ventilation	4
Aerial Operator if Aerial is Used	1
Establishment of IRIC (Initial Rapid Intervention Crew)	4
Medical Care Team	2
Total Effective Response Force	27 (28 If aerial is used)

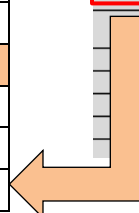
The following table outlines how the NCFD assembles staffing and deployable resources as measured against NFPA 1710 benchmarking for an effective response force for an apartment building or other multi-unit housing type building fire. NCFD units are highlighted.

TABLE 4-7: NCFD Effective Response Force for Apartment Building Fire

Apparatus	Personnel
NCFD Battalion Chief	1
Auto Aid Battalion Chief	1
NCFD Engine	3
NCFD Engine	3
Auto Aid Engine	4
Auto Aid Engine	4
NCFD Ladder	4
Auto Aid Ladder	4
1 ALS unit	2
Total NCFD ERF	23-26

**San Diego Metro Zone Response Plan Matrix
Apartment-Commercial Structure Fire**

1ST ALARM					
NAT	SND	IMP	POW	CHV	CRD
4 E	E 4	4 E	4 E	4 E	4 E
2 T	2 T	2 T	2 T	2 T	2 T
2 BC	2 BC	2 BC	2 BC	2 BC	2 BC
1 ALS	1 ALS	1 ALS	1 ALS	USAR53	1 ALS
				1 ALS*	
				*Workng Fire	



As a single responding agency, NCFD does not meet the minimum benchmarks of NFPA 1710 for an Effective Response Force for an apartment building fire. With regional automatic aid, the NCFD does not meet the benchmark (minus 2 FFs). **NFPA 1710 permits fire departments to use established automatic aid and mutual aid agreements to comply with section 5.2 of this standard.**³³

33. NFPA 1710. 5.2.1.3

High-Rise, NFPA 1710 5.2.4.4

The initial full alarm assignment to a fire in a building where the highest floor is greater than 75 feet above the lowest level of fire department vehicle access must provide for a minimum of 42 members (43 if the building is equipped with a fire pump).

TABLE 4-8: Structure Fire – High Rise

Critical Tasks	Personnel
Incident Command	2
Continuous Water Supply	1 FF for continuous water; if fire pump exists, 1 additional FF required.
Fire Attack via Two Handlines	4
One Handline above the Fire Floor	2
Establishment of IRIC (Initial Rapid Intervention Crew)	4
Primary Search and Rescue Teams	4
Entry Level Officer with Aide near entry point of Fire Floor	2
Entry Level Officer with Aide near the entry point above the Fire Floor	2
Two Evacuation Teams	4
Elevator Operations	1
Safety Officer	1
FF Two Floors below Fire to Coordinate Staging	1
Rehabilitation Management	2
Officer and FFs to Manage Vertical Ventilation	4
Lobby Operations	1
Transportation of Equipment below Fire Floor	2
Officer to Manage Base Operations	1
Two ALS Medical Care Teams	4
Total Effective Response Force	42 (43 If building is equipped with pump)

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TABLE 4-9: NCFD Effective Response Force for High-Rise Fire

Apparatus	Personnel
NCFD Battalion Chief	1
Auto Aid Battalion Chief	1
NCFD Engine	3
NCFD Engine	3
Auto Aid Engine	4
Auto Aid Engine	4
Auto Aid Engine	4
NCFD Ladder	4
Auto Aid Ladder	4
1 Rescue	4
1 ALS unit	2
Total NCFD ERF	34

**San Diego Metro Zone Response Plan Matrix
High Rise Structure Fire**

1ST ALARM					
NAT	SND	IMP	POW	CHV	CRD
5 E	5 E	5 E	5 E	5 E	4 E
2 T	2 T	2 T	2 T	2 T	2 T
2 BC	2 BC	2 BC	2 BC	2 BC	2 BC
1 R	1 R		1 R	USAR53	1 ALS
1 ALS	1 ALS		1 ALS	T53	
				1 ALS*	
				*Working Fire	

As a single responding agency, NCFD does not meet the minimum benchmarks of NFPA 1710 for an Effective Response Force for a high-rise fire. With regional automatic aid, the NCFD does not meet this benchmark. **NFPA 1710 permits fire departments to use established automatic aid and mutual aid agreements to comply with section 5.2 of this standard.**³⁴

Recommendations:

- CPSM recommends the NCFD, to the extent possible and if practical depending on available automatic and mutual aid resources, work with regional Fire Chiefs to increase response resources to commercial, apartment, and high-rise fire responses that align more closely with the NFPA 1710 standard. (Recommendation No. 7.)
- CPSM further recommends due to the following factors: demand for service on the NCFD; population density that includes substantial current and projected vertical density structures, many involving assisted and/or senior living; building and other risks identified in this report such as the San Diego Port property; industrial and commercial properties that include heavy rail and tractor-trailer transportation; proposed industrial and commercial properties; the resiliency issues the department faces due to demand for service; and to increase NCFD resources regarding assembling an Effective Response Force, that the city develop a one- to three-year funding plan to increase staffing on Engine 31 to four per shift (three total personnel with estimated salary costs of \$263,000) as this is a single station response unit in a high-demand fire management zone, and in the subsequent three- to five-year period develop a funding plan to increase staffing on Engine 34 to four per shift (three total personnel with estimated costs of \$263,000 to \$300,000, depending on implementation year). (Recommendation No. 8.)

34. NFPA 1710. 5.2.1.3

NCFD RESPONSE TIMES

Response times are typically utilized as a primary measurement for evaluating fire and EMS services. Response times are used as a benchmark to determine how well a fire department is currently performing, to help identify response trends, and to predict future operational needs and station placement. Achieving the quickest and safest response times possible should be a fundamental goal of every fire department.

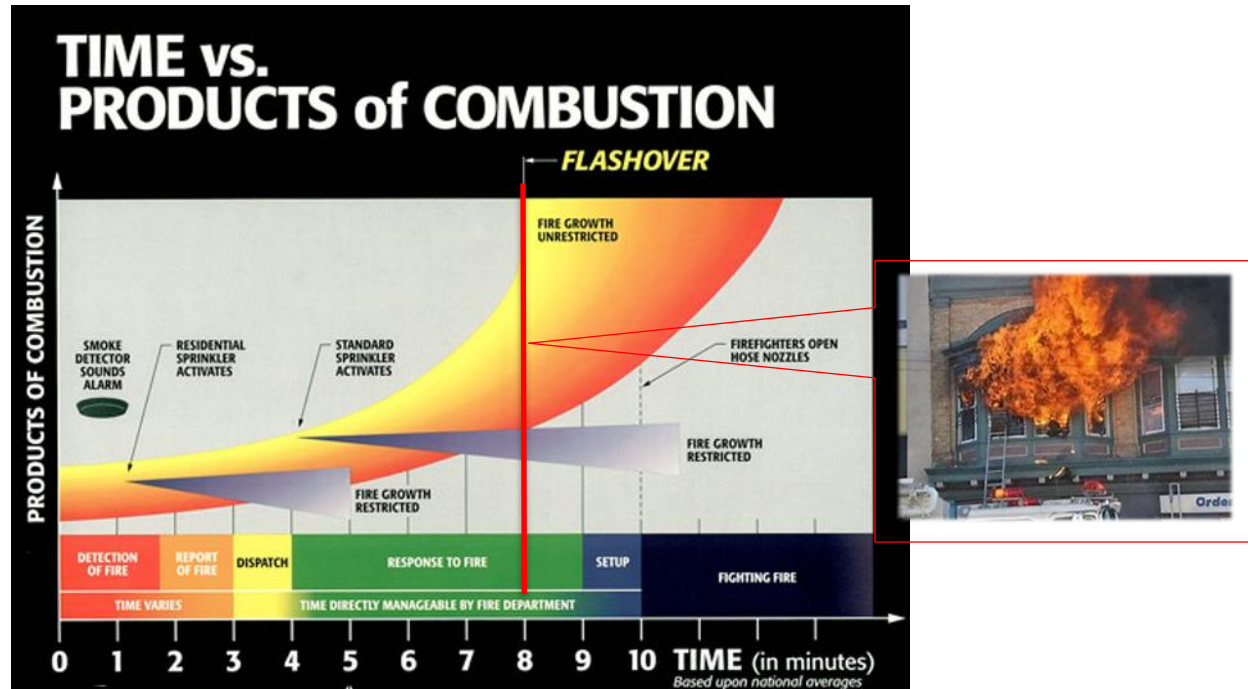
Fire incident response time criterion is linked to the concept of “flashover.” This is the state at which super-heated gasses from a fire are released rapidly, causing the fire to burn freely, and become so volatile that the fire reaches an explosive state (simultaneous ignition of all the combustible materials in a room). In this situation, usually after an extended period (often eight to twelve minutes after ignition but at times as quickly as five to seven minutes), and a combination of the right conditions (fuel and oxygen), the fire expands rapidly and is much more difficult to contain. When the fire does reach this extremely hazardous state, initial firefighting forces are often overwhelmed, larger and more destructive fire occurs, the fire escapes the room and possibly even the building of origin, and significantly more resources are required to affect fire control and extinguishment.

Flashover occurs more quickly and more frequently today and is caused at least in part by the introduction of significant quantities of plastic and foam-based products into homes and businesses (e.g., furnishings, mattresses, bedding, plumbing and electrical components, home and business electronics, decorative materials, insulation, and structural components). These materials ignite and burn quickly and produce extreme heat and toxic smoke.

The next figure illustrates the time progression of a fire from inception (event initiation) through flashover. The time-versus-products of combustion curve shows activation times and effectiveness of residential sprinklers (approximately one minute), commercial sprinklers (four minutes), flashover (eight to ten minutes), and firefighters applying first water to the fire after notification, dispatch, response, and set up (ten minutes).

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FIGURE 4-2: Fire Growth from Inception to Flashover³⁵



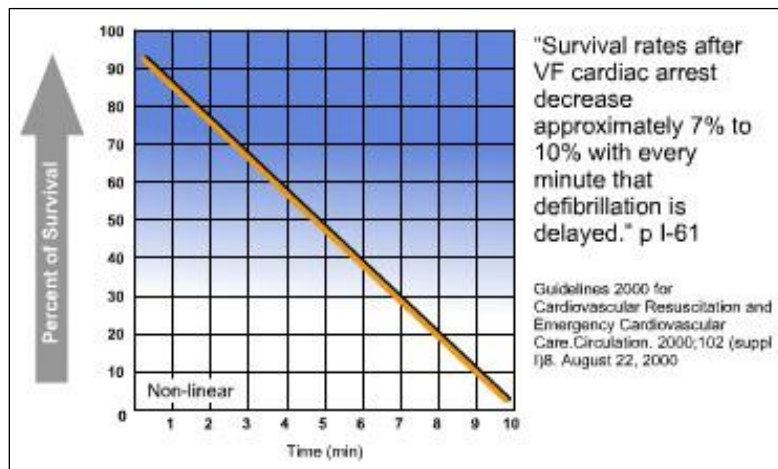
EMS response times are measured differently than fire service response times. Where the fire service uses NFPA 1710 as a response time benchmarking document, the focus for EMS is and should be directed to the evidence-based research relationship between clinical outcomes and response times. Much of the current research suggests response times have reduced impact on clinical outcomes outside of a small segment of call types. These include cerebrovascular accidents (stroke); injury or illness compromising the respiratory system; injury or illness compromising the cardiovascular system to include S-T segment elevation emergencies, high-acuity medical and pediatric emergencies; cardiac and respiratory arrest; and certain high-risk obstetrical emergencies to name a few. Each requires rapid response times, rapid on-scene treatment and packaging for transport, and rapid transport to the hospital.

The next figure illustrates the chance of survival from the onset of cardiac arrest, largely due to ventricular fibrillation in terms of minutes without emergency defibrillation delivered by the public or emergency responders. The chance of survival has not changed over time since this graphic was first published by the American Heart Association in 2000.

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35. Source: <https://www.slideserve.com/tavon/the-international-society-of-fire-service-instructors>

FIGURE 4-3: Cardiac Arrest Survival Probability by Minute



A crucial factor in the whole response time question is what we term “**detection time**.” This is the time it takes to detect a fire or a medical situation and notify 911 to initiate the response. In many instances, particularly at night or when automatic detection systems (fire sprinklers and smoke detectors) are not present or inoperable, the fire detection process can be extended. The same holds true for EMS incidents. Many medical emergencies are often thought to be something minor by the patient, treated with home remedies, and the true emergency goes undetected until signs and symptoms are more severe. When the fire-EMS department responds, they often find these patients in acute states. Fires that go undetected and are allowed to expand in size become more destructive, are difficult to extinguish, and require more resources for longer periods of time.

For the purpose of this analysis, **response time** is a product of three components: **dispatch time**, **turnout time**, and **travel time**.

For this study, and unless otherwise indicated, response times and travel times measure the first arriving unit only. The primary focus of this section is the dispatch and response time of the first arriving units for calls responded to with lights and sirens.

Dispatch time is the difference between the time a call is received and the earliest time an agency is dispatched. Dispatch time includes call processing time, which is the time required to determine the nature of the emergency and the types of resources to dispatch. The NFPA 1710 standard for this component of response times is the event is processed and dispatched in:

- ≤ 64 seconds 90 percent of the time.
- ≤ 106 seconds 95 percent of the time.
- Special call types
 - ≤ 90 seconds 90 percent of the time.
 - ≤ 120 seconds 99 percent of the time.

The next component of response time is **turnout time**, an aspect of response which is controlled by the responding fire department. NFPA 1710 states that turnout time shall be:

- ≤ 80 seconds (1.33 minutes) for fire and special operations 90 percent of the time.
- ≤ 60 seconds (1.0 minute) for EMS responses.

The last component of response time is **travel time**, an aspect of response time that is affected by factors such as station location, road conditions, weather, and traffic control systems. NFPA 1710 states that travel time for the first arriving fire suppression unit to a fire incident shall be:

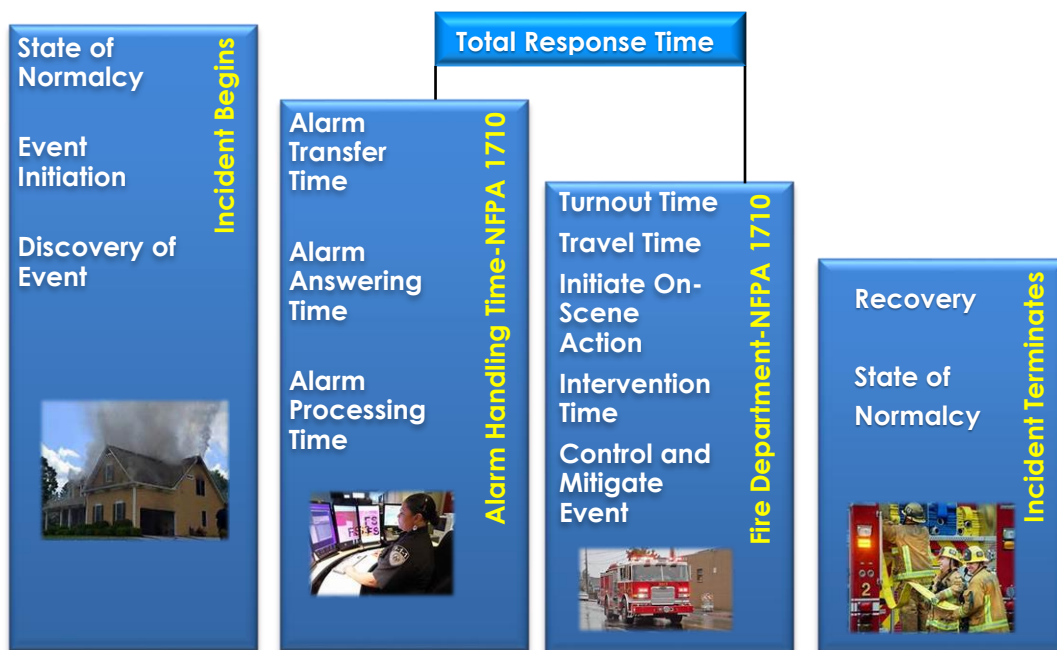
- ≤ 240 seconds for the first arriving engine company to a fire suppression incident 90 percent of the time.
- ≤ 360 seconds for the second company 90 percent of the time.
- ≤ 480 seconds to assemble the initial first alarm assignment on scene 90 percent of the time for low/medium hazards, and 610 seconds for high-rise fire incidents 90 percent of the time.

For EMS incidents the standard NFPA 1710 standard establishes a travel time of:

- ≤ 240 seconds for the first arriving engine company with automatic external defibrillator (AED) or higher level capability.
- ≤ 480 seconds or less travel time of an Advanced Life Support (ALS) unit at an EMS incident where the service is provided by the fire department provided a first responder with an AED or basic life support unit arrived in 240 seconds or less travel time.

The following figure provides an overview of the fire department incident cascade of events and further describes the total cascade of events and their relationship to the total response time of a fire incident.

FIGURE 4-4: Incident Cascade of Events



Travel time is key to understanding how fire and EMS station location influences a community's aggregate response time performance. Travel time can be mapped when existing and proposed station locations are known. The location of responding units is one key factor in response time; reducing response times, which is typically a key performance measure in determining the efficiency of department operations, often depends on this factor. The goal of placement of a single fire station or creating a network of responding fire stations in a single

community is to optimize coverage with short travel distances, when possible, while giving special attention to natural and manmade barriers, and response routes that can create response-time problems.³⁶ This goal is generally budget-driven and based on demand intensity of fire and EMS incidents, travel times, and identified risks.

As already discussed, the NCFD responds fire suppression units (engines/ladder/squad) from three stations and receives automatic aid from surrounding jurisdictions. This section expands on the earlier discussion on travel times and depicts how travel times of 240, 360, and 480 seconds look when mapped from the current fire station locations. Illustrating response time is important when considering the location from which assets should be deployed. When historic demand is coupled with risk analysis, a more informed decision can be made.

The following figures use GIS mapping to illustrate travel time bleeds using the existing street network from the current NCFD stations. CPSM also mapped the travel time projections from primary auto aid stations that may respond into National City.

The GIS data for streets includes speed limits for each street segment and allows for “U-turns” for dead-end streets and intersections, as well as other travel obstacles.

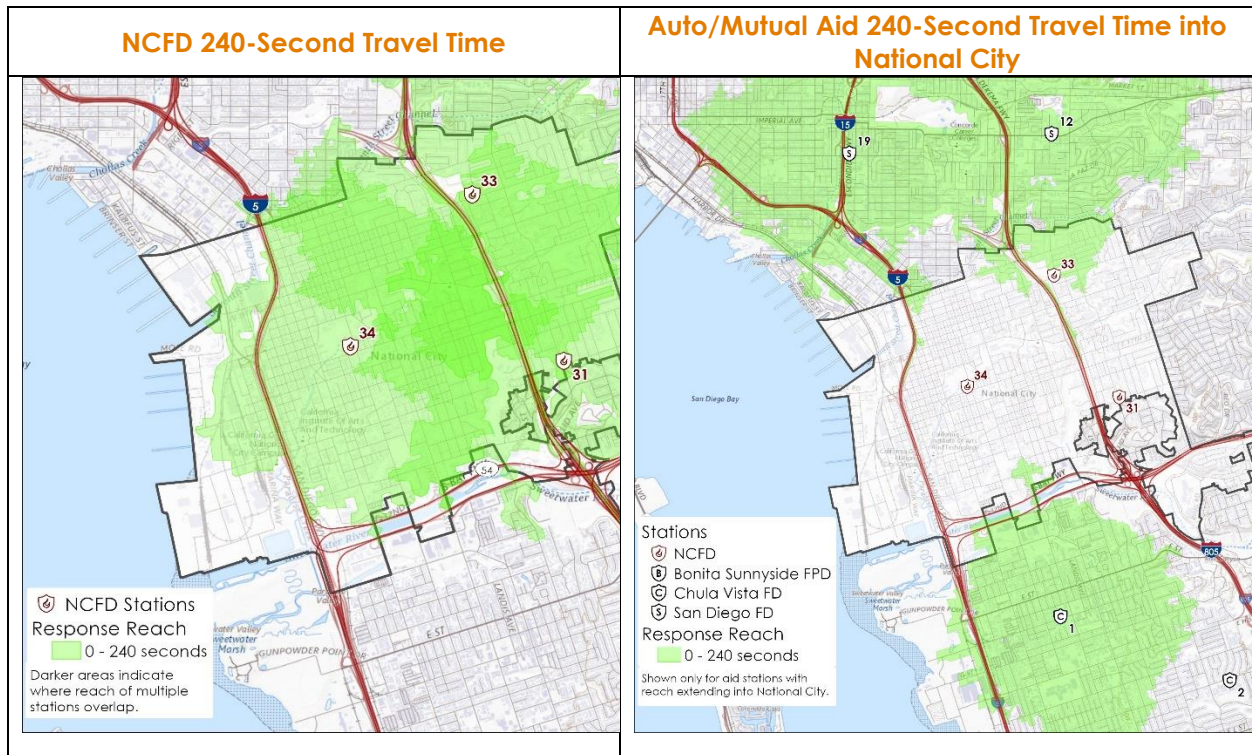
It is important to understand that measuring and analyzing response times and response time coverage are measurements of performance. When we discussed community risk above, we identified that the NCFD like most other fire departments in the nation is an all-hazards response agency. While different regions of the country respond to different environmental risks, the remaining hazards that fire departments confront remain the same. Linking response data to community risks lays the foundation for future fire department planning in terms of fire station location, the need for additional fire stations, and staffing levels whether supplied by the fire department or a combination of a city's fire department and automatic aid. Managing fire department response capabilities to the identified community's risk focuses on three components which are:

- Having a full understanding of the total risk in the community and how each risk impacts the fire department in terms of resiliency, what the consequences are to the community and fire department should a specific risk or combination of two or more occur and preparing for and understanding the probability that the risk may occur.
- Linking risk to the deployment of resources to effectively manage every incident. This includes assembling an Effective Response Force for the response risk in measurable times benchmarked against NFPA standards, deploying the appropriate apparatus (engines, ladders, heavy rescues, ambulances), and having a trained response force trained to combat a specific risk.
- Understanding that each element of response times plays a role in the management of community risk. Low response times of the initial arriving engine and low time to assemble an Effective Response Time on fire and other incidents is associated with positive outcomes.

36. NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Departments*, 2020 Edition.

The following figure looks at the travel time projection at 240 seconds from NCFD stations and the primary auto aid stations that respond into National City. From the NCFD stations, all but the western edges of the city are covered as benchmarked against the NFPA standard. These areas are largely industrial. In the central and central east portions of the city there is good overlap by NCFD stations, which supports resiliency. Auto/mutual aid stations do not have an impact other than the northeast portion of the city.

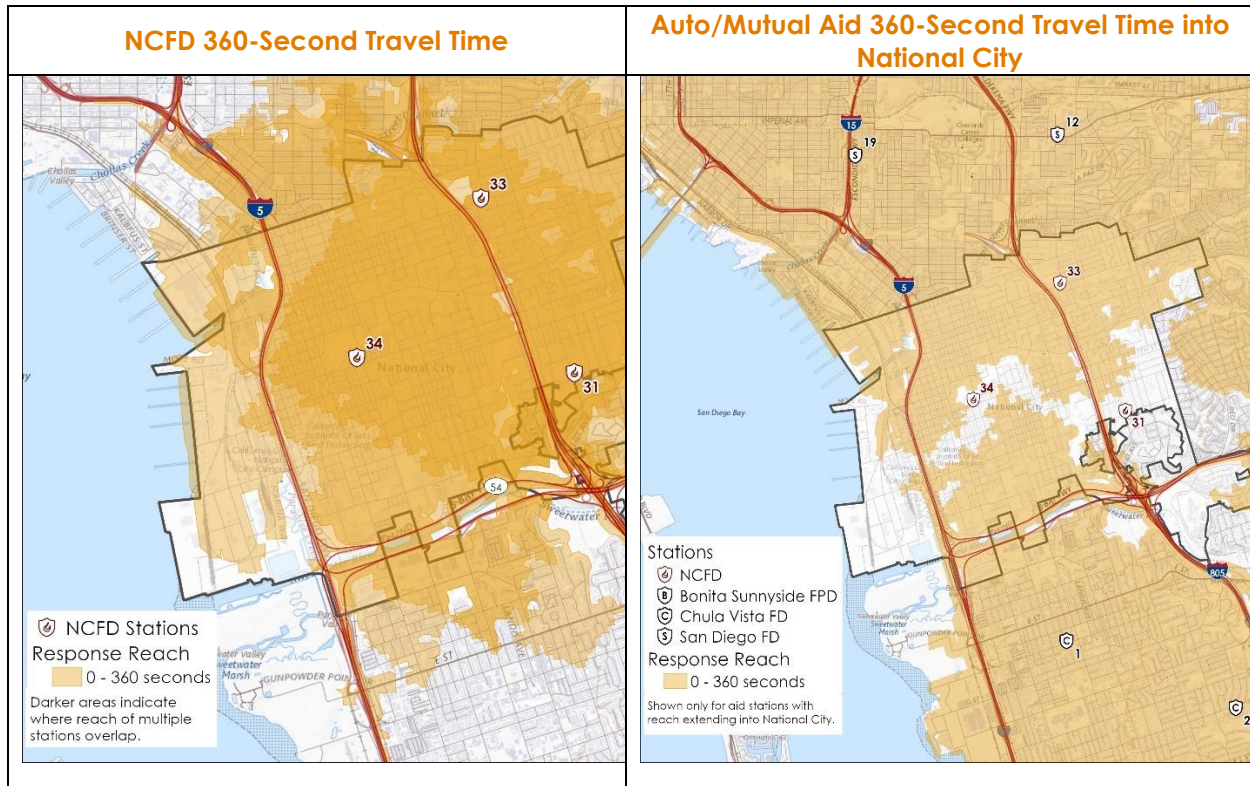
FIGURE 4-5: 240-Second Travel Time Maps



The next figure shows travel time projections at 360 seconds, which in the NFPA 1710 standard is the time benchmark for the second fire company to arrive on the scene in less than or equal to 360 seconds 90 percent of the time. This standard links to the two-in/two-out regulation from OSHA and NFPA 1500 standards, as well as the initial critical tasking and the early assembly of an Effective Response Force for the incident. This figure compares the 360-second response from the NCFD stations and as well from the primary auto aid stations that respond into National City.

From the NCFD stations, nearly 100 percent of the city is covered as benchmarked against the NFPA standard. Station 33 is included here as Squad 33 counts as a second arriving fire unit per the standard. Auto/mutual aid stations have a positive impact in meeting this benchmark in a substantial share of the north and south areas of the city.

FIGURE 4-6: 360-Second Travel Time Maps

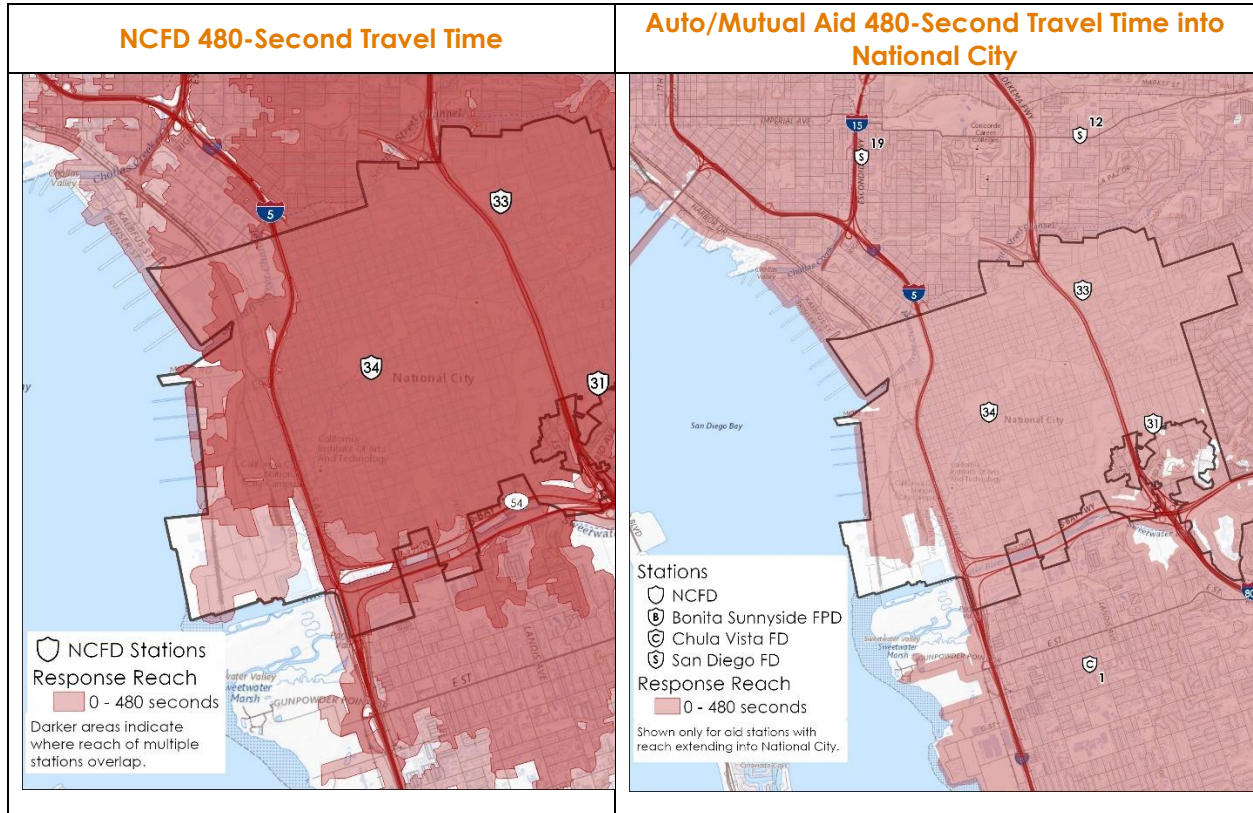


The next figure looks at the travel time bleeds of 480 seconds, which in the NFPA 1710 standard is the time benchmark for the assembly of the initial first alarm assignment on scene in 480 seconds or less 90 percent of the time for low/medium hazards. This standard links to the incident critical tasking and the assembly of an Effective Response Force for the incident. This figure shows the 480 seconds response bleed from the NCFD stations and the primary auto aid stations that respond into National City.

These maps show us that together, NCFD and auto/mutual aid stations cover the city nearly 100 percent, with small gaps in the northeast and northwest corners. As the city is covered at 480 seconds, at the 610 second mark for high-rise incidents, the city is covered as well under the response standard (number of companies) the regional response plan designates for National City.

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FIGURE 4-7: 480-Second Travel Time Maps



The next two tables depict the NCFD's turnout, travel, and total response times for 2019 and 2020 as an average and at the 90th percentile as benchmarked against the NFPA 1710 standard.

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TABLE 4-9: Average Response Time of First Arriving Unit, by Call Type, 2019 and 2020

Call Type	2019					2020				
	Minutes				Calls	Minutes				Calls
	Dispatch	Turnout	Travel	Total		Dispatch	Turnout	Travel	Total	
False alarm	1.7	1.2	3.5	6.4	300	1.8	1.1	3.9	6.8	203
Good intent	2.3	1.1	5.3	8.7	51	2.0	1.1	4.4	7.6	75
Hazard	1.7	1.2	4.0	6.9	47	1.7	1.0	3.4	6.1	33
Outside fire	1.7	1.3	3.6	6.5	123	1.8	1.2	4.1	7.0	160
Public service	2.3	1.1	4.1	7.5	112	2.0	1.1	4.3	7.3	126
Structure fire	2.2	1.0	2.6	5.8	30	1.7	0.9	3.3	5.8	29
Fire Total	1.9	1.2	3.7	6.8	663	1.8	1.1	4.0	7.0	626
EMS Total	2.0	1.0	3.3	6.4	4,991	2.1	1.1	3.7	6.8	4,738
Total	2.0	1.1	3.4	6.5	5,654	2.1	1.1	3.7	6.9	5,364

TABLE 4-10: 90th Percentile Response Time of First Arriving Unit, by Call Type, 2019 and 2020

Call Type	2019					2020				
	Dispatch	Turnout	Travel	Total	Calls	Dispatch	Turnout	Travel	Total	Calls
False alarm	2.7	2.1	5.5	8.7	300	2.9	2.0	6.1	9.4	203
Good intent	4.7	1.7	10.6	13.8	51	3.6	2.0	6.4	11.0	75
Hazard	2.7	2.0	5.8	10.8	47	3.0	1.5	5.0	8.4	33
Outside fire	2.5	2.0	5.6	9.3	123	3.0	2.1	6.2	9.4	160
Public service	3.5	2.0	6.6	10.8	112	3.9	2.0	7.3	10.8	126
Structure fire	3.3	1.7	4.4	7.7	30	2.4	1.8	5.1	8.2	29
Fire Total	3.2	2.0	6.1	9.7	663	3.1	2.0	6.2	9.4	626
EMS Total	3.5	1.8	5.2	8.6	4,991	3.6	2.0	5.5	9.3	4,738
Total	3.5	1.8	5.3	8.7	5,654	3.5	2.0	5.6	9.3	5,364

The call demands the NCFD experiences have an effect on response travel times when compared to each station's ability to cover its fire management zone in 240 seconds as illustrated in Figure 4-5 above. Companies are at times out of position for the next call and often cross districts for first due responses. This is noted when reviewing the 90th percentile travel times in the table above and discussed in the resiliency section above. Turnout times at the 90th percentile should be reviewed by NCFD leadership to determine if there are any physical issues contributing to the overage in this response time element. This is an element the fire department has the greatest control over.

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SECTION 5. EMS ANALYSIS

NATIONAL CITY EMS PROVIDER BACKGROUND

Emergency medical services (EMS) in National City are provided through a partnership between the National City Fire Department (NCFD) and a contracted ambulance provider, American Medical Response (AMR).

The NCFD provides Advanced Life Support (ALS) medical first response for high-acuity medical responses (Priority 1 and Priority 2), as presumptively determined through an Emergency Medical Dispatch (EMD) call-taking process through San Diego Metro Dispatch. NCFD does not typically respond to low-acuity medical calls (Priority 3 and Priority 4); those responses are managed by an AMR ambulance response only.

Evidence of the effectiveness of this response configuration is demonstrated in the response volume differences between NCFD and AMR.

In 2019, NCFD responded to 5,140 EMS calls (58 percent of all NCFD calls), an average of 14.1 calls per day. Comparatively, AMR responded to 7,328 EMS response in National City, an average of 20.1 calls per day.

This response configuration is an optimal use of ALS first response resources by not committing these resources to low-acuity calls in which an ALS first response would likely not be necessary to affect the patient's outcome. Rather, ALS first response is preserved for the responses in which the arrival of additional ALS resources may have an impact on patient outcomes.

NATIONAL CITY EMS WORKLOAD

The workload of NCFD's units is measured in two ways: runs and deployed time. The deployed time of a run is measured from the time a unit is dispatched through the time the unit is cleared. Because multiple units respond to some calls, there are more runs (10,239) than calls (8,846) and the average deployed time per run varies from the average duration per call.

Deployed time, also referred to as deployed hours, is the total deployment time of NCFD units deployed on all runs. The CPSM data analysis shows that the total deployed time for NCFD's 5,596 EMS responses was 1,824.5 hours, an average of 0.326 hours per EMS response, or an average of 19.6 minutes per response.

Another method for measuring workload is *Unit Hour Utilization* (UHU). UHU is a measure of activity, essentially measuring the amount of on-duty time that an EMS response unit is dispatched on a call.

A *Unit Hour* is defined as one unit, fully staffed, equipped and available for a response. For example, one unit on-duty, 24 hours per pay, 365 days per year equates to 8,760 unit hours (1 x 24 x 365). A UHU is derived by dividing the number of responses by the total number of unit hours.

NCFD staffs three primary EMS response units from three response stations, NCE31, NCSQ33, and NCE34. These three response units responded to 81.6 percent of EMS requests in National City in 2019, with the remaining EMS requests being handled by secondary EMS response units of NCE231, B57, and NCT34.

Using the Unit Hours of NCFD's three primary EMS response units, we derive a Unit Hour staffing of 26,280 hours (3 x 8,760). Dividing the number of responses into the number of Unit Hours, we derive a *response* UHU of 0.213. This essentially means that an NCFD unit is on an EMS response 21.3 percent of the time they are on-duty.

A limitation of the UHU calculation is that it generally presumes that an EMS response will last one hour. However, as referenced earlier, an NCFD unit is typically committed on an EMS call for only an average of 19.6 minutes. Therefore, we can also use a **time** analysis to more clearly indicate the percentage of **time** that NCFD units are committed on EMS responses.

As referenced, the CPSM data analysis reveals that in 2019, the total time that NCFD units were committed on EMS calls was 1,824.5 hours. Using the 26,280 annual staffed Unit Hours for the three primary EMS response units, we can calculate the percentage of time that NCFD's primary EMS response units were committed on EMS responses as 0.069, or 6.9 percent of their on-duty time. In other words, NCFD's primary EMS first response units maintain an available percentage of 93.1 percent.

EMS response volume is generally not evenly distributed by time of day. Typically, EMS volume peaks during times when people are engaging in activity as opposed to when they are sleeping. Figure 7-6 in the data analysis displays NCFD's average deployed minutes by time of day. Average deployed time peaked between noon and 1:00 p.m., averaging 28.4 minutes. During this time, NCFD typically has three primary EMS first response units on duty (3 unit hours), meaning that even at peak times, only 15.8 percent of on duty time is committed on responses (28.4 minutes ÷ 90 minutes (3 Unit Hours)).

From an EMS response perspective, this represents a very high degree of response capability, because of a very desirable system design in which first response units maintain a high level of availability, while ambulance resources may be committed on much longer task times due to ambulance transport and hospital destination times.

EMS Reliability

A detailed response time analysis for NCFD was completed by CPSM. To review, we separate response time into its identifiable components.

To derive the total response times for NCFD, and as discussed in an earlier section, we analyze three specific time segments:

- **Dispatch time** is the difference between the time a call is received and the earliest time an agency is dispatched. Dispatch time includes call processing time, which is the time required to determine the nature of the emergency and the types of resources to dispatch.
- **Turnout time** is the difference between the earliest dispatch time and the earliest time an agency's unit is en route to a call's location.
- **Travel time** is the difference between the earliest en route time and the earliest arrival time. Response time is the total time elapsed between receiving a call to arriving on scene.

CPSM uses two response time measures to evaluate EMS response times, *average* and *fractile*. The average time represents the response time interval at which half of the responses are LESS than that interval, and half are LONGER than that interval. It is a level of performance, but not necessarily a level of reliability.

The 90th percentile measure is a measure of reliability. A 90th percentile analysis determines the response interval in which 90 percent of the EMS response times fall under that interval. In other

words, the response time interval in which only 10 percent of the EMS response time was longer than that 90th percent interval.

For NCFD's EMS responses, the average and 90th percentile times for each segment are described in the following tables for 2019.

TABLE 5-1: NCFD Average EMS Response Times

EMS Response Segment	Dispatch	Turnout	Travel	Total
Average, Minutes	2.0	1.0	3.3	6.4

TABLE 5-2: NCFD 90th Percentile EMS Response Times

EMS Response Segment	Dispatch	Turnout	Travel	Total
90th Percentile, Minutes	3.5	1.8	5.2	8.6

The following tables depict the average dispatch, turnout, travel, and total response times for all calls to which AMR responded within the National City fire district in 2019.

TABLE 5-3: AMR Average EMS Response Times

AMR Response Segment	Dispatch	Turnout	Travel	Total
Average, Minutes	0.9	0.8	6.4	8.0

TABLE 5-4: AMR 90th Percentile EMS Response Times

AMR Response Segment	Dispatch	Turnout	Travel	Total
90th Percentile, Minutes	2.4	1.8	10.9	13.2

Both the average and fractile response times for AMR are consistent with national standards, and compliant with contractual requirements.

Because of the dual-tier EMS response configuration for Priority 1 and Priority 2 EMS responses, that is, those in which both a NCFD and AMR unit respond, on average an NCFD unit will arrive on scene in 6.4 minutes with an AMR ambulance arriving in 8.0 minutes, or a 1.6-minute time difference. At the 90th percentile level, the time difference is 4.6 minutes.

CPSM was provided 37 monthly AMR response time compliance reports from January 2018 through December 2020. An analysis of these reports revealed that nearly every monthly report showed that AMR was response time compliant with the requirements in their service agreement with National City; in some months AMR achieved a 99 percent compliance rate.

This data analysis depicts a highly functional and reliable EMS response system.

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CONSIDERATION FOR NCFD GROUND AMBULANCE OPERATIONS

As part of our analysis, CPSM has been asked to evaluate the feasibility for NCFD to engage in ground ambulance transport services.

CPSM has been engaged in a multi-year study in San Diego County, which includes a detailed financial analysis for ambulance operations in two County Service Areas (CSAs) within the county. This project has provided us a unique insight into revenues generated from ambulance operations.

For this part of the report, we will begin with potential revenue generation from ground ambulance services provided by NCFD.

Payer Mix

Payer mix refers to the sources of revenue from ground ambulance services. The payer mix impacts the ability for revenue generation since payer sources reimburse ambulance services in vastly different ways. For example, collection percentages from self-pay patients are generally only 2 to 3 percent, while collection rates from commercial insurers is generally much higher. Medicare and Medi-Cal generally pay fixed amounts, but generally less than the cost of providing the service.

Based on our experience with other San Diego County CSAs, National City would likely experience a payer mix shown in the 2022 column of the following table.

TABLE 5-5: National City Projected EMS Payer Mix

Payer	2019	2020	2021	National City
Medicare	14.7%	16.7%	16.5%	15.2%
Medicare MCO	26.9%	30.7%	28.8%	25.5%
Medi-Cal	2.7%	4.3%	4.0%	3.7%
Medi-Cal MCO	17.0%	22.0%	22.6%	22.6%
Dual Eligible	N/A	2.1%	2.2%	2.2%
Commercial	12.0%	16.1%	17.7%	15.3%
Self-Pay	10.9%	6.3%	6.0%	14.1%
Other	15.7%	1.8%	2.1%	1.5%
Total	99.9%	100.0%	100.0%	100.0%

Recent trends in employment have led to a shift from commercially insured patients to self-pay, due to people leaving employment with health insurance benefits to start business on their own, or even becoming unemployed. Since reimbursement from self-pay patients tends to be significantly less than commercially insured patients, EMS systems across the country have experienced a reduction in revenue for services provided.

Potential National City Ground Transport Revenues

Revenue from ambulance service is generally based on four factors; transport volume, service mix (ALS/BLS, emergency/non-emergency), ambulance rate schedule, and payer mix (which impacts collection amounts).

For our analysis, we used the prevailing ambulance rate schedule that is consistent with surrounding communities in San Diego County.

TABLE 5-6: Projected Transport Fee Schedule

Ambulance Fee Schedule	HCPCS Code	Fee
ALS Base Emergency	A0427	\$2,356.37
ALS Level 2 Emergency	A0433	\$2,626.09
Mileage Urban	A0425	\$45.27
Oxygen	A0422	\$148.52
BLS Base Emergency	A0429	\$1,173.37
BLS Base (Non-Emergency)	A0428	\$1,058.73
Treat No Transport	A0998	\$175.75

Using this fee schedule, we estimate that the Average Patient Charge (APC) for an NCFD-based ambulance service would be \$2,816.88, with a net (collected) reimbursement of \$567.60 (a 20.15 percent gross collection rate).

Using these predictions, we can estimate the revenue generated by an ambulance service run by NCFD over the next three years as follows:

TABLE 5-7: NCFD 3-Year Estimated EMS Transport Revenues

Year 1		Average Patient Charge	Gross Fees	Collection %	Average Collected	Net Collections
Responses	7,137					
Transports	4,782	\$2,816.88	\$13,469,729	20.2%	\$567.60	\$2,714,150
Non-Transports	2,355	\$175.75	\$413,928	5.0%	\$8.79	\$20,696
Total			\$13,883,657			\$2,734,847
Year 2		Average Patient Charge	Gross Fees	Collection %	Average Collected	Net Collections
Responses	7,351					
Transports	4,925	\$2,901.39	\$14,290,035	20.1%	\$583.18	\$2,872,297
Non-Transports	2,426	\$181.02	\$439,136	5.0%	\$9.05	\$21,957
Total			\$14,729,171			\$2,894,254
Year 3		Average Patient Charge	Gross Fees	Collection %	Average Collected	Net Collections
Responses	7,572					
Transports	5,073	\$2,988.43	\$15,160,298	19.7%	\$588.72	\$2,986,579
Non-Transports	2,499	\$186.45	\$465,880	5.0%	\$9.32	\$23,294
Total			\$15,626,178			\$3,009,873

Ambulance service billing is complex, and it is recommended that NCFD use the services of an outside ambulance billing agency for ambulance billing. Generally, contracted billing services charge fees based on the actual revenue collected. These fees are typically 4.5 percent of net collections. Billing expenses are included later in this analysis.

Potential National City Ground Transport Expenses

To provide services comparable to what is currently provided by AMR, NCFD would need to staff three ambulances, 24/7. Based on response volume and overall task times, this would yield a Unit Hour Utilization of 0.300.

TABLE 5-8: NCFD 24/7 Ambulance Needs

	Responses	Transports	Non-Transports	Transport Ratio	Transport Task Time	Non-Transport Task Time	Average Task Time	Total Time on Task	Unit Hour Utilization	Unit Hours Needed	Ambulances Needed
2022	7,137	4,782	2,355	0.670	1.5	0.617	1.21	7,553	0.300	25,178	2.9
2023	7,351	4,925	2,426	0.670	1.5	0.617	1.21	7,780	0.300	25,933	3.0
2024	7,572	5,073	2,499	0.670	1.5	0.617	1.21	8,013	0.300	26,711	3.0

For the projected expenses for running an NCFD-based ambulance system, we presume NCFD would use sworn personnel to staff the ambulances, giving the system additional flexibilities for cross-staffing and cross-functioning personnel that could be deployed for a fire or medical response. We also presume an EMT/Paramedic staffing configuration, since currently, a second paramedic, if needed for ALS patient care, would be typically provided by an engine co-responding on the medical call.

NCFD could use non-sworn, dual-role personnel for ambulance service provision. This would reduce some of the personnel expenses; however, it would also limit the ability of personnel assigned to ambulance duties to fulfill other duties that may be valuable for the city.

For this analysis, we used the pay rates, salary schedule, and shift patterns as outlined in the July 2020 – December 2021 Memorandum of Understanding between National City and the Fire Fighters Association.

Based on these presumptions, and using the current and future pay rates for each position, including the wage differences based on hours worked per week, the staffing configuration and costs for three years is shown in the tables that follow.

TABLE 5-9: NCFD EMS Staffing Cost: Year 1

Ambulance Personnel	Rate	#	Reg. Hours	Regular Wages	Overtime Rate	FLSA Pay (1)	Training Hours (2)	Overtime Wages	Total Wages	Benefit %	Total Expense
A-Shift Ambulance 1 EMT (240 Shift)	\$21.63	1.00	2756	\$59,611	\$32.44	156	10	\$5,386	\$64,997	45.0%	\$94,246
B-Shift Ambulance 1 EMT (240 Shift)	\$21.63	1.00	2756	\$59,611	\$32.44	156	10	\$5,386	\$64,997	45.0%	\$94,246
C-Shift Ambulance 1 EMT (240 Shift)	\$21.63	1.00	2756	\$59,611	\$32.44	156	10	\$5,386	\$64,997	45.0%	\$94,246
A-Shift Ambulance 2 EMT (240 Shift)	\$21.63	1.00	2756	\$59,611	\$32.44	156	10	\$5,386	\$64,997	45.0%	\$94,246
B-Shift Ambulance 2 EMT (240 Shift)	\$21.63	1.00	2756	\$59,611	\$32.44	156	10	\$5,386	\$64,997	45.0%	\$94,246
C-Shift Ambulance 2 EMT (240 Shift)	\$21.63	1.00	2756	\$59,611	\$32.44	156	10	\$5,386	\$64,997	45.0%	\$94,246
A-Shift Ambulance 3 EMT (240 Shift)	\$21.63	1.00	2756	\$59,611	\$32.44	156	10	\$5,386	\$64,997	45.0%	\$94,246
B-Shift Ambulance 3 EMT (240 Shift)	\$21.63	1.00	2756	\$59,611	\$32.44	156	10	\$5,386	\$64,997	45.0%	\$94,246
C-Shift Ambulance 3 EMT (240 Shift)	\$21.63	1.00	2756	\$59,611	\$32.44	156	10	\$5,386	\$64,997	45.0%	\$94,246
A-Shift Ambulance 1 Paramedic (240 Shift)	\$24.51	1.00	2756	\$67,540	\$36.76	156	20	\$6,470	\$74,010	45.0%	\$107,314
B-Shift Ambulance 1 Paramedic (240 Shift)	\$24.51	1.00	2756	\$67,540	\$36.76	156	20	\$6,470	\$74,010	45.0%	\$107,314
C-Shift Ambulance 1 Paramedic (240 Shift)	\$24.51	1.00	2756	\$67,540	\$36.76	156	20	\$6,470	\$74,010	45.0%	\$107,314
A-Shift Ambulance 2 Paramedic (240 Shift)	\$24.51	1.00	2756	\$67,540	\$36.76	156	20	\$6,470	\$74,010	45.0%	\$107,314
B-Shift Ambulance 2 Paramedic (240 Shift)	\$24.51	1.00	2756	\$67,540	\$36.76	156	20	\$6,470	\$74,010	45.0%	\$107,314
C-Shift Ambulance 2 Paramedic (240 Shift)	\$24.51	1.00	2756	\$67,540	\$36.76	156	20	\$6,470	\$74,010	45.0%	\$107,314
A-Shift Ambulance 3 Paramedic (240 Shift)	\$24.51	1.00	2756	\$67,540	\$36.76	156	20	\$6,470	\$74,010	45.0%	\$107,314
B-Shift Ambulance 3 Paramedic (240 Shift)	\$24.51	1.00	2756	\$67,540	\$36.76	156	20	\$6,470	\$74,010	45.0%	\$107,314
C-Shift Ambulance 3 Paramedic (240 Shift)	\$24.51	1.00	2756	\$67,540	\$36.76	156	20	\$6,470	\$74,010	45.0%	\$107,314
Floater Paramedic (240 Shift)	\$24.51	1.00	2756	\$67,540	\$36.76	156	20	\$6,470	\$74,010	45.0%	\$107,314
Ambulance Supv./Coordinator/Captain	\$40.35	1.00	2080	\$83,935	\$60.53	104	20	\$7,506	\$91,441	45.0%	\$132,589
Year 1 Total Personnel Expense											\$ 2,053,941

TABLE 5-10: NCFD EMS Staffing Cost: Year 2

Ambulance Personnel	Rate	#	Reg. Hours	Regular Wages	Overtime Rate	FLSA Pay (1)	Training Hours (2)	Overtime Wages	Total Wages	Benefit %	Total Expense
A-Shift Ambulance 1 EMT (240 Shift)	\$22.71	1.00	2756	\$62,576	\$34.06	156	10	\$5,654	\$68,230	45.0%	\$98,934
B-Shift Ambulance 1 EMT (240 Shift)	\$22.71	1.00	2756	\$62,576	\$34.06	156	10	\$5,654	\$68,230	45.0%	\$98,934
C-Shift Ambulance 1 EMT (240 Shift)	\$22.71	1.00	2756	\$62,576	\$34.06	156	10	\$5,654	\$68,230	45.0%	\$98,934
A-Shift Ambulance 2 EMT (240 Shift)	\$22.71	1.00	2756	\$62,576	\$34.06	156	10	\$5,654	\$68,230	45.0%	\$98,934
B-Shift Ambulance 2 EMT (240 Shift)	\$22.71	1.00	2756	\$62,576	\$34.06	156	10	\$5,654	\$68,230	45.0%	\$98,934
C-Shift Ambulance 2 EMT (240 Shift)	\$22.71	1.00	2756	\$62,576	\$34.06	156	10	\$5,654	\$68,230	45.0%	\$98,934
A-Shift Ambulance 3 EMT (240 Shift)	\$22.71	1.00	2756	\$62,576	\$34.06	156	10	\$5,654	\$68,230	45.0%	\$98,934
B-Shift Ambulance 3 EMT (240 Shift)	\$22.71	1.00	2756	\$62,576	\$34.06	156	10	\$5,654	\$68,230	45.0%	\$98,934
C-Shift Ambulance 3 EMT (240 Shift)	\$22.71	2.00	2756	\$62,576	\$34.06	156	10	\$5,654	\$68,230	45.0%	\$98,934
A-Shift Ambulance 1 Paramedic (240 Shift)	\$25.73	1.00	2756	\$70,899	\$38.59	156	20	\$6,792	\$77,691	45.0%	\$112,652
B-Shift Ambulance 1 Paramedic (240 Shift)	\$25.73	1.00	2756	\$70,899	\$38.59	156	20	\$6,792	\$77,691	45.0%	\$112,652
C-Shift Ambulance 1 Paramedic (240 Shift)	\$25.73	1.00	2756	\$70,899	\$38.59	156	20	\$6,792	\$77,691	45.0%	\$112,652
A-Shift Ambulance 2 Paramedic (240 Shift)	\$25.73	1.00	2756	\$70,899	\$38.59	156	20	\$6,792	\$77,691	45.0%	\$112,652
B-Shift Ambulance 2 Paramedic (240 Shift)	\$25.73	1.00	2756	\$70,899	\$38.59	156	20	\$6,792	\$77,691	45.0%	\$112,652
C-Shift Ambulance 2 Paramedic (240 Shift)	\$25.73	1.00	2756	\$70,899	\$38.59	156	20	\$6,792	\$77,691	45.0%	\$112,652
A-Shift Ambulance 3 Paramedic (240 Shift)	\$25.73	1.00	2756	\$70,899	\$38.59	156	20	\$6,792	\$77,691	45.0%	\$112,652
B-Shift Ambulance 3 Paramedic (240 Shift)	\$25.73	1.00	2756	\$70,899	\$38.59	156	20	\$6,792	\$77,691	45.0%	\$112,652
C-Shift Ambulance 3 Paramedic (240 Shift)	\$25.73	1.00	2756	\$70,899	\$38.59	156	20	\$6,792	\$77,691	45.0%	\$112,652
Floater Paramedic (240 Shift)	\$25.73	1.00	2756	\$70,899	\$38.59	156	20	\$6,792	\$77,691	45.0%	\$112,652
Ambulance Supv./Coordinator/Captain	\$42.39	1.00	2080	\$88,169	\$63.58	104	20	\$7,884	\$96,053	45.0%	\$139,278
Year 2 Total Personnel Expense											\$ 2,156,201

TABLE 5-11: NCFD EMS Staffing Cost: Year 3

Ambulance Personnel	Rate	#	Reg. Hours	Regular Wages	Overtime Rate	FLSA Pay (1)	Training Hours (2)	Overtime Wages	Total Wages	Benefit %	Total Expense
A-Shift Ambulance 1 EMT (240 Shift)	\$23.84	1.00	2756	\$65,710	\$35.76	156	10	\$5,937	\$71,646	45.0%	\$103,887
B-Shift Ambulance 1 EMT (240 Shift)	\$23.84	1.00	2756	\$65,710	\$35.76	156	10	\$5,937	\$71,646	45.0%	\$103,887
C-Shift Ambulance 1 EMT (240 Shift)	\$23.84	1.00	2756	\$65,710	\$35.76	156	10	\$5,937	\$71,646	45.0%	\$103,887
A-Shift Ambulance 2 EMT (240 Shift)	\$23.84	1.00	2756	\$65,710	\$35.76	156	10	\$5,937	\$71,646	45.0%	\$103,887
B-Shift Ambulance 2 EMT (240 Shift)	\$23.84	1.00	2756	\$65,710	\$35.76	156	10	\$5,937	\$71,646	45.0%	\$103,887
C-Shift Ambulance 2 EMT (240 Shift)	\$23.84	1.00	2756	\$65,710	\$35.76	156	10	\$5,937	\$71,646	45.0%	\$103,887
A-Shift Ambulance 3 EMT (240 Shift)	\$23.84	1.00	2756	\$65,710	\$35.76	156	10	\$5,937	\$71,646	45.0%	\$103,887
B-Shift Ambulance 3 EMT (240 Shift)	\$23.84	1.00	2756	\$65,710	\$35.76	156	10	\$5,937	\$71,646	45.0%	\$103,887
C-Shift Ambulance 3 EMT (240 Shift)	\$23.84	1.00	2756	\$65,710	\$35.76	156	11	\$5,973	\$71,682	45.0%	\$103,939
A-Shift Ambulance 1 Paramedic (240 Shift)	\$27.01	1.00	2756	\$74,449	\$40.52	156	20	\$7,132	\$81,581	45.0%	\$118,292
B-Shift Ambulance 1 Paramedic (240 Shift)	\$27.01	1.00	2756	\$74,449	\$40.52	156	20	\$7,132	\$81,581	45.0%	\$118,292
C-Shift Ambulance 1 Paramedic (240 Shift)	\$27.01	1.00	2756	\$74,449	\$40.52	156	20	\$7,132	\$81,581	45.0%	\$118,292
A-Shift Ambulance 2 Paramedic (240 Shift)	\$27.01	1.00	2756	\$74,449	\$40.52	156	20	\$7,132	\$81,581	45.0%	\$118,292
B-Shift Ambulance 2 Paramedic (240 Shift)	\$27.01	1.00	2756	\$74,449	\$40.52	156	20	\$7,132	\$81,581	45.0%	\$118,292
C-Shift Ambulance 2 Paramedic (240 Shift)	\$27.01	1.00	2756	\$74,449	\$40.52	156	20	\$7,132	\$81,581	45.0%	\$118,292
A-Shift Ambulance 3 Paramedic (240 Shift)	\$27.01	1.00	2756	\$74,449	\$40.52	156	20	\$7,132	\$81,581	45.0%	\$118,292
B-Shift Ambulance 3 Paramedic (240 Shift)	\$27.01	1.00	2756	\$74,449	\$40.52	156	20	\$7,132	\$81,581	45.0%	\$118,292
C-Shift Ambulance 3 Paramedic (240 Shift)	\$27.01	1.00	2756	\$74,449	\$40.52	156	21	\$7,172	\$81,621	45.0%	\$118,351
Floater Paramedic (240 Shift)	\$27.01	1.00	2756	\$74,449	\$40.52	156	22	\$7,213	\$81,662	45.0%	\$118,410
Ambulance Supv./Coordinator/Captain	\$44.49	1.00	2080	\$92,546	\$66.74	104	21	\$8,343	\$100,889	45.0%	\$146,289
Year 3 Total Personnel Expense											\$2,264,422

Capital Costs

In addition to the personnel costs, NCFD would need to make capital purchases for the provision of ambulance services. For the purposes of this analysis, we will use annual depreciation estimates based on the predicted useful life of the capital equipment, but it should be noted that the initial costs are listed in the Capital Outlay column of the following table.

TABLE 5-12: NCFD EMS Capital Outlay and Capital Annualized Costs

	Capital Expense	Number Needed	Capital Outlay	Useful Life (Years)	Annual Expense
Ambulance	\$350,000	4	\$1,400,000	5	\$280,000
Cardiac Monitor	\$45,000	5	\$225,000	7	\$32,143
Auto-Load/Stretcher	\$35,000	5	\$175,000	7	\$25,000
Radios	\$3,500	12	\$42,000	4	\$10,500
Mobile Computers	\$1,750	5	\$8,750	2	\$4,375
Total	-	-	\$1,850,750	-	\$352,018

Annual Operating Expenses

In addition to personnel and capital expenses, NCFD will have other expenses related to providing ambulance services. These include vehicle expenses such as fuel, maintenance, and tires, but also include additional medical supplies for the additional service level of ambulance provision. These are summarized below for Year 1 and escalated by a factor of 7 percent for subsequent years in our analysis.

TABLE 5-13: NCFD EMS Annualized Operating Costs

Annual Responses	7,137				
Annual Transports	4,782				
Category	Annual Miles	Miles Per Gallon	Gallons	Price	Total
Fuel	49,959	5	9,992	\$5.20	\$51,957
	Annual Miles	Cost per Mile			Total
Maintenance/Tires	49,959	\$0.41			\$20,483
	Per Response	Responses			Total
Medical Supplies	\$21.00	7,137			\$149,877
Equipment Maintenance	\$3.50	7,137			\$24,980
Total Operations Expense					\$247,297

Financial Rollup – NCFD Operated Ambulance Service

Combining the potential revenue and expenses for a NCFD operated ambulance service, the net operating margin for services is summarized in the following table.

TABLE 5-14: NCFD EMS Net Operating Margin

Expense	Year 1	Year 2	Year 3
Personnel	\$1,949,373	\$2,046,431	\$2,149,157
Vehicles/Equipment	\$352,018	\$369,619	\$388,100
Operations	\$247,297	\$264,608	\$283,130
Billing Fees	\$130,241	\$135,444	\$135,444
Total	\$2,678,929	\$2,816,102	\$2,955,831
Revenue	\$2,734,847	\$2,894,254	\$3,009,873
Net From Operations	\$63,091	\$83,355	\$54,042

Note that *operationally*, there is slight retained earnings each year, however, this amount decreases over time, as personnel and operational expenses increase at a faster rate than revenues.

However, AMR currently pays fees to the city for ambulance operations in the city. These fees consist of a \$320,000 annual franchise fee, and \$80,000 annually for renting space in fire station to house ambulances. It is likely that if NCFD assumed ambulance service provision, the fees would no longer be paid to the City. Adding the loss of \$400,000 annually, the total financial impact to the city can be illustrated below.

TABLE 5-15: NCFD EMS Financial Impact

Expense	Year 1	Year 2	Year 3
Personnel	\$1,949,373	\$2,046,431	\$2,149,157
Vehicles/Equipment	\$352,018	\$369,619	\$388,100
Operations	\$247,297	\$264,608	\$283,130
Billing Fees	\$123,068	\$130,241	\$135,444
Total	\$2,671,756	\$2,810,899	\$2,955,831
Revenue	\$2,734,847	\$2,894,254	\$3,009,873
Net From Operations	\$63,091	\$83,355	\$54,042
Loss of AMR Fees	\$ (400,000)	\$ (400,000)	\$ (400,000)
Net to the City	\$ (336,909)	\$ (316,645)	\$ (345,958)

Overall, there will be significant net financial losses to the city if NCFD assumes responsibility for providing ambulance service.

Based on the fact that AMR is providing services that are consistent with the contractual requirements, and the contract is contributing a net financial benefit to the city, it is our recommendation that the current method of ambulance service provision of using an outside contractor be retained, and that NCFD not assume responsibility for providing ambulance services to the city.

Recommendation:

- The current method of ambulance service provision of using an outside contractor should be retained, and the NCFD should not assume responsibility for providing ambulance services to the city. (Recommendation No. 9.)

AMR AMBULANCE SERVICE CONTRACT

AMR is currently operating under a contract with National City that was initially established in 2006. There have been significant changes in National City, as well as with ambulance service delivery over the past 15 years. Additionally, ambulance service providers within the southern San Diego region have changed and there may be other options for contracted ambulance service providers for National City.

Therefore, the city should negotiate with AMR for significant contracting updates or consider options for procuring enhanced service delivery models, either from the current or prospective ambulance service providers.

Recommendation:

- The city should negotiate with AMR for significant contracting updates or consider undergoing an RFP process to seek enhanced service delivery models, either from the current, or prospective ambulance service providers. (Recommendation No. 10.)

MOBILE INTEGRATED HEALTHCARE/COMMUNITY PARAMEDICINE

One of the fastest growing value-added service enhancements in EMS is the development of Mobile Integrated Healthcare / Community Paramedicine (MIH/CP) programs. MIH/CP is comprised of a suite of potential services that EMS could provide to fill gaps in the local healthcare delivery system. In essence, MIH/CP is intended to better manage the increasing EMS call volume and better align the types of care being provided with the needs of the patient. To be effective, MIH/CP is commonly accomplished in a collaborative approach with healthcare and social service agencies within the community.

We believe that there are opportunities for NCFD to use existing service capacity to collaborate with local stakeholders to implement an MIH/CP program to help manage the navigation of patients to treatment options more efficiently.

Recommendation:

- NCFD should engage in discussions with local and regional stakeholders to determine the potential benefits and impact of initiating a Mobile Integrated Healthcare / Community Paramedicine program. (Recommendation No. 11.)

§ § §

SECTION 6. FIRE EMERGENCY COMMUNICATIONS SYSTEM

CPSM was asked to review the current fire dispatching system and costs and provide a recommendation on bringing this function in-house. The police department currently provides law enforcement dispatch services to the National City Police Department.

The NCFD currently has an agreement with San Diego City for the receiving of fire and medical related emergency calls as a secondary Public Safety Answering Point (PSAP), processing the call, and then dispatching the appropriate response assets as defined in the San Diego metro call algorithms. Key components of this the agreement include:

- Triaging medical calls to ensure the most appropriate resource is dispatched.
- Dispatching the closest available unit via Automatic Vehicle Location (AVL).
- Fire Station Alerting via CAD to station interface utilizing agency self-managed alerting system.
- Mobile Data Computer (MDC) or other mobile platform services such as mapping, live-routing, and loading agency self-managed building pre-plans.
- Records Management System (RMS) services for a CAD-to-Fire RMS interface.

Compensation to San Diego City for the dispatch service is subject to change each fiscal year of the contract and has a base "cost per call" dispatch fee for service. Dispatch fees are based on the adopted 911-Center budget for personnel services and prior year actuals for non-personnel expenditures (agency per-call volume).

National City currently has a five-year agreement with San Diego City for 911 Fire and EMS Dispatch services that became effective July 1, 2019. The agreement has a five-year extension clause. Year-to-year cost increases are based on any increase in call volume, with a five percent increase (plus or minus) service as the base fee escalator. Should NCFD's call volume increase more than five percent, an increase in non-personnel expenditures will increase equal to the percent increase in call volume rounded to the nearest tenth. A five percent escalator applies if the call volume does not increase to a sum equaling five percent. The base agreement cost in 2019 was \$361,050. The current fire dispatch agreement cost is \$442,000.

CPSM visited the National City Police 911 Center and spoke with the Support Services Manager (SSM) who manages the center. In our conversation with the SSM, CPSM was informed that to bring fire dispatching into the National City 911 Center, the following would have to be added:

- Two 911 Center workstations.
 - Workstation with chair, radio, computer, computer monitors, and ancillary console equipment and interfaces, with a cost of \$25,000 to \$30,000 per workstation depending on availability of current city radio and computer equipment. Total estimated cost: \$50,000 to \$60,000. Annualized software support per console would be \$500 to \$1,000.
- The current CAD system would have to be upgraded with a fire module solution to include all GIS, AVL, RMS Fire Station Alerting, On-screen Tablet Incident Command with GIS and Pre-Plan function, and other interfaces NCFD has with San Diego City. Currently the National City 911 Center only has the module and licensing for a law enforcement module.

- Cost for this is dependent on features and if the current CAD system can perform all the functions the NCFD currently utilizes through San Diego City. Quote from current vendor would be needed to establish start-up and annualized fire CAD solution costs.
- A priority medical dispatch solution would have to be purchased and added to the CAD to continue the efficiency of a prioritized medical dispatch the NCFD is currently operating under.
 - For four radio positions the initial start-up fee is estimated to be \$85,000 to \$95,000 and includes licensing for four positions, training software, case review software, on-site training, and ancillary components included in the system.
 - Annualized-licensing fees are estimated to be \$21,000 to \$25,000.
- Two dispatchers per shift (1 call taker, 1 radio position) would have to be added (total of eight personnel).
 - The current starting hourly rate for 911 dispatcher in National City is \$27.74/hour. At 2,080 hours/year, the annualized salary is \$57,699 (+40% benefits=\$80,779). The cost of eight personnel is estimated to be \$646,228.
 - The Priority Medical Dispatch solution typically requires a dedicated Quality Assurance staff member. Annualized salary for this position is estimated to be \$88,857 (dispatcher salary + 40% benefits +10% for QA supervisory work).

Overall, to implement fire dispatch in the NCPD 911 Center, CPSM estimates it would cost:

- Startup fees, licensing, hardware: \$135,000 to \$155,000 + current CAD vendor quote to start up a fire CAD system software solution that can perform all functions the NCFD currently utilizes through San Diego City.
- Annualized licensing fees and salaries (no overtime included): \$756,585 to \$761,085.

During the on-site visit CPSM conducted in March 2022, CPSM visited the San Diego Metro Fire Dispatch Center and spoke the Center's senior staff, and also observed Center operations to include call-taking and dispatching. The center was adequately staffed (average of nine personnel on duty around the clock, including a uniform fire officer who serves as an operational liaison) and was performing all operations without incident. Based on our observations and discussion with NCFD and San Diego dispatch center staff, we view the San Diego center as a high-performing fire and EMS dispatch system.

Recommendation:

- Based on the estimated start-up and annualized costs, the annualized costs for fire dispatching through the National City Police 911 Center would be almost double the cost of the contract with San Diego Metro Fire Dispatch. CPSM strongly recommends that National City continue with the current agreement with San Diego City for fire dispatch services. CPSM does recommend, however, that National City work with San Diego City to reduce the current fire dispatch agreement costs to offset the costs the NCFD incurs as the de facto fire department for Paradise Hills, a situation that was demonstrated in the analysis. (Recommendation No. 12.)

SECTION 7. NCFD DATA ANALYSIS

This data analysis was prepared as a key component of the study of the National City Fire Department (NCFD), which provides fire protection service to the City of National City and surrounding communities. This analysis examines all calls for service between January 1, 2019, and December 31, 2020, as recorded in the regional computer-aided dispatch (CAD) system, with National Fire Incident Reporting System (NFIRS) data obtained from multiple sources. The analysis results are primarily presented for 2019; the results for 2020 are compared with those for the prior year in Attachment I.

This analysis is made up of five parts. The first part focuses on call types and dispatches. The second part explores the time spent and the workload of individual units. The third part presents an analysis of the busiest hours in the year studied. The fourth part provides a response time analysis of the studied agency's units. The fifth and final part analyzes the total fire loss.

The NCFD is a multi-service fire department, primarily serving an area of approximately 9.1 square miles and 63,000 residents. It provides fire, rescue, and paramedic first responder emergency medical services (EMS) to the National City Fire District including the City of National City, Lower Sweetwater Fire Protection District, the Port of San Diego, and surrounding communities. The department operates out of three fire stations and utilizes two frontline engines, one fire truck, one squad unit, and one command unit (battalion chief).

In 2019, the NCFD responded to 8,846 calls, of which 58 percent were EMS calls. The total combined workload (deployed time) for NCFD units was 3,105.6 hours. The average response time was 6.5 minutes. The 90th percentile response time was 8.7 minutes.

In 2020, the NCFD responded to 8,481 calls, of which 57 percent were EMS calls. The total combined workload (deployed time) for NCFD units was 3,895.8 hours. The average response time was 6.9 minutes. The 90th percentile response time was 9.3 minutes.

METHODOLOGY

In this report, CPSM analyzes calls and runs. A call is an emergency service request or incident. A run is a dispatch of a unit (i.e., a unit responding to a call). Thus, a call may include multiple runs.

We linked the CAD and NFIRS data sets. Then, we classified the calls in a series of steps. We first used the NFIRS incident type to identify canceled calls, motor vehicle accidents (MVA), and fire category call types. Calls identified by NFIRS as EMS calls along with any calls that lacked a matching NFIRS record were categorized using the CAD system's incident descriptions. We describe the method in Attachment VII.

The analysis focuses on calls that involved a responding NCFD unit. We examine aid received by other fire departments within National City in Table 7-1 and provide greater detail in Attachment IV. We analyze American Medical Response's (AMR) EMS calls within National City in a separate section.

We received records for a total of 23,415 calls in 2019 and 2020. We removed 3,150 calls that had no responding units. These calls were canceled, and their cancel reasons are summarized in Attachment VIII. We also removed 2,022 calls in National City where only AMR responded. In addition, we removed 21 calls outside National City that did not record a responding NCFD unit. Finally, we excluded one incident to which the NCFD's administrative unit was the sole responder; however, the workload of administrative units is documented in Attachment II. The remaining 18,221 calls included in this analysis are summarized in Table 7-1.

The main analysis in the following sections focuses on the 8,846 calls in 2019 where NCFD responded inside and outside of its fire district (see the highlighted rows in Table 7-1). All calls outside NCFD's fire district are identified as aid given. The detailed call types for aid given calls are presented in Attachment III. During the two years, NCFD received aid from other fire departments for incidents that occurred inside National City. This included 1,069 calls together with NCFD and 894 calls without a responding NCFD unit. Attachment IV provides further detail for aid received calls.

TABLE 7-1: Studied Calls by Location, Responding Agency, and Year

Location	Responding Agency	2019	2020	Total
Inside NCFD District	NCFD only	6,193	5,821	12,014
	NCFD and FD agencies	499	570	1,069
	NCFD Total	6,692	6,391	13,083
	Other FD agencies only	452	442	894
	Total	7,144	6,833	13,977
Outside NCFD District	NCFD Total	2,154	2,090	4,244
Total		9,298	8,923	18,221

Observations:

- Of all calls involving NCFD, 76 and 75 percent were inside the National City fire district in 2019 and 2020, respectively.
- Of all calls within the National City fire district, outside agencies responded independently to 6 percent of calls in both years.

AGGREGATE CALL TOTALS AND RUNS

In 2019, NCFD responded to 8,846 calls, of which, 6,692 occurred inside and 2,154 occurred outside the National City fire district, respectively. During the year, there were 31 structure fire calls and 125 outside fire calls within the National City fire district.

Calls by Type

Table 7-2 shows the number of calls that NCFD responded to by call type, average calls per day, and the percentage of calls that fall into each call type category. Figures 7-1 and 7-2 show the percentage of calls that fall into each EMS (Figure 7-1) and fire (Figure 7-2) type category.

TABLE 7-2: Calls by Type

Call Type	Total Calls	Calls per Day	Call Percentage
Breathing difficulty	722	2.0	8.2
Cardiac and stroke	779	2.1	8.8
Fall and injury	999	2.7	11.3
Illness and other	1,344	3.7	15.2
MVA	407	1.1	4.6
Overdose and psychiatric	151	0.4	1.7
Seizure and unconsciousness	738	2.0	8.3
EMS Total	5,140	14.1	58.1
False alarm	318	0.9	3.6
Good intent	56	0.2	0.6
Hazard	48	0.1	0.5
Outside fire	125	0.3	1.4
Public service	121	0.3	1.4
Structure fire	31	0.1	0.4
Fire Total	699	1.9	7.9
Canceled	853	2.3	9.6
Aid given	2,154	5.9	24.3
Total	8,846	24.2	100.0

FIGURE 7-1: EMS Calls by Type

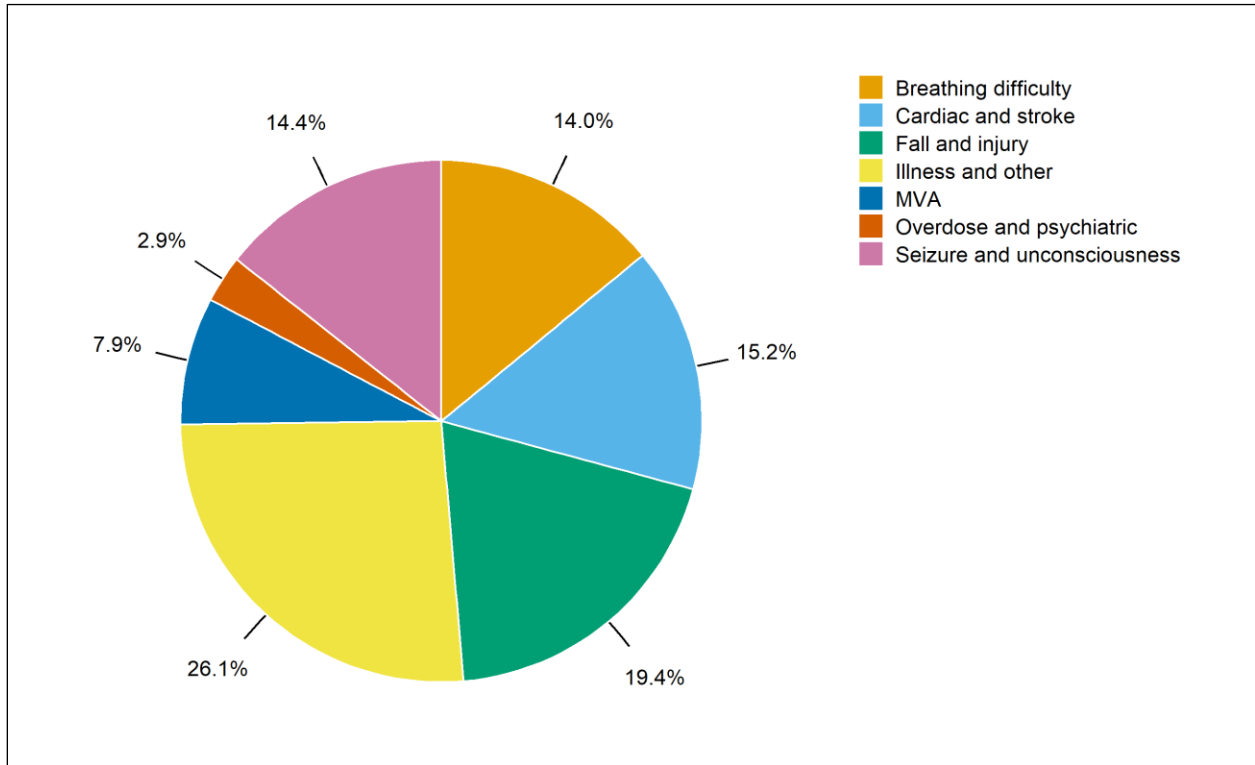
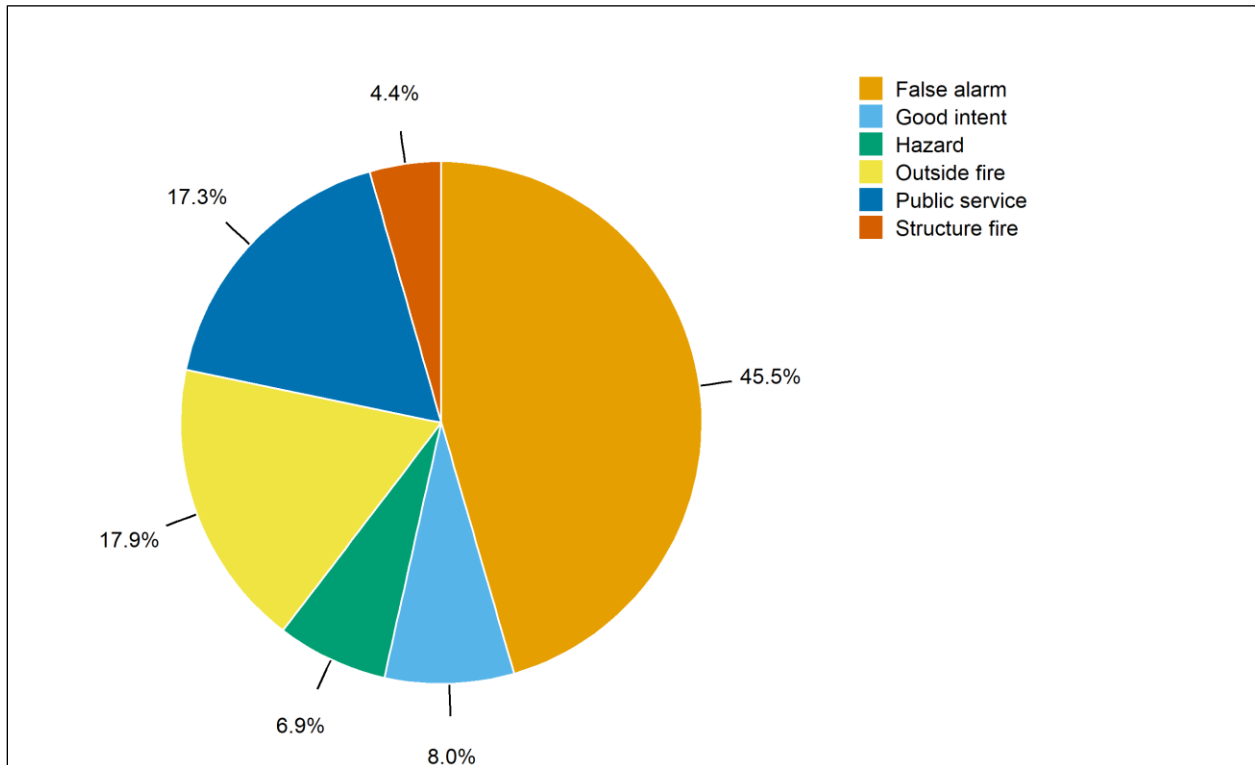


FIGURE 7-2: Fire Calls by Type



Observations:

- In 2019, NCFD responded to an average of 24.2 calls per day, including 2.3 canceled (10 percent) and 5.9 (24 percent) mutual aid calls per day.
- EMS calls for the year totaled 5,140 (58 percent of all calls), an average of 14.1 calls per day.
 - Illness and other calls were the largest category of EMS calls at 15 percent of total calls (26 percent of EMS calls).
 - Motor vehicle accidents (MVA) made up 5 percent of total calls (8 percent of EMS calls).
 - Cardiac and stroke calls made up 9 percent of total calls (15 percent of EMS calls).
- Fire calls for the year totaled 699 (8 percent of all calls), or an average of 1.9 calls per day.
 - False alarm calls made up 4 percent of total calls (45 percent of fire calls).
 - Structure and outside fire calls combined made up 2 percent of total calls (22 percent of fire calls), or an average of 0.4 calls per day, or one call every 2.3 days.

Calls by Type and Duration

The following table shows the duration of calls by type using four duration categories: less than 30 minutes, 30 minutes to one hour, one to two hours, and two or more hours.

TABLE 7-3: Calls by Type and Duration

Call Type	Less than 30 Minutes	30 Minutes to One Hour	One to Two Hours	Two or More Hours	Total
Breathing difficulty	633	84	5	0	722
Cardiac and stroke	662	81	34	2	779
Fall and injury	876	102	20	1	999
Illness and other	1,212	117	14	1	1,344
MVA	359	39	9	0	407
OD	136	13	2	0	151
Seizure and UNC	642	84	12	0	738
EMS Total	4,520	520	96	4	5,140
False alarm	289	25	4	0	318
Good intent	52	3	1	0	56
Hazard	34	12	2	0	48
Outside fire	84	29	10	2	125
Public service	95	18	5	3	121
Structure fire	18	5	4	4	31
Fire Total	572	92	26	9	699
Canceled	837	11	5	0	853
Aid given	1,883	210	44	17	2,154
Total	7,812	833	171	30	8,846

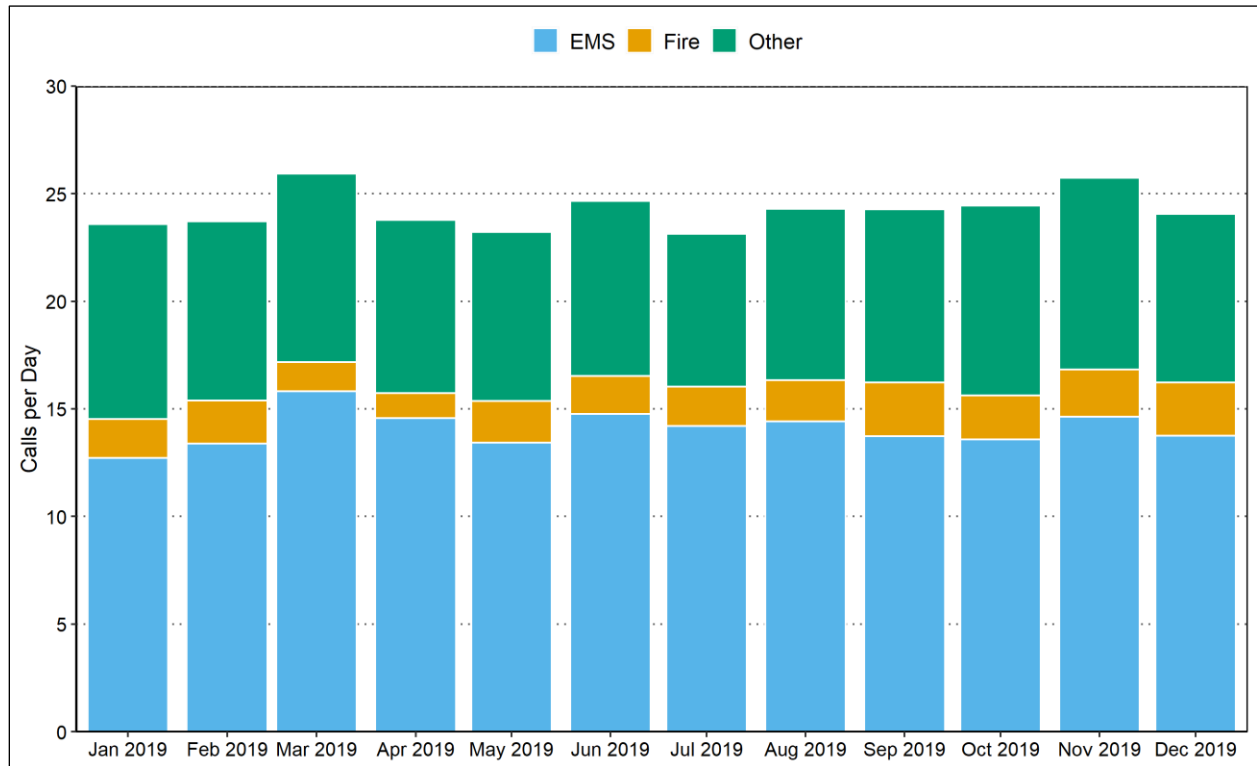
Observations:

- A total of 5,040 EMS calls (98.1 percent) lasted less than one hour, 96 EMS calls (1.9 percent) lasted one to two hours, and 4 EMS calls (0.1 percent) lasted two or more hours.
- A total of 664 fire calls (95.0 percent) lasted less than one hour, 26 fire calls (3.7 percent) lasted one to two hours, and 9 fire calls (1.3 percent) lasted two or more hours.
- A total of 113 outside fire calls (90.4 percent) lasted less than one hour, 10 outside fire calls (8.0 percent) lasted one to two hours, and two outside fire calls (1.6 percent) lasted two or more hours.
- A total of 23 structure fire calls (74.2 percent) lasted less than one hour, four structure fire calls (12.9 percent) lasted one to two hours, and four structure fire calls (12.9 percent) lasted two or more hours.

Average Calls by Month and Hour of Day

Figure 7-3 shows the monthly variation in the average daily number of calls handled by NCFD in 2019. Similarly, Figure 7-4 illustrates the average number of calls received each hour of the day.

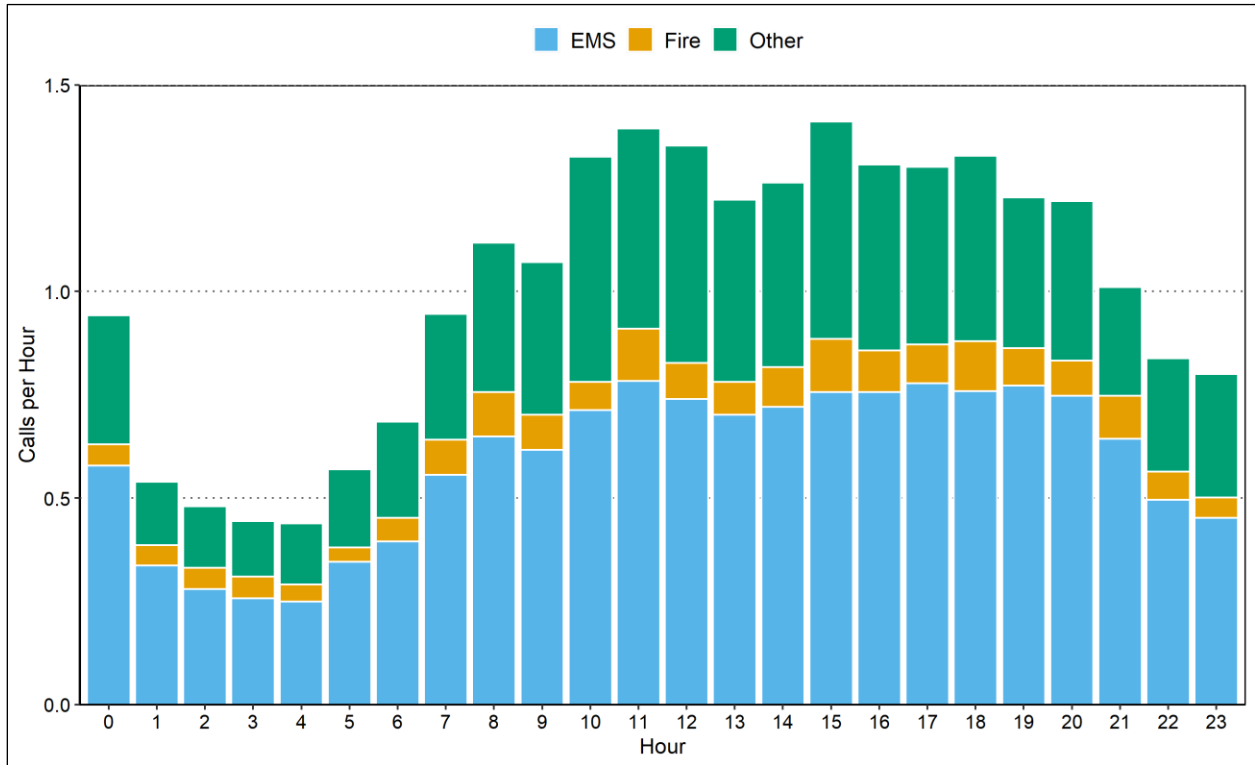
FIGURE 7-3: Calls per Day by Month



Observations:

- EMS calls per day ranged from 12.7 in January 2019 to 15.8 in March 2019.
- Fire calls per day ranged from 1.2 in April 2019 to 2.5 in September 2019.
- Other calls per day ranged from 7.1 in July 2019 to 9.1 in January 2019.
- Total calls per day ranged from 23.1 in July 2019 to 25.9 in March 2019.

FIGURE 7-4: Average Calls by Hour of Day



Observations:

- Average EMS calls per hour ranged from 0.25 between 4:00 a.m. and 5:00 a.m. to 0.78 between 11:00 a.m. and noon.
- Average fire calls per hour ranged from 0.04 between 5:00 a.m. and 6:00 a.m. to 0.13 between 3:00 p.m. and 4:00 p.m.
- Average other calls per hour ranged from 0.13 between 3:00 a.m. and 4:00 a.m. to 0.55 between 10:00 a.m. and 11:00 a.m.
- Average total calls per hour ranged from 0.44 between 4:00 a.m. and 5:00 a.m. to 1.41 between 3:00 p.m. and 4:00 p.m.

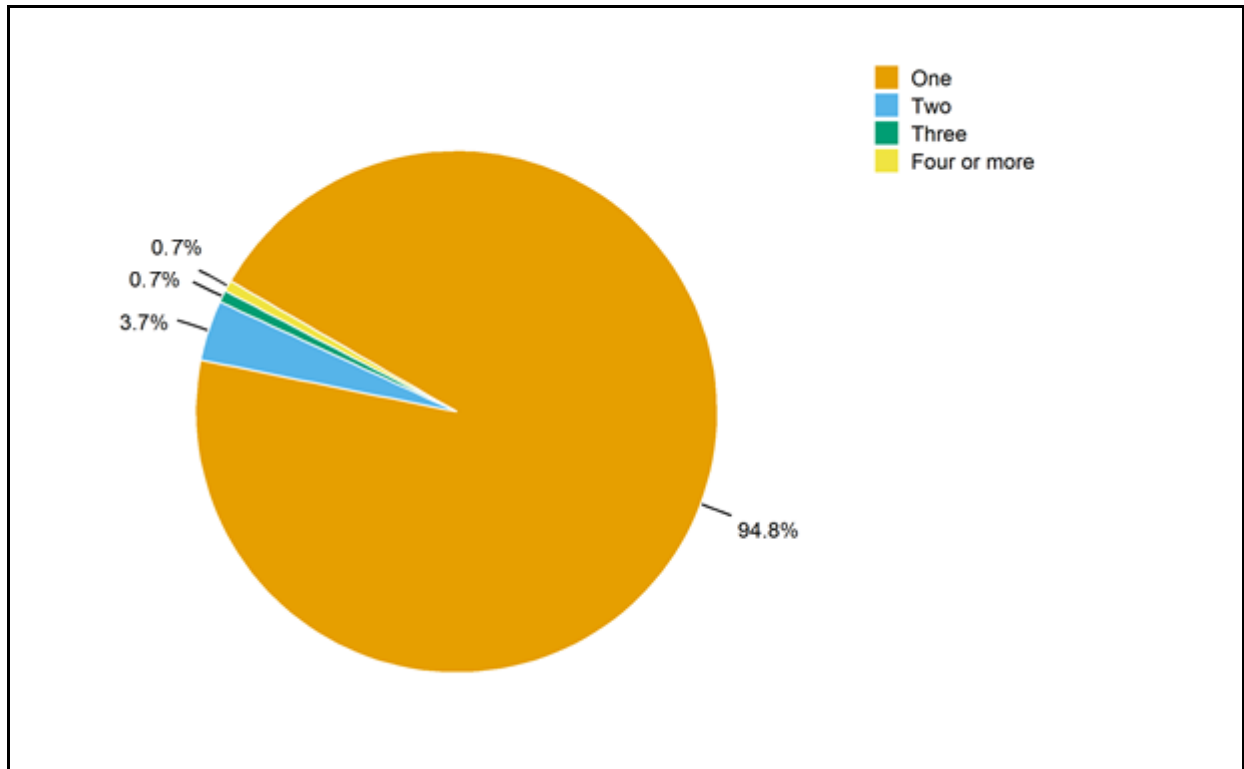
Units Arriving at Calls

In this section, we limit ourselves to calls where a unit from NCFD arrived. For this reason, there are fewer calls in Table 7-4 than in Table 7-2. For 2019, Table 7-4, along with Figure 7-5, detail the number of calls with one, two, three, and four or more NCFD units arriving at a call, broken down by call type.

TABLE 7-4: Calls by Call Type and Number of Arriving NCFD Units

Call Type	Number of Units				Total Calls
	One	Two	Three	Four or More	
Breathing difficulty	715	0	1	0	716
Cardiac and stroke	743	31	0	0	774
Fall and injury	975	3	0	0	978
Illness and other	1,298	22	1	1	1,322
MVA	319	61	12	1	393
Overdose and psychiatric	138	0	0	0	138
Seizure and unconsciousness	728	6	0	0	734
EMS Total	4,916	123	14	2	5,055
False alarm	233	63	4	5	305
Good intent	49	4	1	0	54
Hazard	41	2	3	2	48
Outside fire	92	14	9	9	124
Public service	111	6	1	2	120
Structure fire	6	5	2	18	31
Fire Total	532	94	20	36	682
Canceled	400	20	1	1	422
Aid given	1,513	53	23	14	1,603
Total	7,361	290	58	53	7,762
Percentage	94.8	3.7	0.7	0.7	100.0

FIGURE 7-5: Calls by Number of Arriving NCFD Units



Observations:

Overall

- On average, 1.1 units arrived at all calls; for 94.8 percent of calls, only one unit arrived.
- Overall, four or more units arrived at 0.7 percent of calls.

EMS

- On average, 1.0 units arrived per EMS call.
- For EMS calls, one unit arrived 97.3 percent of the time, two units arrived 2.4 percent of the time, three units arrived 0.3 percent of the time, and four units arrived less than 0.1 percent of the time.

Fire

- On average, 1.4 units arrived per fire call.
- For fire calls, one unit arrived 78.0 percent of the time, two units arrived 13.8 percent of the time, three units arrived 2.9 percent of the time, and four or more units arrived 5.3 percent of the time.
- For outside fire calls, three or more units arrived 14.5 percent of the time.
- For structure fire calls, three or more units arrived 64.5 percent of the time.

WORKLOAD: RUNS AND TOTAL TIME SPENT

The workload of NCFD's units is measured in two ways: runs and deployed time. The deployed time of a run is measured from the time a unit is dispatched through the time the unit is cleared. Because multiple units respond to some calls, there are more runs (10,239) than calls (8,846) and the average deployed time per run varies from the average duration per call.

Runs and Deployed Time – NCFD Units

Deployed time, also referred to as deployed hours, is the total deployment time of NCFD units deployed on all runs. Table 7-5 shows the total deployed time, both overall and broken down by type of run, for all non-administrative NCFD units in 2019. Table 7-6 and Figure 7-6 present the average deployed minutes by hour of day.

TABLE 7-5: Annual Runs and Deployed Time by Run Type

Run Type	Deployed Minutes per Run	Total Annual Hours	Percent of Total Hours	Deployed Minutes per Day	Total Annual Runs	Avg. Runs per Day
Breathing difficulty	20.0	251.2	8.1	41.3	753	2.1
Cardiac and stroke	22.2	315.3	10.2	51.8	851	2.3
Fall and injury	20.1	349.7	11.3	57.5	1,046	2.9
Illness and other	17.9	433.4	14.0	71.2	1,451	4.0
MVA	17.2	160.3	5.2	26.4	558	1.5
OD	18.4	47.5	1.5	7.8	155	0.4
Seizure and UNC	20.5	267.1	8.6	43.9	782	2.1
EMS Total	19.6	1,824.5	58.8	299.9	5,596	15.3
False alarm	13.5	103.1	3.3	16.9	459	1.3
Good intent	15.8	17.9	0.6	2.9	68	0.2
Hazard	17.5	22.5	0.7	3.7	77	0.2
Outside fire	25.1	89.3	2.9	14.7	213	0.6
Public service	23.0	57.5	1.9	9.4	150	0.4
Structure fire	41.1	81.5	2.6	13.4	119	0.3
Fire Total	20.5	371.8	12.0	61.1	1,086	3.0
Canceled	7.0	123.6	4.0	20.3	1,060	2.9
Aid given	18.9	785.7	25.3	129.2	2,497	6.8
Other Total	15.3	909.3	29.3	149.5	3,557	9.7
Total	18.2	3,105.6	100.0	510.5	10,239	28.1

Note: OD=Overdose and psychiatric; UNC=Unconsciousness.

Observations:

Overall

- The total deployed time for 2019 was 3,105.6 hours. The daily average was 8.5 hours for all NCFD units combined.
- There were 10,239 runs, including 1,060 runs dispatched for canceled calls and 2,497 runs dispatched for aid given calls. The daily average was 28.1 runs.

EMS

- EMS runs accounted for 59 percent of the total workload.
- The average deployed time for EMS runs was 19.6 minutes. The deployed time for all EMS runs averaged 5.0 hours per day.

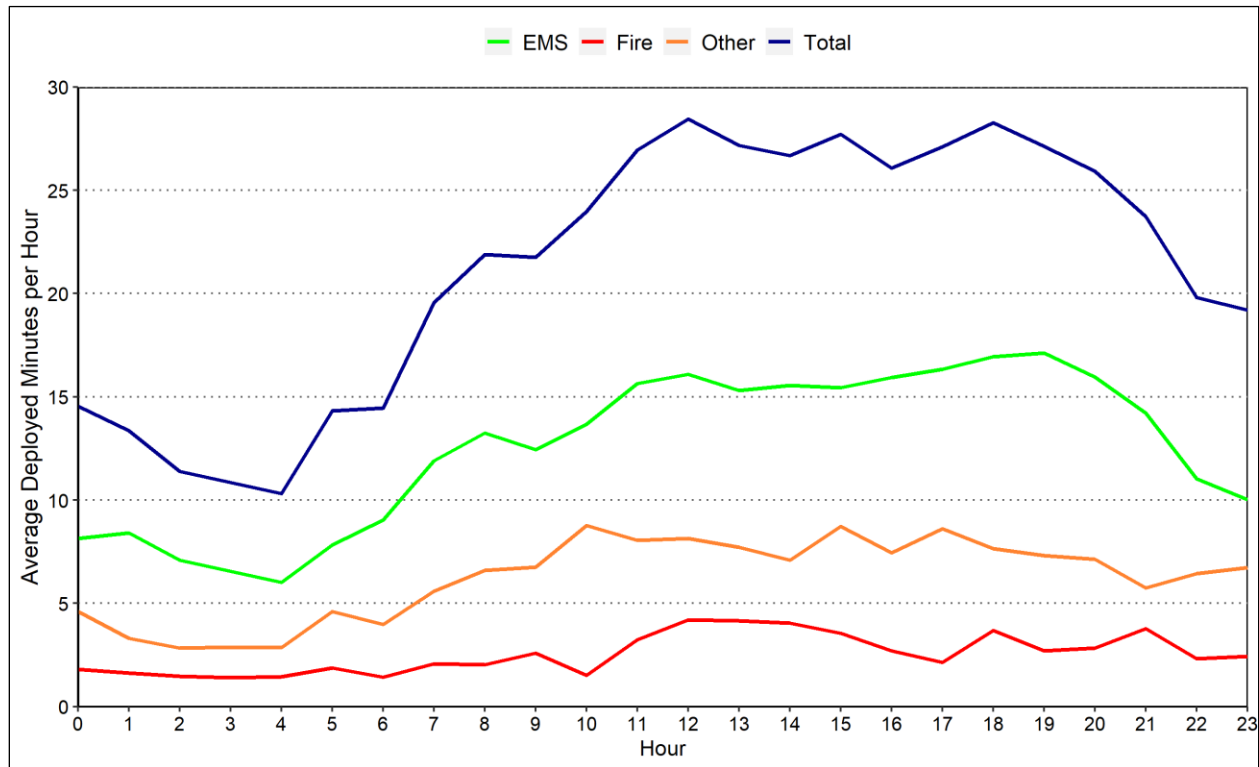
Fire

- Fire runs accounted for 12 percent of the total workload.
- The average deployed time for fire runs was 20.5 minutes. The deployed time for all fire runs averaged 1.0 minutes per day.
- There were 332 runs for structure and outside fire calls combined, with a total workload of 170.8 hours. This accounted for 5 percent of the total workload.
- The average deployed time for outside fire runs was 25.1 minutes per run, and the average deployed time for structure fire runs was 41.1 minutes per run.

TABLE 7-6: Deployed Minutes by Hour of Day

Hour	EMS	Fire	Other	Total
0	8.1	1.8	4.6	14.5
1	8.4	1.6	3.3	13.4
2	7.1	1.5	2.8	11.4
3	6.6	1.4	2.9	10.8
4	6.0	1.4	2.9	10.3
5	7.8	1.9	4.6	14.3
6	9.0	1.4	4.0	14.4
7	11.9	2.1	5.6	19.6
8	13.2	2.0	6.6	21.9
9	12.4	2.6	6.8	21.8
10	13.7	1.5	8.8	24.0
11	15.6	3.2	8.1	26.9
12	16.1	4.2	8.2	28.4
13	15.3	4.2	7.7	27.2
14	15.6	4.1	7.1	26.7
15	15.4	3.6	8.7	27.7
16	15.9	2.7	7.4	26.1
17	16.3	2.2	8.6	27.1
18	16.9	3.7	7.7	28.3
19	17.1	2.7	7.3	27.1
20	16.0	2.8	7.1	25.9
21	14.2	3.8	5.8	23.7
22	11.0	2.3	6.4	19.8
23	10.0	2.4	6.7	19.2
Daily Avg.	299.9	61.1	149.5	510.5

FIGURE 7-6: Average Deployed Minutes by Hour of Day



Observations:

- Hourly deployed time was highest during the day from 11:00 a.m. to 9:00 p.m., averaging more than 26 minutes per hour.
- Average deployed time peaked between noon and 1:00 p.m., averaging 28.4 minutes.
- Average deployed time was lowest between 4:00 a.m. and 5:00 a.m., averaging 10.3 minutes.

Workload by Unit

Table 7-7 provides a summary of each NCFD unit's workload for the year. Tables 7-8 and 7-9 provide a more detailed view of workload, showing each unit's runs broken out by run type (Table 7-8) and its daily average deployed time by run type (Table 7-9).

TABLE 7-7: Workload by Unit

Station	Unit	Unit Type	Deployed Minutes per Run	Total Hours	Total Pct.	Deployed Minutes per Day	Total Runs	Runs per Day
31	NCE31	Engine	18.1	915.3	29.5	150.5	3,031	8.3
	NCE231	Engine	12.3	0.6	0.0	0.1	3	0.0
	Total		18.1	915.9	29.5	150.6	3,034	8.3
33	NCSQ33	Squad	20.2	742.2	23.9	122.0	2,201	6.0
34	B57	Battalion	18.9	145.2	4.7	23.9	462	1.3
	NCE34	Engine	17.4	1,011.5	32.6	166.3	3,495	9.6
	NCE234	Engine	648.0	10.8	0.3	1.8	1	0.0
	NCT34	Truck	16.1	280.0	9.0	46.0	1,046	2.9
	Total		17.4	1,447.5	46.6	237.9	5,004	13.7
Total			18.2	3,105.6	100.0	510.5	10,239	28.1

TABLE 7-8: Total Runs by Run Type and Unit

Station	Unit	EMS	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Cancel	Aid Given	Total
31	NCE31	1,279	101	27	21	68	31	26	279	1,199	3,031
	NCE231	2	0	0	0	0	0	0	1	0	3
	Total	1,281	101	27	21	68	31	26	280	1,199	3,034
33	NCSQ33	1,773	76	12	13	29	37	23	229	9	2,201
34	B57	33	12	3	6	28	5	22	17	336	462
	NCE34	2,008	181	22	29	65	60	22	428	680	3,495
	NCE234	0	0	0	0	0	0	0	0	1	1
	NCT34	501	89	4	8	23	17	26	106	272	1,046
	Total	2,542	282	29	43	116	82	70	551	1,289	5,004
Total		5,596	459	68	77	213	150	119	1,060	2,497	10,239

Note: See Table 7-7 for unit type.

TABLE 7-9: Deployed Minutes per Day by Run Type and Unit

Station	Unit	EMS	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Cancel	Aid Given	Total
31	NCE31	66.1	3.3	1.1	1.0	4.8	1.3	2.9	4.7	65.1	150.5
	NCE231	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Total	66.2	3.3	1.1	1.0	4.8	1.3	2.9	4.7	65.1	150.6
33	NCSQ33	107.0	2.6	0.3	0.7	1.8	1.7	2.3	5.4	0.2	122.0
34	B57	1.4	0.3	0.2	0.2	1.5	0.9	2.0	0.3	17.1	23.9
	NCE34	104.1	7.7	1.1	1.4	5.0	4.3	2.9	8.1	31.7	166.3
	NCE234	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	1.8
	NCT34	21.2	3.0	0.3	0.4	1.5	1.3	3.3	1.8	13.3	46.0
	Total	126.7	11.0	1.5	2.0	8.1	6.4	8.2	10.2	63.9	237.9
Total		299.9	16.9	2.9	3.7	14.7	9.4	13.4	20.3	129.2	510.5

Note: See Table 7-7 for unit type.

Observations:

- Station 34 made the most runs (5,004 or an average of 13.7 runs per day) and had the highest total annual deployed time (1,447.5 or an average of 4.0 hours per day).
 - EMS calls accounted for 51 percent of runs and 53 percent of total deployed time.
 - Outside and structure fire calls accounted for 4 percent of runs and 7 percent of total deployed time.
- Station 31 made the second-most runs (3,034 or an average of 8.3 runs per day) and had the second-highest total annual deployed time (915.9 or an average of 2.5 hours per day).
 - EMS calls accounted for 42 percent of runs and 44 percent of total deployed time.
 - Outside and structure fire calls accounted for 3 percent of runs and 5 percent of total deployed time.
- Unit NCE34 made the most runs (3,495 or an average of 9.6 runs per day) and had the highest total annual deployed time (1,011.5 or an average of 2.8 hours per day).
 - EMS calls accounted for 57 percent of runs and 63 percent of total deployed time.
 - Outside and structure fire calls accounted for 2 percent of runs and 5 percent of total deployed time.
- Unit NCE31 made the second most runs (3,031 or an average of 8.3 runs per day) and had the second-highest total annual deployed time (915.3 or an average of 2.5 hours per day).
 - EMS calls accounted for 42 percent of runs and 44 percent of total deployed time.
 - Outside and structure fire calls accounted for 3 percent of runs and 5 percent of total deployed time.

Workload by Fire District

Table 7-10 breaks down the agency's workload by fire district. Table 7-11 provides further detail for the workload associated with structure and outside fire calls. Table 7-11 includes the aid given runs to outside and structure fires outside the National City fire district.

TABLE 7-10: Annual Workload by Fire District

District	Calls	Pct. Annual Calls	Runs	Runs Per Day	Deployed Minutes Per Run	Annual Hours	Pct. Annual Work	Deployed Minutes Per Day
National City	6,692	75.7	7,742	21.2	18.0	2,319.9	74.7	381.3
San Diego City	1,323	15.0	1,495	4.1	19.8	494.5	15.9	81.3
Chula Vista	699	7.9	864	2.4	15.6	225.1	7.2	37.0
San Diego County	101	1.1	105	0.3	32.4	56.8	1.8	9.3
Imperial Beach	21	0.2	21	0.1	13.0	4.5	0.1	0.7
Coronado	7	0.1	9	0.0	29.0	4.4	0.1	0.7
Lemon Grove	3	0.0	3	0.0	9.3	0.5	0.0	0.1
Total	8,846	100.0	10,239	28.1	18.2	3,105.6	100.0	510.5

TABLE 7-11: Structure and Outside Fire Runs by Fire District

District	Structure Fire Runs	Structure Fires Deployed Min. per Run	Outside Fire Runs	Outside Fires Deployed Min. per Run	Hours for Structure and Outside Fires	Pct. of Structure and Outside Fire Workload
National City	119	41.1	213	25.1	170.8	51.3
San Diego	122	22.9	44	62.1	92.2	27.7
Chula Vista	75	34.3	36	22.0	56.1	16.8
Imperial Beach	12	17.6	0	NA	3.5	1.0
San Diego County	3	53.9	3	78.6	6.6	2.0
Coronado	2	119.0	0	NA	4.0	1.2
Total	333	32.7	296	30.8	333.2	100.0

Note: All runs outside the National City fire district were mutual aid. The runs within National City match the number of runs described in Table 7-5.

Observations:

National City Fire

- There were 6,692 calls or 76 percent of the total calls.
- There were 7,742 runs or 21.2 runs per day.
- Total deployed time for the year was 2,319.9 hours or 75 percent of the total annual workload. The daily average was 381.3 minutes for all units combined.

San Diego Fire

- There were 1,323 calls or 15 percent of the total calls.
- There were 1,495 runs or 4.1 runs per day.
- Total deployed time for the year was 494.5 hours or 16 percent of the total annual workload. The daily average was 81.3 minutes for all units combined.

Chula Vista Fire

- There were 699 calls or 8 percent of the total calls.
- There were 864 runs or 2.4 runs per day.
- Total deployed time for the year was 225.1 hours or seven percent of the total annual workload. The daily average was 37.0 minutes for all units combined.

Other

- There were 132 calls or one percent of the total calls.
- There were 138 runs or 0.4 runs per day.
- Total deployed time for the year was 66.2 hours or two percent of the total annual workload. The daily average was 10.9 minutes for all units combined.

ANALYSIS OF BUSIEST HOURS

In this analysis, we included all 9,298 calls that occurred inside and outside National City's fire district in 2019. For these calls, there is significant variability in the number of calls from hour to hour. One special concern relates to the resources available for hours with the heaviest workload. We tabulated the data for each of the 8,760 hours in the year. Table 7-12 shows the number of hours in the year in which there were zero to six and more calls during the hour. Table 7-13 shows the ten one-hour intervals which had the most calls during the year. Table 7-14 examines the number of times a call overlapped with another call in each station area in 2019.

TABLE 7-12: Frequency Distribution of the Number of Calls by Year

Calls in an Hour	Frequency	Percentage
0	3,297	37.6
1	2,938	33.5
2	1,641	18.7
3	582	6.6
4	217	2.5
5	62	0.7
6+	23	0.3
Total	8,760	100.0

TABLE 7-13: Top Ten Hours with the Most Calls Received

Hour	Number of Calls	Number of Runs	Total Deployed Hours
5/14/2019, midnight to 1:00 a.m.	10	10	3.1
3/5/2019, midnight to 1:00 a.m.	9	12	2.2
11/28/2019, 11:00 a.m. to noon	8	19	2.8
7/20/2019, 2:00 p.m. to 3:00 p.m.	8	13	4.9
6/3/2019, midnight to 1:00 a.m.	8	11	1.7
10/31/2019, 11:00 a.m. to noon	8	10	1.0
11/15/2019, 2:00 p.m. to 3:00 p.m.	7	7	2.0
4/12/2019, 2:00 p.m. to 3:00 p.m.	6	10	2.4
1/8/2019, 3:00 p.m. to 4:00 p.m.	6	9	2.6
12/28/2019, 3:00 p.m. to 4:00 p.m.	6	9	2.4

Note: Total deployed hours is a measure of the total time spent responding to calls received in the hour. The deployed time from these calls may extend into the next hour or hours. The number of runs and deployed hours includes all units from the studied agencies. Here we considered units from all responding agencies

TABLE 7-14: Frequency of Overlapping Calls

Station	Scenario	Number of Calls	Percent of All Calls	Total Hours
31	No overlapped call	2,862	87.1	995.8
	Overlapped with one call	380	11.6	65.9
	Overlapped with two calls	41	1.2	4.8
	Overlapped with three calls	3	0.1	0.5
34	No overlapped call	3,289	85.3	1,048.1
	Overlapped with one call	505	13.1	87.6
	Overlapped with two calls	55	1.4	7.6
	Overlapped with three calls	7	0.2	0.6
	Overlapped with four calls	2	0.1	0.0
Outside	No overlapped call	1,968	91.4	631.1
	Overlapped with one call	173	8.0	34.3
	Overlapped with two calls	13	0.6	1.3

Table 7-15 examines each NCFD station's availability to respond to calls within its first due area. At the same time, it focuses on calls where at least one unit (NCFD or another FD agency) eventually arrived and ignores calls where no unit arrived. While there were 7,144 calls within National City's fire district (See Table 7-1, the fifth row of the "Total" column), there were 573 calls without an arriving unit.

TABLE 7-15: NCFD Station Availability to Respond to Calls

Station	Calls in Area	First Due Responded	First Due Arrived	First Due First	Percent Responded	Percent Arrived	Percent First
31	3,063	1,430	1,347	1,270	46.7	44.0	41.5
34	3,508	2,700	2,639	2,588	77.0	75.2	73.8
Total	6,571	4,130	3,986	3,858	62.9	60.7	58.7

Note: For each station, we count the number of calls occurring within its first due area. Then, we count the number of calls to where at least one unit arrived. Next, we focus on units from the first due station to see if any of its units responded, arrived, or arrived first.

Observations:

- During 23 hours (0.3 percent of all hours), six or more calls occurred; in other words, the department responded to six or more calls in an hour roughly once every 16 days.
 - The highest number of calls to occur in an hour was 10, which happened once.
- The hour with the most calls was from midnight to 1:00 a.m. on May 14, 2019. The hour's 10 calls involved 10 individual dispatches resulting in 3.1 hours of deployed time. These 10 calls included three cardiac and stroke calls, two illness and other calls, two MVA calls, one breathing difficulty call, one fall and injury call, and one seizure and unconsciousness call.

RESPONSE TIME

In this part of the analysis, we present response time statistics for different call types. We separate response time into its identifiable components. *Dispatch time* is the difference between the time a call is received and the time a unit is dispatched. Dispatch time includes call processing time, which is the time required to determine the nature of the emergency and the types of resources to dispatch. *Turnout time* is the difference between dispatch time and the time a unit is en route to a call's location. *Travel time* is the difference between the time en route and arrival on scene. *Response time* is the total time elapsed between receiving a call to arriving on scene.

In this analysis, we included all calls within the National City fire district to which at least one non-administrative NCFD unit arrived. Units from non-NCFD agencies were also included. Also, calls with a total response time exceeding 30 minutes were excluded. In addition, non-emergency calls were excluded. Finally, we focused on units that had complete time stamps, that is, units with all components recorded, so that we could calculate each segment of response time.

Based on the methodology above, for 8,846 calls in 2019, we excluded 2,154 aid given calls (outside National City), 853 canceled calls, one non-emergency call, 43 calls where no units recorded a valid on-scene time, 85 calls with a total response time exceeding 30 minutes, and 56 calls where one or more segments of the first arriving unit's response time could not be calculated due to missing or faulty data. As a result, in this section, a total of 5,654 calls are included in the analysis. Using the same method, we obtained 5,364 calls for the same analysis for 2020. 2020's response time analysis is compared with that of 2019 in Attachment I.

Response Time by Type of Call

Table 7-16 breaks down the average dispatch, turnout, travel, and total response times by call type for all 2019 calls in the National City fire district, and Table 7-17 does the same for 90th percentile response times. A 90th percentile means that 90 percent of calls had response times at or below that number. For example, Table 7-17 shows an overall 90th percentile response time of 8.7 minutes, which means that 90 percent of the time, a call had a response time of no more than 8.7 minutes. Figures 7-7 and 7-8 illustrate the same information.

TABLE 7-16: Average Response Time of First Arriving Unit, by Call Type

Call Type	Time in Minutes				Number of Calls
	Dispatch	Turnout	Travel	Total	
Breathing difficulty	1.8	1.1	3.2	6.1	703
Cardiac and stroke	2.1	1.0	3.1	6.2	762
Fall and injury	2.1	1.0	3.5	6.7	979
Illness and other	2.2	1.0	3.3	6.6	1,300
MVA	1.2	1.1	3.7	6.0	377
Overdose and psychiatric	2.3	1.1	4.2	7.5	145
Seizure and unconsciousness	2.0	1.0	3.2	6.2	725
EMS Total	2.0	1.0	3.3	6.4	4,991
False alarm	1.7	1.2	3.5	6.4	300
Good intent	2.3	1.1	5.3	8.7	51
Hazard	1.7	1.2	4.0	6.9	47
Outside fire	1.7	1.3	3.6	6.5	123
Public service	2.3	1.1	4.1	7.5	112
Structure fire	2.2	1.0	2.6	5.8	30
Fire Total	1.9	1.2	3.7	6.8	663
Total	2.0	1.1	3.4	6.5	5,654

FIGURE 7-7: Average Response Time of First Arriving Unit, by Call Type – EMS

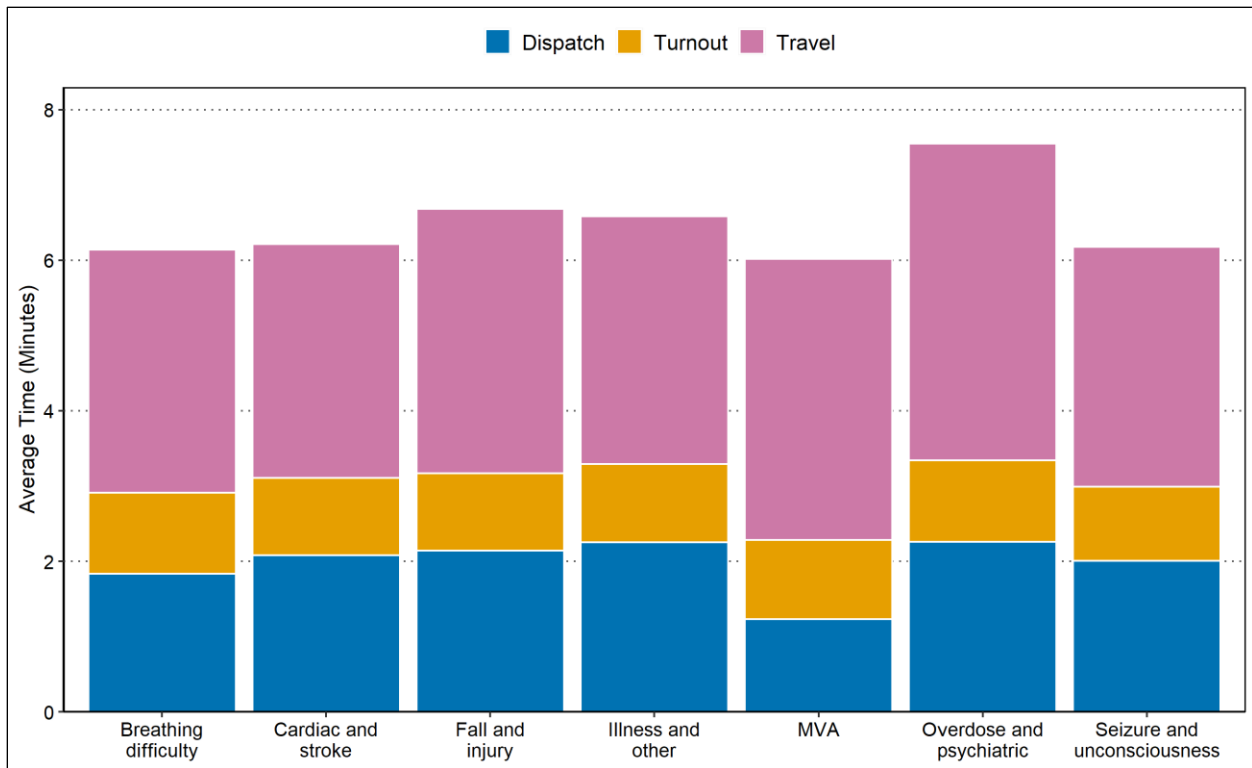


FIGURE 7-8: Average Response Time of First Arriving Unit, by Call Type – Fire

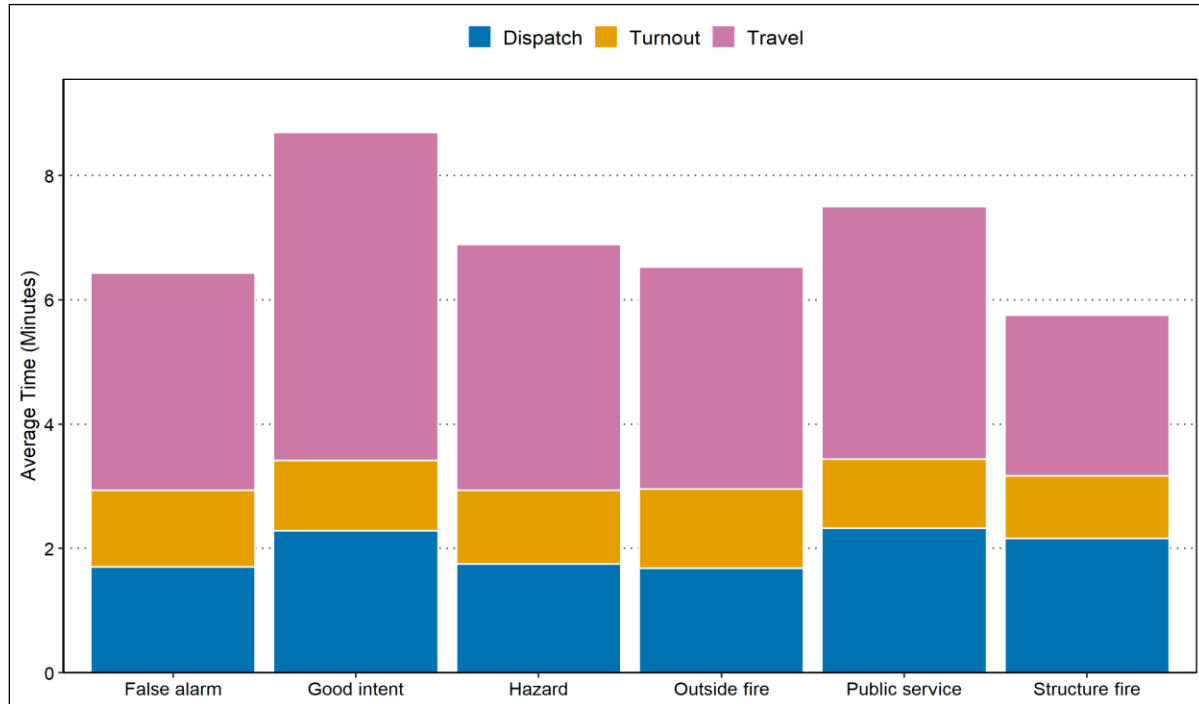


TABLE 7-17: 90th Percentile Response Time of Average Response Time of First Arriving Unit, by Call Type

Call Type	Time in Minutes				Number of Calls
	Dispatch	Turnout	Travel	Total	
Breathing difficulty	3.1	1.9	4.8	8.0	703
Cardiac and stroke	3.4	1.8	4.8	8.3	762
Fall and injury	3.6	1.8	5.4	8.8	979
Illness and other	3.8	1.8	5.1	8.9	1,300
MVA	2.1	1.8	5.9	8.5	377
Overdose and psychiatric	3.9	1.8	6.8	10.4	145
Seizure and unconsciousness	3.5	1.7	4.8	8.2	725
EMS Total	3.5	1.8	5.2	8.6	4,991
False alarm	2.7	2.1	5.5	8.7	300
Good intent	4.7	1.7	10.6	13.8	51
Hazard	2.7	2.0	5.8	10.8	47
Outside fire	2.5	2.0	5.6	9.3	123
Public service	3.5	2.0	6.6	10.8	112
Structure fire	3.3	1.7	4.4	7.7	30
Fire Total	3.2	2.0	6.1	9.7	663
Total	3.5	1.8	5.3	8.7	5,654

Observations:

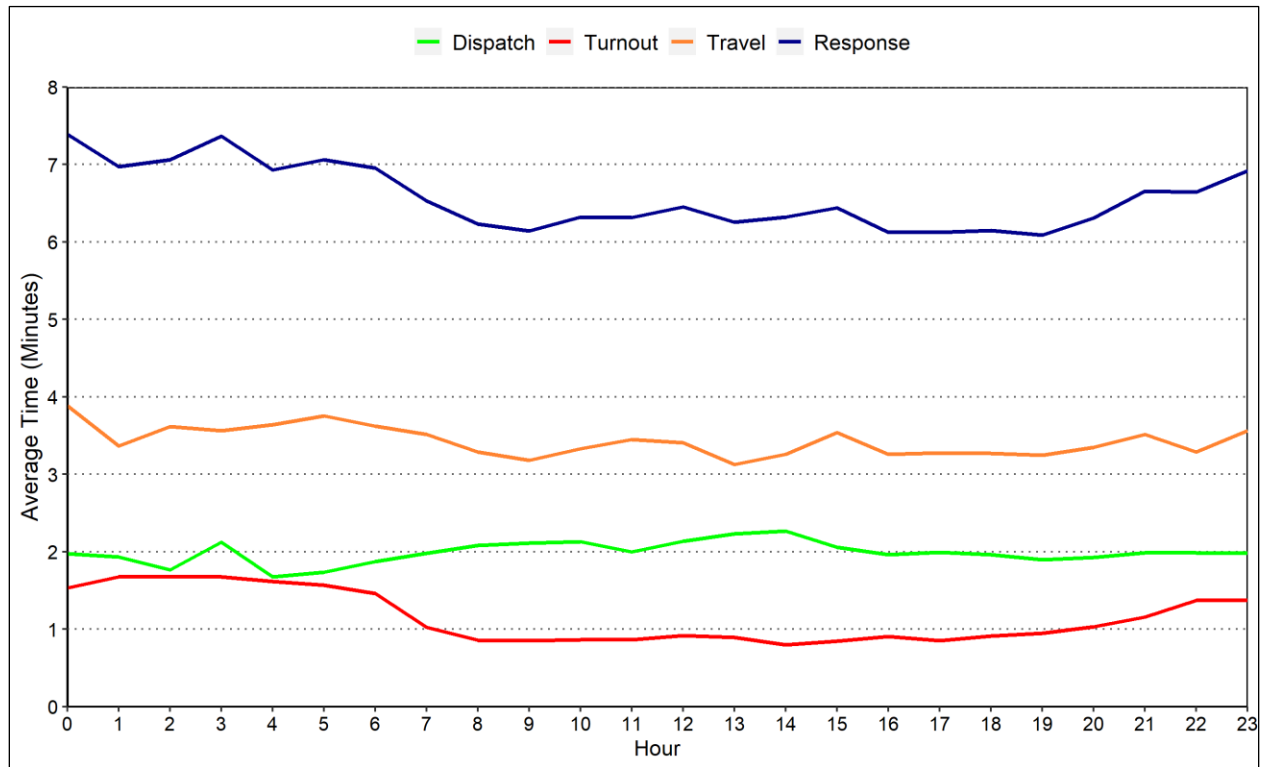
- The average dispatch time was 2.0 minutes.
- The average turnout time was 1.1 minutes.
- The average travel time was 3.4 minutes.
- The average total response time was 6.5 minutes.
- The average response time was 6.4 minutes for EMS calls and 6.8 minutes for fire calls.
- The average response time was 6.5 minutes for outside fires and 5.8 minutes for structure fires.
- The 90th percentile dispatch time was 3.5 minutes.
- The 90th percentile turnout time was 1.8 minutes.
- The 90th percentile travel time was 5.3 minutes.
- The 90th percentile total response time was 8.7 minutes.
- The 90th percentile response time was 8.6 minutes for EMS calls and 9.7 minutes for fire calls.
- The 90th percentile response time was 9.3 minutes for outside fires and 7.7 minutes for structure fires.

Table 7-18 shows the average response time by the time of day. The table also shows 90th percentile response times. Figure 7-9 shows the average response time by the time of day.

TABLE 7-18: Average and 90th Percentile Response Time of First Arriving Unit, by Hour of Day

Hour	Dispatch	Turnout	Travel	Response Time	90th Percentile Response Time	Number of Calls
0	2.0	1.5	3.9	7.4	9.6	152
1	1.9	1.7	3.4	7.0	9.2	138
2	1.8	1.7	3.6	7.1	9.0	120
3	2.1	1.7	3.6	7.4	9.4	111
4	1.7	1.6	3.6	6.9	8.6	105
5	1.7	1.6	3.8	7.1	8.6	139
6	1.9	1.5	3.6	7.0	9.1	164
7	2.0	1.0	3.5	6.5	8.8	226
8	2.1	0.9	3.3	6.2	8.6	272
9	2.1	0.9	3.2	6.1	8.4	246
10	2.1	0.9	3.3	6.3	8.2	280
11	2.0	0.9	3.4	6.3	8.8	324
12	2.1	0.9	3.4	6.5	8.8	298
13	2.2	0.9	3.1	6.3	8.4	281
14	2.3	0.8	3.3	6.3	8.8	290
15	2.1	0.8	3.5	6.4	9.2	314
16	2.0	0.9	3.3	6.1	8.4	309
17	2.0	0.9	3.3	6.1	8.2	312
18	2.0	0.9	3.3	6.1	8.3	316
19	1.9	0.9	3.2	6.1	8.3	307
20	1.9	1.0	3.3	6.3	8.3	297
21	2.0	1.2	3.5	6.7	8.8	270
22	2.0	1.4	3.3	6.6	8.8	203
23	2.0	1.4	3.6	6.9	9.1	180
Total	2.0	1.1	3.4	6.5	8.7	5,654

FIGURE 7-9: Average Response Time of First Arriving Unit, by Hour of Day



Observations:

- Average dispatch time was between 1.7 minutes (4:00 a.m. to 5:00 a.m.) and 2.3 minutes (2:00 p.m. to 3:00 p.m.).
- Average turnout time was between 0.8 minutes (2:00 p.m. to 3:00 p.m.) and 1.7 minutes (2:00 a.m. to 3:00 a.m.).
- Average travel time was between 3.1 minutes (1:00 p.m. to 2:00 p.m.) and 3.9 minutes (midnight to 1:00 a.m.).
- Average response time was between 6.1 minutes (7:00 p.m. to 8:00 p.m.) and 7.4 minutes (midnight to 1:00 a.m.).
- The 90th percentile response time was between 8.2 minutes (10:00 a.m. to 11:00 a.m.) and 9.6 minutes (midnight to 1:00 a.m.).

Response Time Distribution

Here, we present a more detailed look at how response times to calls are distributed. The cumulative distribution of total response time for the first arriving unit to EMS calls is shown in Figure 7-10 and Table 7-19. Figure 7-10 shows response times for the first arriving unit to EMS calls as a frequency distribution in whole-minute increments, and Figure 7-11 shows the same for the first arriving unit to outside and structure fire calls.

The cumulative percentages here are read in the same way as a percentile. In Figure 7-10, the 90th percentile of 8.6 minutes means that 90 percent of EMS calls had a response time of 8.6 minutes or less. In Table 7-19, the cumulative percentage of 84.7, for example, means that 84.7 percent of EMS calls had a response time under 8 minutes.

FIGURE 7-10: Cumulative Distribution of Response Time – First Arriving Unit – EMS

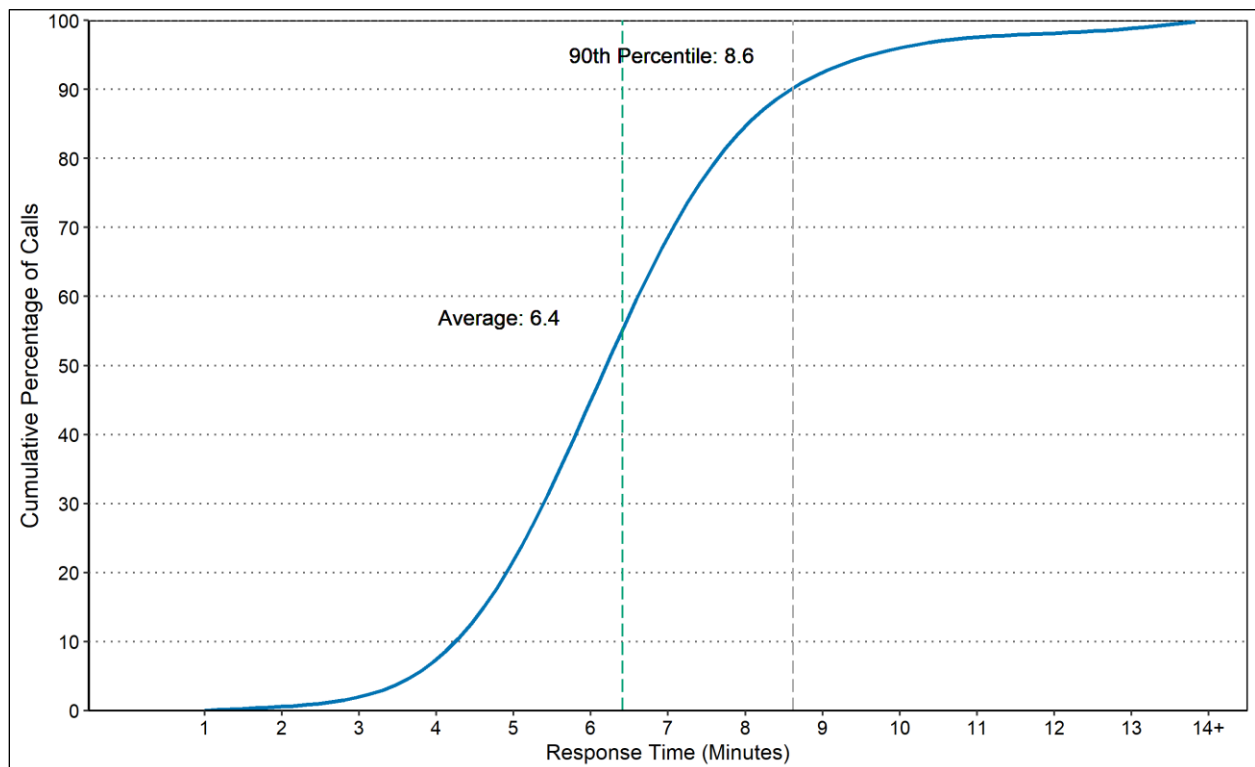


FIGURE 7-11: Cumulative Distribution of Response Timer – First Arriving Unit – Outside and Structure Fires

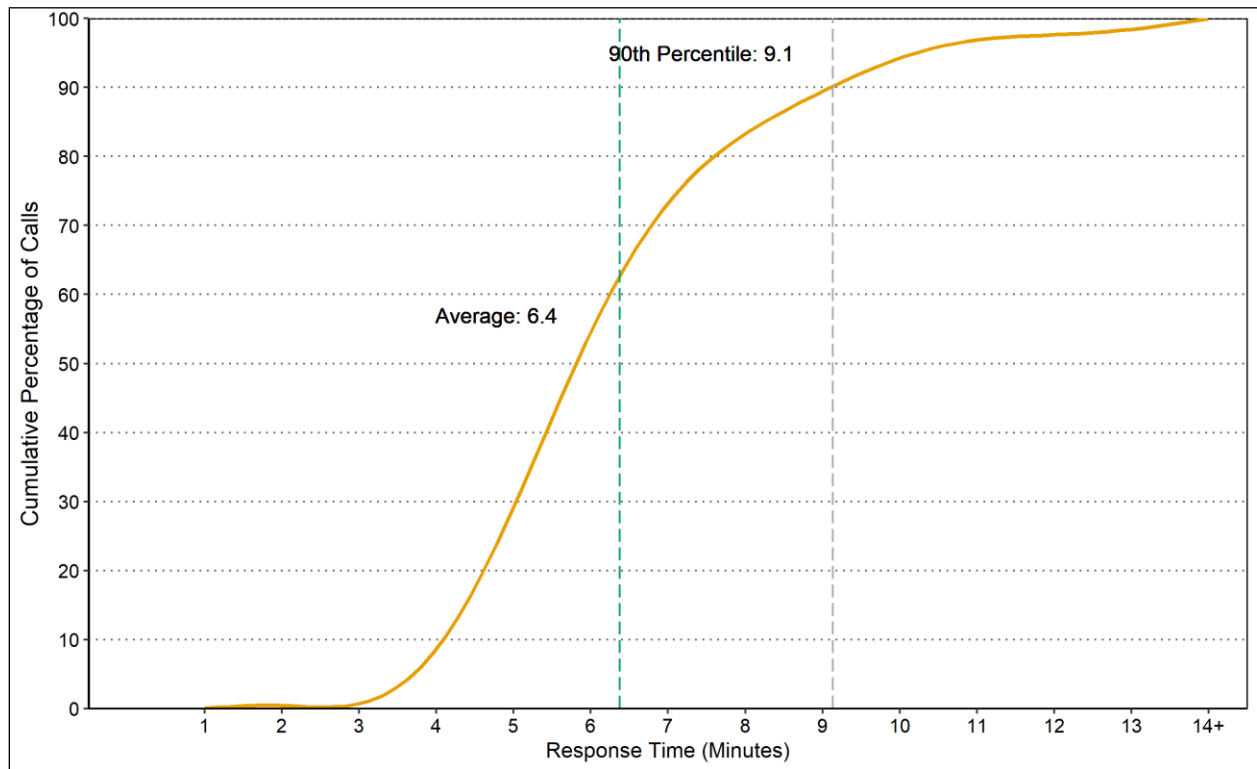


TABLE 7-19: Cumulative Distribution of Response Time – First Arriving Unit – EMS

Response Time (Minute)	Frequency	Cumulative Percentage
1	2	0.0
2	24	0.5
3	79	2.1
4	260	7.3
5	709	21.5
6	1,177	45.1
7	1,183	68.8
8	794	84.7
9	386	92.4
10	177	96.0
11	80	97.6
12	31	98.2
13	26	98.7
14+	63	100.0

TABLE 7-20: Cumulative Distribution of Response Time – First Arriving Unit – Outside and Structure Fires

Response Time (Minute)	Frequency	Cumulative Percentage
1	0	0.0
2	1	0.7
3	1	1.3
4	9	7.2
5	33	28.8
6	42	56.2
7	25	72.5
8	17	83.7
9	8	88.9
10	9	94.8
11	3	96.7
12	1	97.4
13	2	98.7
14+	2	100.0

Observations:

- For 85 percent of EMS calls, the response time of the first arriving unit was less than 8 minutes.
- For 84 percent of outside and structure fire calls, the response time of the first arriving unit was less than 8 minutes.

FIRE LOSS

Table 7-21 presents the number of outside and structure fires, broken out by levels of fire loss. Table 7-22 shows the amount of property and content loss for outside and structure fires inside the NCFD fire district in 2019.

TABLE 7-21: Total Fire Loss Above and Below \$25,000

Call Type	No Loss	Under \$25,000	\$25,000 plus	Total
Outside fire	108	16	1	125
Structure fire	16	11	4	31
Total	124	27	5	156

TABLE 7-22: Content and Property Loss – Structure and Outside Fires

Call Type	Property Loss		Content Loss	
	Loss Value	Number of Calls	Loss Value	Number of Calls
Outside fire	\$1,092,100	15	\$3,200	5
Structure fire	\$287,200	13	\$39,700	13
Total	\$1,379,300	28	\$42,900	18

Note: The table includes only fire calls with a recorded loss greater than 0.

Observations:

- 108 outside fires and 16 structure fires had no recorded loss.
- 1 outside fire and 4 structure fires recorded losses above \$25,000.
- Structure fires:
 - The highest total loss for a structure fire was \$155,000.
 - The average total loss for structure fires with loss was \$21,793.
 - 13 structure fires recorded a content loss totaling \$39,700.
 - Out of 31 structure fires, 13 recorded a property loss totaling \$287,200.
- Outside fires:
 - The highest total loss for an outside fire was \$1,000,000.
 - The average total loss for outside fires with loss was \$64,429.
 - 5 outside fires recorded content losses totaling \$3,200.
 - Out of 125 outside fires, 15 recorded property losses totaling \$1,092,100.

ATTACHMENT I: 2019 & 2020 COMPARISON

In this analysis, we compare portions of the previous analysis with similar records for 2020. We compare calls by type, unit workload, agency's availability, and response times.

Calls Volume by Year

Table 7-23 shows the number of calls for both 2019 and 2020. Figure 7-12 shows the monthly variation in the number of calls per day for both years. Similarly, Figure 7-13 illustrates the average number of calls per hour for both years.

TABLE 7-23: Calls by Type and Year

Call Type	2019		2020	
	Total Calls	Calls per Day	Total Calls	Calls per Day
Breathing difficulty	722	2.0	674	1.8
Cardiac and stroke	779	2.1	740	2.0
Fall and injury	999	2.7	952	2.6
Illness and other	1,344	3.7	1,303	3.6
MVA	407	1.1	349	1.0
Overdose and psychiatric	151	0.4	171	0.5
Seizure and unconsciousness	738	2.0	620	1.7
EMS total	5,140	14.1	4,809	13.1
False alarm	318	0.9	216	0.6
Good intent	56	0.2	81	0.2
Hazard	48	0.1	33	0.1
Outside fire	125	0.3	162	0.4
Public service	121	0.3	139	0.4
Structure fire	31	0.1	29	0.1
Fire total	699	1.9	660	1.8
Canceled	853	2.3	922	2.5
Aid given	2,154	5.9	2,090	5.7
Total	8,846	24.2	8,481	23.2

FIGURE 7-12: Average Calls by Month and Year

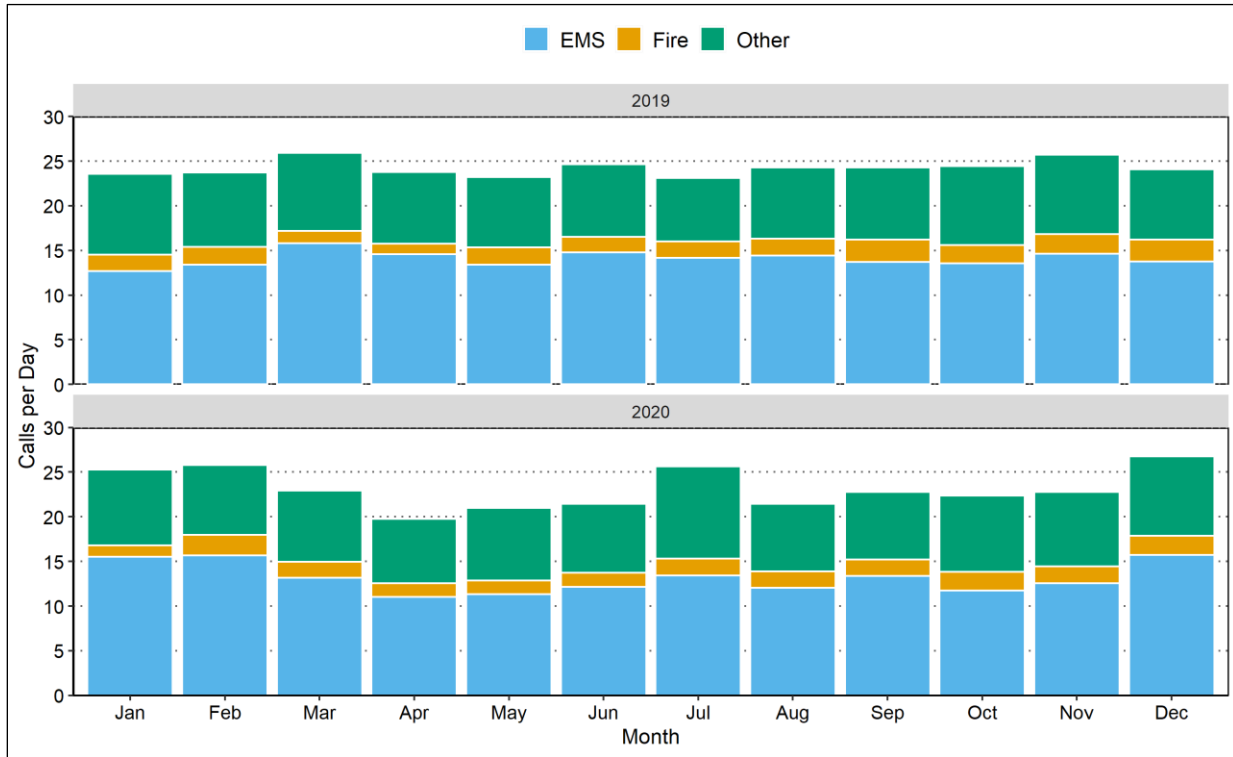
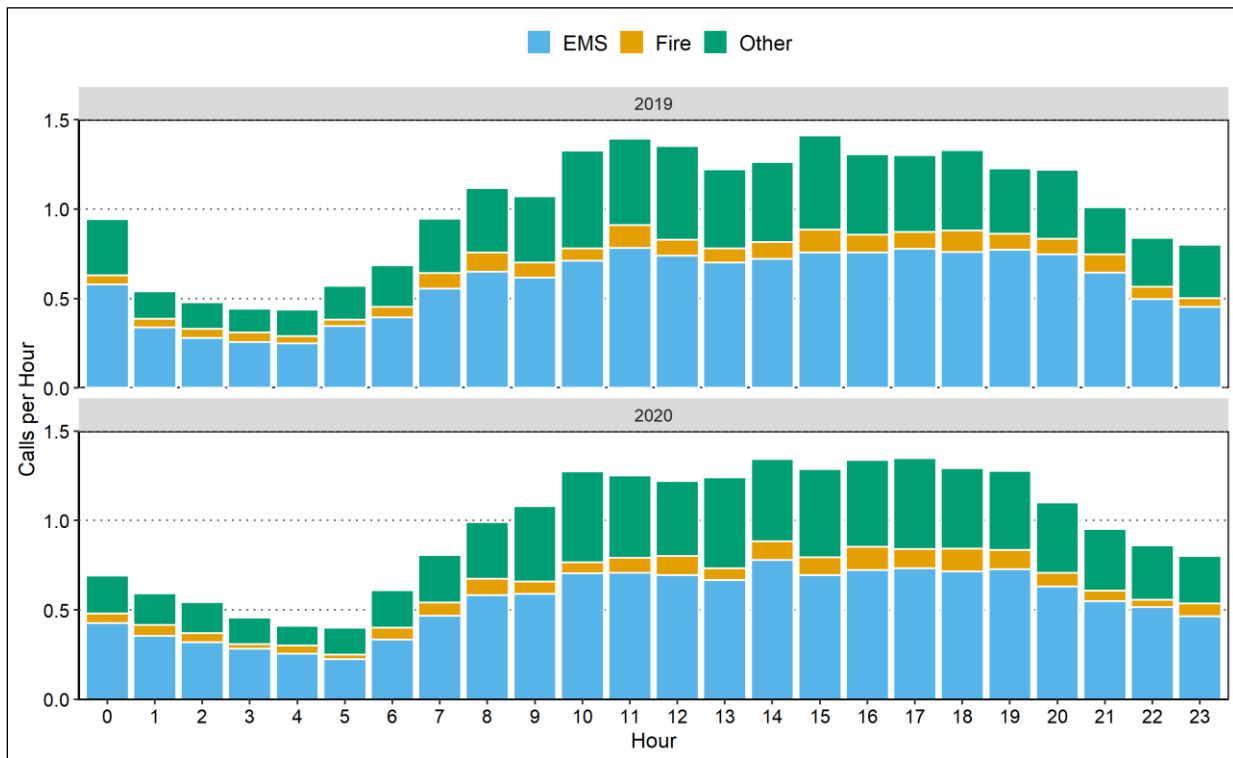


FIGURE 7-13: Average Calls by Hour of Day and Year



Workload by Year

Table 7-24 compares the call volume, annual runs, and workload by fire district in 2019 and 2020. Table 7-25 compares the annual runs and workload by NCFD station and unit during the two years. Figure 7-14 compares the average deployed minutes by the hour of the day in 2019 and 2020. Note that in Figure 7-14, the workload created by incident FMSC202350 was not included. Unit NCE34 responded to this incident with a duration time of 752.9 hours (19 percent of the annual workload). This is an outlier but has a significant influence on the workload in 2020.

TABLE 7-24: Annual Workload by District and Year

District	2019			2020		
	Calls	Runs	Hours	Calls	Runs	Hours
National City	6,692	7,742	2,319.9	6,391	7,540	2,320.1
San Diego	1,323	1,495	494.5	1,328	1,525	541.6
Chula Vista	699	864	225.1	653	813	224.8
San Diego County	101	105	56.8	77	83	45.1
Imperial Beach	21	21	4.5	21	25	5.8
Coronado	7	9	4.4	10	13	5.6
Lemon Grove	3	3	0.5			
Fresno County *				1	3	752.9
Total	8,846	10,239	3,105.6	8,481	10,002	3,895.8

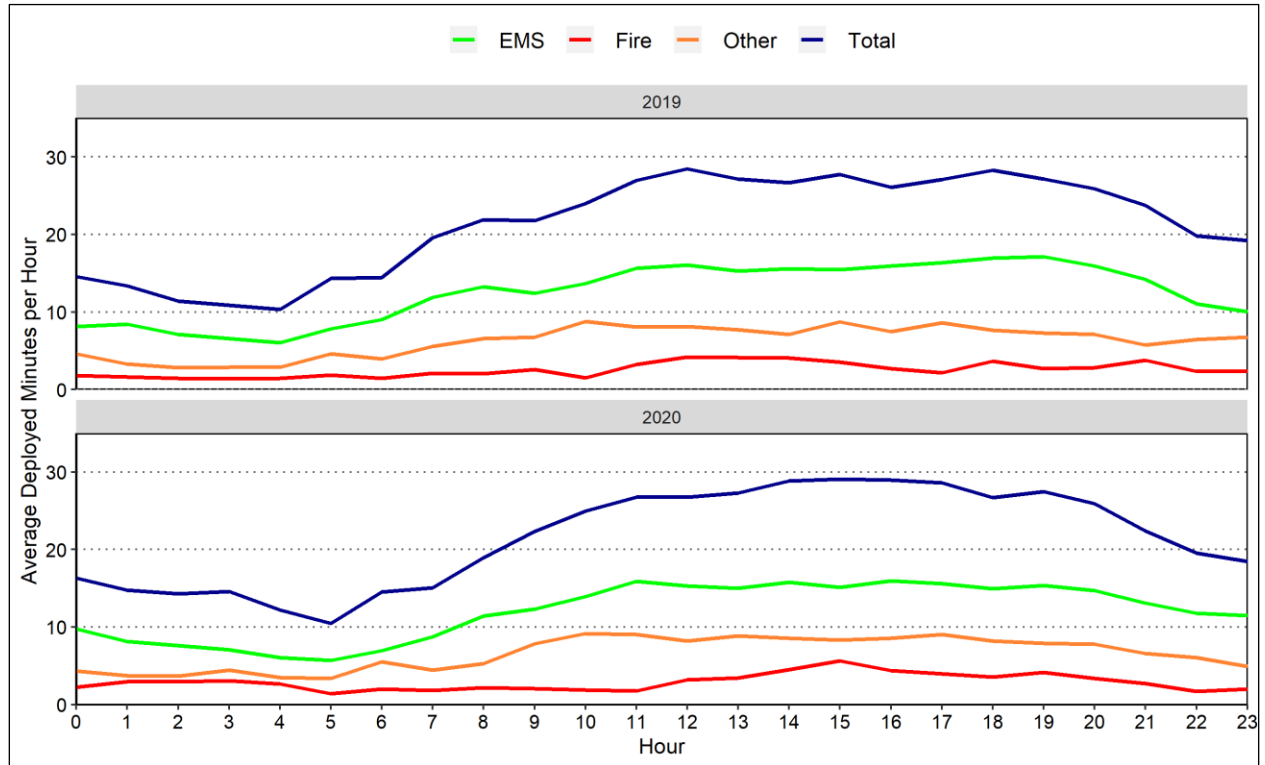
Note: *2020 included responses to one wildfire (Creek Fire) recorded as incident number FMSC202350. Unit NCE34 responded to this call from September 6, 2020, to October 7, 2020.

TABLE 7-25: Annual Workload by Station, Unit, and Year

Station	Unit	Unit Type	2019		2020	
			Hours	Runs	Hours	Runs
31	NCE31	Engine	915.3	3,031	916.6	2,989
	NCE231	Engine	0.6	3		
	Total		915.9	3,034	916.6	2,989
33	NCSQ33	Squad	742.2	2,201	696.3	2,098
34	B57	Battalion	145.2	462	182.8	460
	NCE34*	Engine	1,011.5	3,495	1,711.0	3,152
	NCE234	Engine	10.8	1	113.3	368
	NCT34	Truck	280.0	1,046	275.9	935
	Total		1,447.5	5,004	2,282.9	4,915
Total			3,105.6	10,239	3,895.8	10,002

Note: *NCE34 includes 753 hours associated with one wildfire (Creek Fire) in 2020.

FIGURE 7-14: Average Deployed Minutes by Hour of Day in 2019 and 2020



Agency's Availability by Year

Table 7-26 compares each NCFD station's response availability to calls that occurred in its first due area in both years. We focused on calls where a unit eventually arrived and ignores calls where no unit arrived.

TABLE 7-26: NCFD Station Availability to Respond to Calls by Year

Station	2019				2020			
	Calls in Area	Percent Responded	Percent Arrived	Percent First	Calls in Area	Percent Responded	Percent Arrived	Percent First
31	3,137	45.6	42.9	30.1	2,880	46.4	42.7	30.8
34	3,658	73.8	72.1	54.5	3,584	73.7	71.6	53.7
Total	6,795	60.8	58.7	43.2	6,464	61.6	58.7	43.5

Note: For each station, we count the number of calls occurring within its first due area. Then, we count the number of calls to where at least one unit arrived. Next, we focus on units from the first due station to see if any of its units responded, arrived, or arrived first.

Response Time by Year

Tables 7-27 and 7-28 compare the average and 90th percentile response times by call type in 2019 and 2020.

TABLE 7-27: Average Response Time of First Arriving Unit, by Call Type and Year

Call Type	2019					2020				
	Time in Minutes				Calls	Time in Minutes				Calls
	Dispatch	Turnout	Travel	Total		Dispatch	Turnout	Travel	Total	
False alarm	1.7	1.2	3.5	6.4	300	1.8	1.1	3.9	6.8	203
Good intent	2.3	1.1	5.3	8.7	51	2.0	1.1	4.4	7.6	75
Hazard	1.7	1.2	4.0	6.9	47	1.7	1.0	3.4	6.1	33
Outside fire	1.7	1.3	3.6	6.5	123	1.8	1.2	4.1	7.0	160
Public service	2.3	1.1	4.1	7.5	112	2.0	1.1	4.3	7.3	126
Structure fire	2.2	1.0	2.6	5.8	30	1.7	0.9	3.3	5.8	29
Fire Total	1.9	1.2	3.7	6.8	663	1.8	1.1	4.0	7.0	626
EMS Total	2.0	1.0	3.3	6.4	4,991	2.1	1.1	3.7	6.8	4,738
Total	2.0	1.1	3.4	6.5	5,654	2.1	1.1	3.7	6.9	5,364

TABLE 7-28: 90th Percentile Response Time of First Arriving Unit, by Call Type and Year

Call Type	2019					2020				
	Time in Minutes				Calls	Time in Minutes				Calls
	Dispatch	Turnout	Travel	Total		Dispatch	Turnout	Travel	Total	
False alarm	2.7	2.1	5.5	8.7	300	2.9	2.0	6.1	9.4	203
Good intent	4.7	1.7	10.6	13.8	51	3.6	2.0	6.4	11.0	75
Hazard	2.7	2.0	5.8	10.8	47	3.0	1.5	5.0	8.4	33
Outside fire	2.5	2.0	5.6	9.3	123	3.0	2.1	6.2	9.4	160
Public service	3.5	2.0	6.6	10.8	112	3.9	2.0	7.3	10.8	126
Structure fire	3.3	1.7	4.4	7.7	30	2.4	1.8	5.1	8.2	29
Fire Total	3.2	2.0	6.1	9.7	663	3.1	2.0	6.2	9.4	626
EMS Total	3.5	1.8	5.2	8.6	4,991	3.6	2.0	5.5	9.3	4,738
Total	3.5	1.8	5.3	8.7	5,654	3.5	2.0	5.6	9.3	5,364

ATTACHMENT II: ADDITIONAL PERSONNEL

Table 7-29 illustrates the workload of NCFD's administrative units in 2019 and 2020, respectively.

TABLE 7-29: Workload of Administrative Units by Year

Unit ID	Unit Type	2019		2020	
		Annual Hours	Annual Runs	Annual Hours	Annual Runs
5701	Fire Chief	6.9	2	0.0	0
5703	Battalion Chief	0.0	0	0.3	2
5705	Fire Marshal	10.5	10	10.3	6
5706	Deputy Fire Marshal	9.7	6	12.4	9

ATTACHMENT III: CALLS OUTSIDE NATIONAL CITY FIRE DISTRICT

From 2019 to 2020, NCFD responded to 4,244 aid-given calls outside of its fire district (see Table 7-23). Table 7-30 details these calls by call type and year. Of these, 241 were structure fire calls and 153 were outside fire calls. Figures 7-15 and 7-16 show the percentage of calls that fall into each EMS (Figure 7-15) and fire (Figure 7-16) type category by year.

TABLE 7-30: Calls Outside NCFD District by Call Type and Year

Call Type	2019			2020		
	Total Calls	Calls per Day	Pct. Calls	Total Calls	Calls per Day	Pct. Calls
Breathing difficulty	173	0.5	8.0	176	0.5	8.4
Cardiac and stroke	209	0.6	9.7	192	0.5	9.2
Fall and injury	204	0.6	9.5	181	0.5	8.7
Illness and other	347	1.0	16.1	303	0.8	14.5
MVA	128	0.4	5.9	128	0.3	6.1
OD	26	0.1	1.2	36	0.1	1.7
Seizure and UNC	178	0.5	8.3	143	0.4	6.8
EMS Total	1,265	3.5	58.7	1,159	3.2	55.5
False alarm	80	0.2	3.7	81	0.2	3.9
Good intent	16	0.0	0.7	25	0.1	1.2
Hazard	25	0.1	1.2	35	0.1	1.7
Outside fire	67	0.2	3.1	86	0.2	4.1
Public service	31	0.1	1.4	37	0.1	1.8
Structure fire	135	0.4	6.3	106	0.3	5.1
Fire Total	354	1.0	16.4	370	1.0	17.7
Canceled	535	1.5	24.8	561	1.5	26.8
Total	2,154	5.9	100.0	2,090	5.7	100.0

Note: OD=Overdose and psychiatric; UNC=unconsciousness.

FIGURE 7-15: EMS Calls by Type and Year, Outside National City

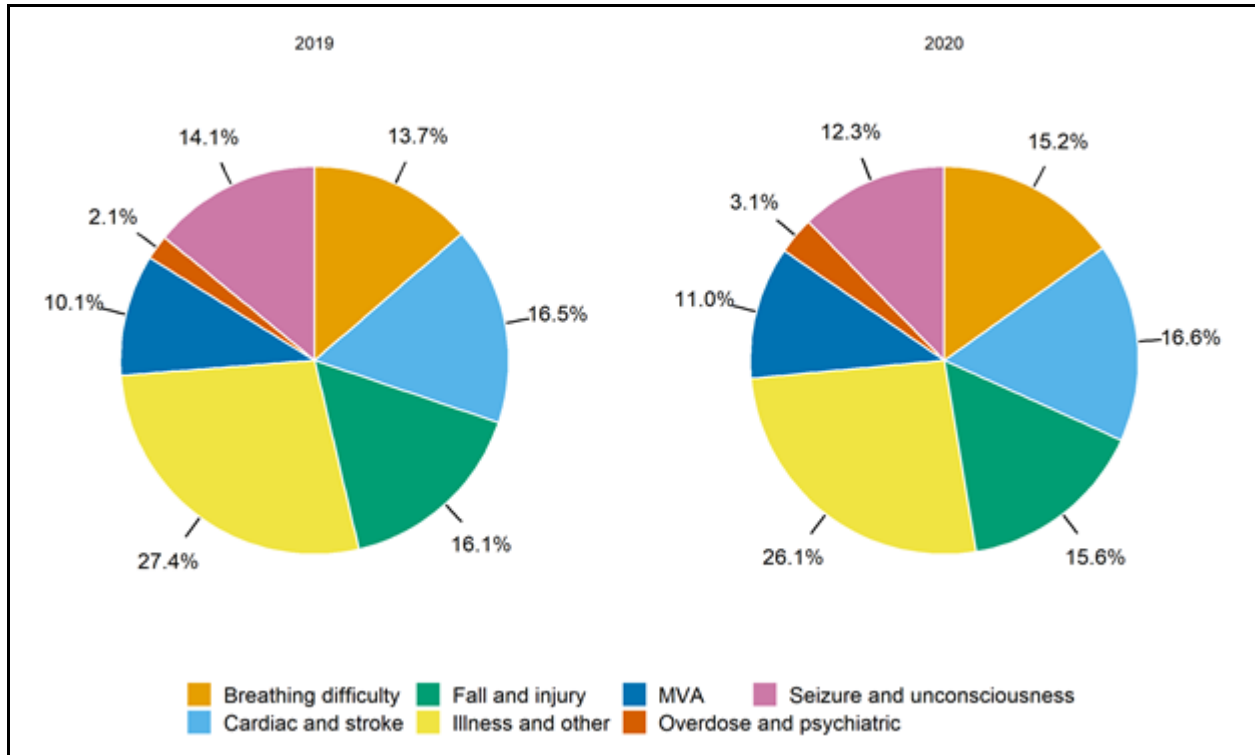
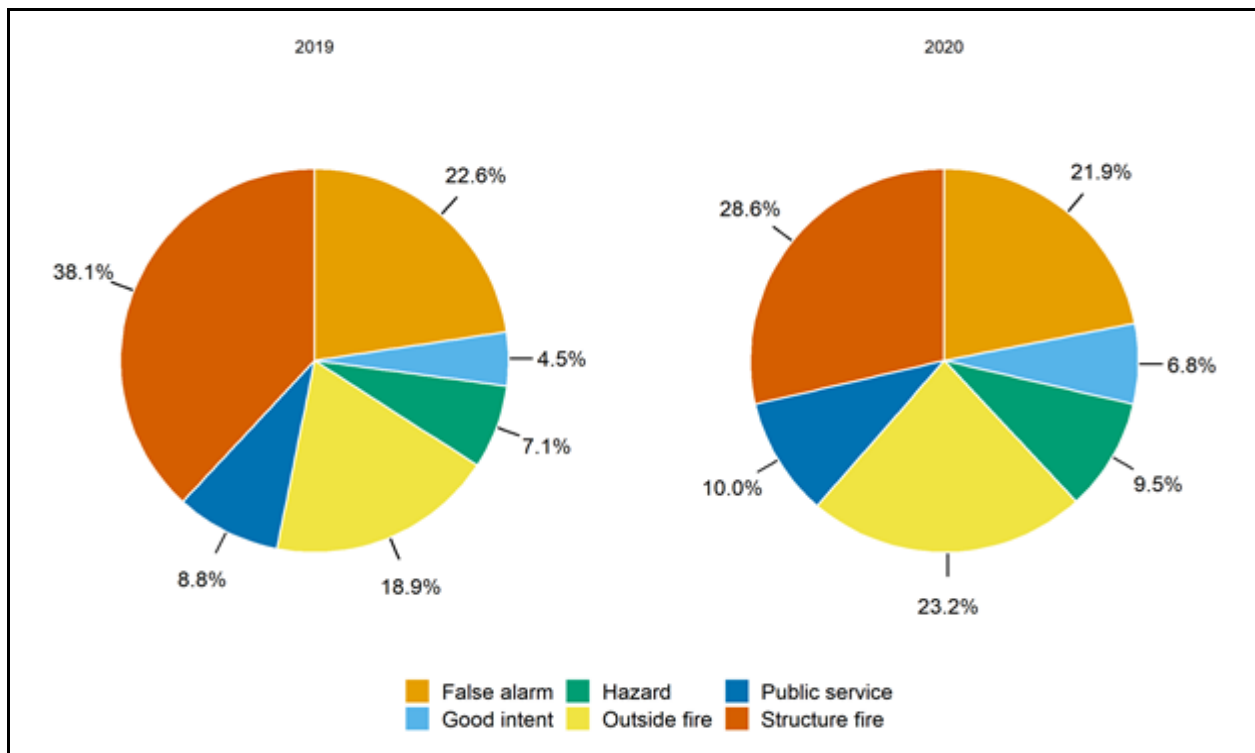


FIGURE 7-16: Fire Calls by Type and Year, Outside National City



ATTACHMENT IV: AID RECEIVED WORKLOAD

This section focuses on aid received within National City's fire district from other fire agencies. From 2019 to 2020, there were 1,963 calls in National City where aid was received from other agencies. Of these, 1,069 calls involved a joint response with NCFD and 894 calls involved a response by other agencies alone (See Table 7-1).

Aid Received Calls by Type

Table 7-31 shows the number of calls to which other FD agencies responded, broken out by call type and year. The table also presents the annual runs and work hours for each type of call.

TABLE 7-31: Aid Received Workload by Type and Year, Inside National City

Call Type	Total Annual Calls		Total Annual Runs		Total Annual Hours	
	2019	2020	2019	2020	2019	2020
Breathing difficulty	62	66	65	72	30.1	40.7
Cardiac and stroke	75	86	85	94	43.9	41.4
Fall and injury	100	114	106	119	38.5	47.2
Illness and other	131	140	144	179	52.7	80.7
MVA	193	177	295	270	75.1	68.7
OD	19	22	22	24	8.6	12.4
Seizure and UNC	69	71	70	75	30.4	42.0
EMS Total	649	676	787	833	279.1	333.1
False alarm	67	52	104	94	15.1	15.2
Good intent	21	48	22	77	5.9	12.5
Hazard	13	18	32	46	9.9	6.2
Outside fire	36	57	94	127	23.5	45.6
Public service	25	31	32	54	12.1	8.8
Structure fire	24	25	106	135	31.7	48.8
Fire Total	186	231	390	533	98.2	137.1
Canceled	116	105	153	146	35.2	29.2
Total	951	1,012	1,330	1,512	412.4	499.4

Note: OD=Overdose and psychiatric; UNC=Unconsciousness.

Runs and Arrivals by Aid Agency

Tables 7-32 and 7-33 compare the number of aid-received runs and arrivals by different agencies in 2019 and 2020.

TABLE 7-32: Aid Received Runs by Agency, First Due Area, and Year

Agency	2019			2020		
	First Due Area		Total	First Due Area		Total
	31	34		31	34	
Bonita FD	104	0	104	94	1	95
Coronado FD	0	4	4	1	1	2
Chula Vista FD	136	196	332	182	240	422
Escondido FD	1	0	1	0	0	0
Federal FD	0	1	1	1	0	1
Lemon Grove FD	0	0	0	0	1	1
San Diego FD	522	364	886	569	421	990
San Miguel FD	1	1	2	1	0	1
Total	764	566	1,330	848	664	1,512

TABLE 7-33: Aid Received Arrivals by Agency, First Due Area, and Year

Agency	2019			2020		
	First Due Area		Total	First Due Area		Total
	31	34		31	34	
Bonita FD	75	0	75	61	1	62
Coronado FD	0	1	1	0	0	0
Chula Vista FD	95	131	226	121	159	280
Lemon Grove FD	0	0	0	0	1	1
San Diego FD	326	207	533	372	257	629
Total	496	339	835	554	418	972

ATTACHMENT V: LINCOLN ACRES

One area of particular interest is Lincoln Acres. While not officially part of National City, it is an unincorporated area that is entirely enclosed within National City's boundaries. Up until this point, calls within Lincoln Acres were included as part of the National City Fire District. For this section, we used each call's recorded latitude and longitude to locate the calls within Lincoln Acres.

Table 7-34 compares the volume of calls and the workload for this area for both years, broken down by call type. While Table 7-1 distinguishes calls without a responding NCFD unit, all calls within Lincoln Acres involved a responding NCFD unit. To better understand the workload within Lincoln Acres, we included runs and associated work for all fire agencies responding to calls within the area. Table 7-35 shows the average and 90 percentile response time to calls that occurred in this area. Due to the small sample size, we used all calls in two years in the analysis of response time. Table 7-36 examines the average and 90th response times of the first arriving units by the time of day (in four-hour intervals).

TABLE 7-34: Calls and Workload in Lincoln Acres by Call Type and Year

Call Type	2019			2020		
	Calls	Hours	Runs	Calls	Hours	Runs
Breathing difficulty	16	20.7	34	16	23.7	35
Cardiac and stroke	19	30.7	46	21	27.7	48
Fall and injury	16	23.9	35	15	24.4	34
Illness and other	23	31.4	54	31	42.6	67
MVA	23	30.4	74	31	30.4	93
OD	2	2.0	4	6	6.6	13
Seizure and UNC	14	19.7	29	15	23.2	31
EMS Total	113	158.8	276	135	178.6	321
False alarm	5	1.8	9	5	7.0	15
Good intent	3	2.6	5	6	5.1	24
Hazard	1	0.1	1	4	2.3	10
Outside fire	5	5.6	20	7	12.5	20
Public service	5	1.6	6	3	0.9	3
Structure fire	4	42.0	36	0	0.0	0
Fire Total	23	53.8	77	25	27.7	72
Canceled	28	23.7	77	41	34.9	100
Total	164	236.2	430	201	241.2	493

Note: OD=Overdose and psychiatric; UNC=Unconsciousness.

TABLE 7-35: Response Time in Lincoln Acres, by Call Type

Call Type	Average Response Time (Minutes)				90 Percentile Response Time (Minutes)				Call Count
	Dispatch	Turnout	Travel	Total	Dispatch	Turnout	Travel	Total	
False alarm	2.7	0.7	3.3	6.8	12.3	1.7	7.2	12.6	8
Good intent	2.3	0.8	4.9	8.0	7.0	1.6	10.6	13.2	7
Hazard	2.5	1.1	4.2	7.7	7.8	1.5	5.6	9.1	5
Outside fire	1.7	1.0	3.9	6.6	2.7	1.8	6.6	8.7	12
Public service	3.2	1.1	4.5	8.8	10.8	2.0	7.9	15.5	7
Structure fire	3.6	0.6	1.6	5.8	7.4	1.2	2.0	9.3	3
Fire Total	2.5	0.9	3.9	7.3	7.0	1.7	6.6	11.5	42
EMS Total	2.0	1.0	3.9	7.0	3.4	1.8	6.2	9.6	240
Total	2.1	1.0	3.9	7.0	3.5	1.8	6.3	9.8	282

TABLE 7-36: Response Time in Lincoln Acres, by Time of Day

Time	Average, Minutes				90 Percentile, Minutes				Call Count
	Dispatch	Turnout	Travel	Total	Dispatch	Turnout	Travel	Total	
00:00 - 03:59	2.1	1.6	3.5	7.2	4.3	2.3	5.4	9.8	28
04:00 - 07:59	1.8	1.3	4.5	7.6	2.9	2.2	8.5	12.4	26
08:00 - 11:59	1.8	0.8	4.0	6.6	3.0	1.4	6.2	9.0	60
12:00 - 15:59	2.3	0.7	3.9	6.9	3.0	1.4	6.2	8.9	50
16:00 - 19:59	2.1	0.8	4.2	7.1	3.4	1.4	6.8	9.2	61
20:00 - 23:59	2.2	1.2	3.6	7.1	5.0	1.9	6.2	10.3	57
Total	2.1	1.0	3.9	7.0	3.5	1.8	6.3	9.8	282

ATTACHMENT VI: PARADISE HILLS

Another area of particular interest is Paradise Hills. Paradise Hills is a neighborhood within San Diego that is located close to National City. Calls into Paradise Hills are part of aid given calls measured in Table 7-10. As in the previous section, we used each call's recorded latitude and longitude to locate calls within Paradise Hills. We compare the volume of calls and the workload for this area over two years. Table 7-37 presents the comparison, broken down by call type. Aid given workload only included calls, workload, and runs associated with NCFD units.

TABLE 7-37: Calls and Workload in Lincoln Acres by Call Type and Year

Call Type	2019			2020		
	Calls	Hours	Runs	Calls	Hours	Runs
Breathing difficulty	95	31.3	95	110	45.1	111
Cardiac and stroke	116	46.2	116	107	48.2	108
Fall and injury	91	31.6	94	99	36.2	102
Illness and other	120	47.6	128	127	48.2	128
MVA	17	8.3	20	23	7.5	28
OD	7	2.2	7	14	5.9	14
Seizure and UNC	93	39.9	94	73	28.8	73
EMS Total	539	207.3	554	553	219.9	564
False alarm	19	7.1	19	21	5.9	26
Good intent	2	0.4	2	7	1.4	7
Hazard	3	1.7	6	4	19.3	9
Outside fire	6	3.2	6	6	2.6	9
Public service	9	2.6	9	7	2.8	7
Structure fire	12	7.5	18	13	6.8	20
Fire total	51	22.5	60	58	38.8	78
Canceled	73	12.3	99	93	19.1	129
Total	663	242.0	713	704	277.9	771

Note: OD=Overdose and psychiatric; UNC=Unconsciousness.

Observations:

- In 2019, there were 663 aid-given calls to Paradise Hills. This was 50 percent of aid-given calls (1,323) to San Diego.
- In 2019, there were 713 aid-given runs to Paradise Hills. This was 48 percent of aid-given runs (1,495) to San Diego.
- In 2019, there were 242.0 aid-given work hours associated with calls in Paradise Hills. This was 49 percent (494.5) of aid-given work associated with calls in San Diego.
- In 2020, call volume increased by 6 percent from 663 to 704.
- In 2020, total runs increased by 8 percent from 713 to 771.
- In 2020, the workload increased by 15 percent from 242.0 to 277.9.

ATTACHMENT VII: CALL TYPE IDENTIFICATION

When available, NFIRS data serves as our primary source for assigning call categories. In this work, for an MVA or fire call that had a matched NFIRS record, we used the NFIRS incident type to assign a call category. Otherwise, we used the CAD incident type and problem description to assign a call category. All EMS calls were categorized by the CAD incident type and problem description. Tables 7-38 and 7-39 specify the call categories identified by available NFIRS and CAD information, respectively.

TABLE 7-38: Call Type by NFIRS Incident Type Code

Call Type	Incident Type Code	Frequency	
		2019	2020
Canceled	611	1,357	1,421
	621	1	0
	622	38	64
False Alarm	700	296	217
	710	2	1
	713	1	0
	715	1	1
	730	3	0
	733	3	1
	735	3	4
	736	4	2
	740	1	0
	743	2	0
	744	3	2
	745	4	11
	746	1	10
Good Intent	600	40	39
	631	0	2
	641	0	2
	650	6	4
	651	8	29
	652	2	1
	653	3	3
	661	0	2
	671	5	10
672	1	0	

Call Type	Incident Type Code	Frequency	
		2019	2020
Hazard	223	1	0
	400	4	7
	410	1	1
	411	3	1
	412	6	12
	413	2	0
	420	0	1
	421	2	1
	423	0	1
	424	2	1
	440	7	4
	441	3	2
	442	1	1
	443	1	0
	444	7	1
	445	5	2
	460	1	1
	461	1	1
	480	4	7
	481	0	1
MVA	322	464	392
	323	7	5
	324	2	9
	352	1	1
Outside Fire	100	6	8
	130	29	38
	131	0	1
	140	26	46
	150	101	126
	151	5	3
	161	0	1

Call Type	Incident Type Code	Frequency	
		2019	2020
Public Service	500	14	22
	510	13	9
	511	20	10
	512	1	1
	520	7	7
	521	2	1
	522	5	5
	531	11	24
	540	1	1
	541	0	1
	542	2	1
	550	7	6
	551	6	8
	552	4	9
	553	6	9
	554	25	13
	561	7	23
	571	0	1
	812	1	0
	813	1	0
900	3	3	
911	0	1	
Structure Fire	111	51	59
	113	22	15
Total		2,686	2,730

TABLE 7-39: Call Type by CAD Problem Description

Call Type	Problem	Frequency	
		2019	2020
Breathing Difficulty	Breathing Problems	909	856
	Choking	30	30
Cardiac and Stroke	Cardiac / Respiratory Arrest	131	175
	Chest Pain	563	512
	Heart Problems	119	116
	Stroke	213	169
Fall and Injury	Assault/Rape	210	214
	Drowning/Diving Accident	1	3
	Electrocution	3	1
	Falls / Back Inj	868	812
	Stabbing/Gunshot	39	42
	Traumatic Injuries Spec	26	19
	Traumatic Injuries, Spec	115	108
False Alarm	Carbon Monoxide Alarm	3	3
	Ringin Alarm	53	27
	Ringin Alarm Coronado	2	0
	Ringin Alarm Highrise	18	13
	Vegetation 1st Alarm	18	17
Good Intent	Noxious Odor	0	1
	Odor of Chemical	0	2
	Odor of Smoke	1	1
	Smoke Check	21	43
Hazard	Nat Gas Leak Broken/Blowing	5	11
	Natural Gas Leak/Odor-Inside	3	3
	Natural Gas Odor - Outside	2	2
	Electrical Short	2	1
	Extinguished Fire	1	4
	Fuel Spill	1	2
	HazMat	1	0
	HazMat Single Engine	0	2
	Illegal Burn	12	2
	Wires down	2	1

Call Type	Problem	Frequency	
		2019	2020
Illness and Other	Confined Space/Trench Rescue	1	0
	Abdominal Pain/Problems	60	63
	Advised Incident*	7	0
	Allergy/Hives/Med Rx/Stng	41	43
	Animal Bites/ Attacks	13	11
	Back Pain	33	19
	Burns / Explosion*	3	4
	C O / Inhalation/ Haz Mat*	2	2
	CV Medical Aid	2	2
	Diabetic Problems	147	141
	Elevator Rescue	11	11
	Eye Problems / Injuries	2	1
	Headache	42	32
	Heat / Cold Exposure	3	6
	Hemorrhage / Lacerations	236	219
	Illegal Burn*	3	0
	Industrial Rescue	0	1
	Lift Assist*	7	2
	Medical Aid	16	13
	Medical Alert Alarm	43	38
	Miscellaneous Rescue	0	1
	NC Medical Aid	0	1
	Open Space Rescue	1	1
	Poison Control	0	1
	Preg/Birth/Miscarriage	30	25
	Sick Person	806	763
	Special Service*	10	5
	Suspected COVID19	0	63
	Traffic Accident*	90	70
	Traffic Accident FWY*	5	3
	Unknown Problem*	152	129
Vehicle Fire Freeway*	1	0	
Vehicle Rescue	11	13	
Vehicle vs. Pedestrian*	4	3	
Water Rescue	0	2	
MVA	Traffic Accident	120	122
	Traffic Accident FWY	30	26
	Vehicle vs Structure	3	5
	Vehicle vs. Pedestrian	1	1

Note: *NRIFS incident type code is 321.

Call Type	Problem	Frequency	
		2019	2020
Outside Fire	Boat Fire 1st Alm	0	1
	Fence*	1	0
	Pole Fire	0	1
	Rubbish Fire	8	8
	Tree*	0	1
	Vegetation Initial Attack	10	13
	Vehicle Fire	5	4
	Vehicle Fire Freeway	5	7
Overdose and Psychiatric	OD/Ingestion/Poisonings	112	122
	Psych / Suicide Attempt	78	100
Public Service	Advised Incident	1	2
	AID - ENGINE	0	1
	Assist PD	1	1
	Assist PD - Ladder Bldg	0	1
	Investigate	1	0
	Knocked Off Hydrant	3	4
	Lift Assist	2	0
	Lock in/out	3	9
	Move Up	7	6
	SNAKE REMOVAL	1	0
	Special Service	4	8
	Strike Team Type 1	1	3
	Strike Team Type 3	1	1
	Water Removal/Flooding CV/NC	2	0
	yGT General Transport	1	0
Seizure and UNC	Convulsions / Seizures	330	258
	Unc/Fainting	634	549
Structure Fire	Oven Fire	1	1
	Structure Fire - Comm / Apt	38	29
	Structure Highrise/Hospital	1	0
	Structure Residential	53	31
Total		6,612	6,193

Note: *Level 2 fires; UNC = Unconsciousness.

ATTACHMENT VIII: REMOVED CANCELED CALLS

TABLE 7-40: Removed Calls by Cancel Reason and Year

Cancel Reason	Frequency	
	2019	2020
Duplicate Call	754	793
Call complete / Available	425	485
CAD test	263	220
False Alarm	81	46
Caller refused ambulance	11	11
Patient not ready	8	9
Stand back cancellation	8	2
Canceled by PD/CHP on scene	2	6
Canceled/Turned	1	3
Change in level of service	0	2
Delayed in traffic	2	0
Private transport arranged	1	1
Wrong location	1	1
Level 4 triage	0	1
Canceled by first responder	1	0
NA	6	6
Total	1,564	1,586

SECTION 8. AMR DATA ANALYSIS

This data analysis was prepared as a key component of the study of the American Medical Response (AMR) ambulance service in the National City fire district. This analysis examines all calls for service between January 1, 2019, and January 1, 2021, as recorded in the regional computer-aided dispatch (CAD) system, and AMR's EMS incident Reporting System.

This analysis is made up of five parts. The first part focuses on call types and dispatches. The second part explores the time spent and the workload of individual units. The third part presents an analysis of the busiest hours in the year studied. The fourth part provides a response time analysis of the studied agency's units. The fifth and final part is an analysis of unit transports. The analysis results are primarily presented for the 2019 calendar year. The results for 2020 are compared with those for the prior year in Attachment I.

As the primary emergency medical service (EMS) provider within the National City fire district, AMR works closely with the National City Fire Department (NCFD) to provide both advanced life support (ALS) and basic life support (BLS) services. In 2019, AMR responded to 7,328 calls. The total workload was 7,335.9 hours. The average response time to EMS calls was 8.0 minutes, and the 90th percentile response time was 13.2 minutes. In 2020, the AMR responded to 6,945 calls. The total workload was 6,561.9 hours. The average response time to EMS calls was 8.3 minutes, and the 90th percentile response time was 13.5 minutes.

METHODOLOGY

In this report, CPSM analyzes calls and runs. A call is an emergency service request or incident. A run is a dispatch of a unit (i.e., a unit responding to a call). Thus, a call may include multiple runs.

This analysis studied AMR's 9-1-1 EMS response. We received data from both the regional CAD system and the AMR's EMS incident Reporting System. We first matched the two sets of data based on the available information of call time and location. The AMR data lacked information of incident type and unit transport times. Therefore the analysis was primarily conducted based on the CAD data that included the description of call nature and transport time stamps of AMR units. The method to categorize calls based on the call nature description is detailed in Attachment II. With the AMR data, we used the call received time for the analysis of AMR unit's response time to calls and used the available unit time stamps to fill the missing unit time stamps in the CAD data.

Working independently or jointly with fire departments, AMR responded to 14,273 total calls in the National City fire district in 2019 and 2020. The following table summarizes these calls by responding agency and year. The main analysis in the following sections focuses on the 7,328 calls in 2019. The results for 2020 are presented along with the corresponding 2019 results in Attachment I for comparison.

TABLE 8-1: Studied Calls Responding Agency and Year

Responding Agency	2019	2020	Total
AMR only	1,036	986	2,022
AMR and FD agencies	6,292	5,959	12,251
Total	7,328	6,945	14,273

Observations:

- Of all calls where AMR responded within the National City fire district, AMR responded jointly with FD agencies to 86 percent of calls in both years.

AGGREGATE CALL TOTALS AND RUNS

In 2019, AMR responded to 7,328 calls in the National City fire district. Of these calls, 99 percent were 9-1-1 EMS calls and one percent were the service calls for assisting fire or PD agencies.

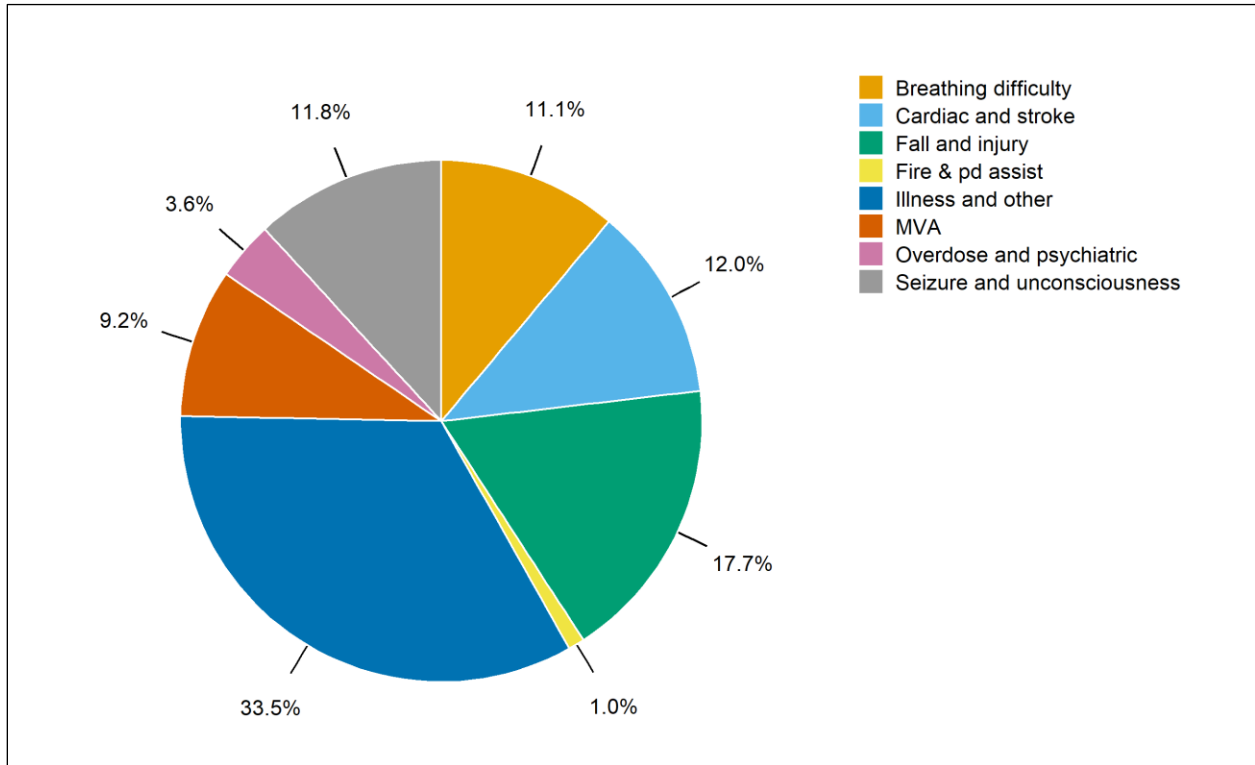
Calls by Type

The following table and figure show the number of calls by call type, average calls per day, and the percentage of calls that fall into each call type category for the 12 months studied.

TABLE 8-2: Call Types

Call Type	Number of Calls	Calls per Day	Call Percentage
Breathing difficulty	815	2.2	11.1
Cardiac and stroke	881	2.4	12.0
Fall and injury	1,296	3.6	17.7
Illness and other	2,453	6.7	33.5
MVA	677	1.9	9.2
Overdose and psychiatric	266	0.7	3.6
Seizure and unconsciousness	867	2.4	11.8
EMS Total	7,255	19.9	99.0
Fire & PD assist	73	0.2	1.0
Total	7,328	20.1	100.0

FIGURE 8-1: Calls by Type



Note: Other includes Canceled and Fire & FD assist calls.

Observations:

- In 2019, AMR responded to an average of 20.1 calls per day.
- EMS calls for the year totaled 7,255 (99 percent of all calls), an average of 19.9 calls per day.
 - Illness and other calls were the largest category of EMS calls at 34 percent of total calls (34 percent of EMS calls) or an average of 6.7 calls per day.
 - Cardiac and stroke calls made up 12 percent of total calls (12 percent of EMS calls) or an average of 2.4 calls per day.
 - Motor vehicle accidents made up 9 percent of total calls (9 percent of EMS calls) or an average of 1.9 calls per day.

Calls by Type and Duration

The following table shows the duration of calls by type using four duration categories: less than 30 minutes, 30 minutes to one hour, one to two hours, and two or more hours.

TABLE 8-3: Calls by Type and Duration

Call Type	Less than 30 Minutes	30 Minutes to One Hour	One to Two Hours	Two or More Hours	Total
Breathing difficulty	103	202	477	33	815
Cardiac and stroke	118	207	533	23	881
Fall and injury	315	248	683	50	1,296
Illness and other	651	509	1,189	104	2,453
MVA	374	86	201	16	677
Overdose and psychiatric	81	63	113	9	266
Seizure and unconsciousness	161	174	493	39	867
EMS Total	1,803	1,489	3,689	274	7,255
Fire & FD assist	58	1	13	1	73
Total	1,861	1,490	3,702	275	7,328

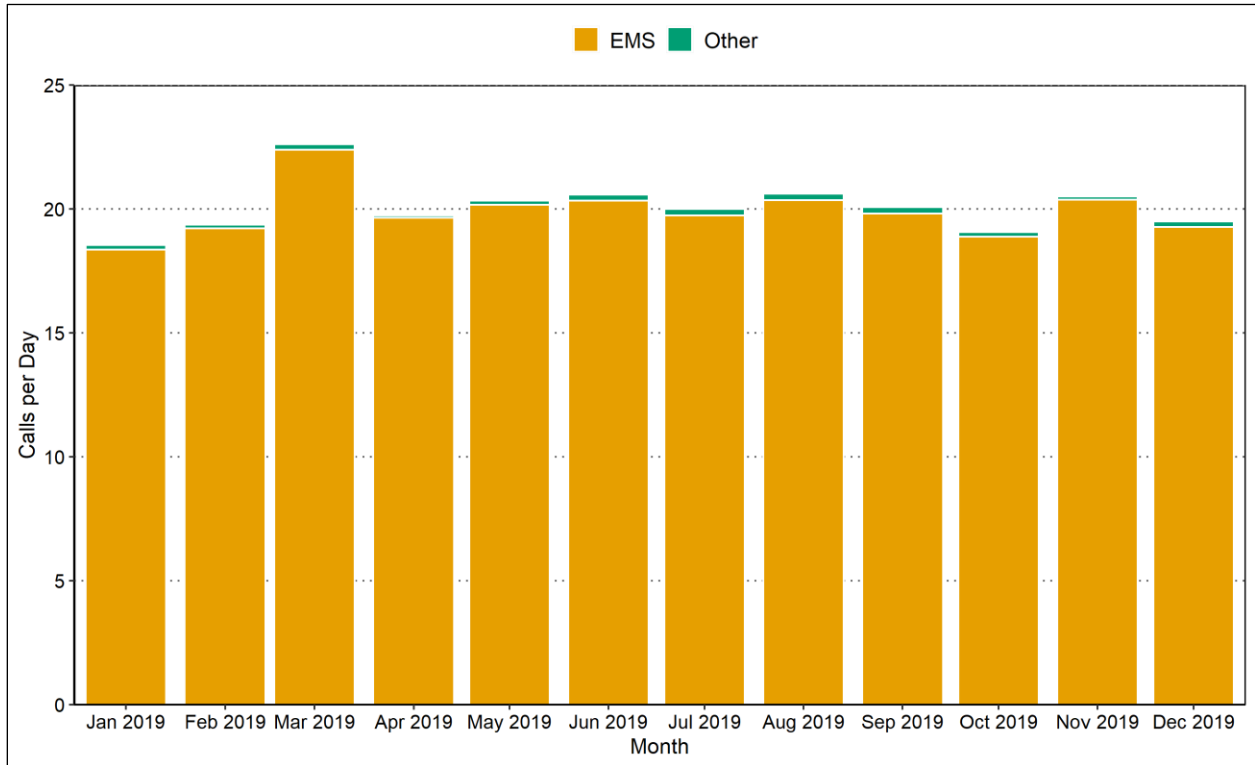
Observations:

- On average, there were 10.9 EMS calls per day that lasted more than one hour.
- A total of 3,292 EMS calls (45 percent) lasted less than one hour, 3,689 EMS calls (51 percent) lasted one to two hours, and 274 EMS calls (4 percent) lasted two or more hours.
- A total of 325 cardiac and stroke calls (37 percent) lasted less than one hour, 533 cardiac and stroke calls (60 percent) lasted one to two hours, and 23 cardiac and stroke calls (3 percent) lasted two or more hours.
- A total of 460 motor vehicle accidents (68 percent) lasted less than one hour, 201 motor vehicle accidents (30 percent) lasted one to two hours, and 16 motor vehicle accidents (2 percent) lasted two or more hours.

Average Calls by Month and Hour of Day

Figure 8-2 shows the monthly variation in the average daily number of calls handled by AMR in 2019. Similarly, Figure 8-3 illustrates the average number of calls received each hour of the day over the year.

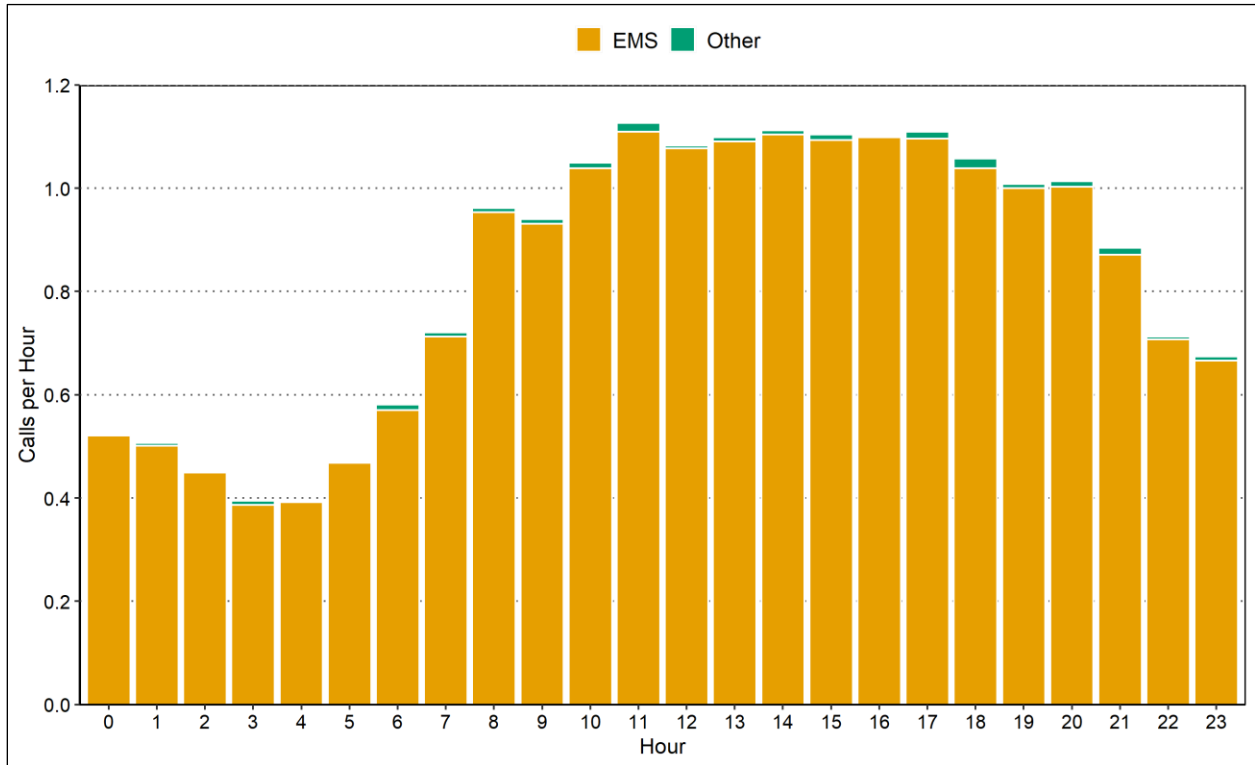
FIGURE 8-2: Average Calls by Month



Observations:

- Average calls per day overall ranged from 18.5 in January 2019 to 22.6 in March 2019.

FIGURE 8-3: Calls by Hour of Day



Observations:

- Average calls per hour overall ranged from 0.4 between 3:00 a.m. and 5:00 a.m. to 1.1 between 11:00 a.m. and noon.

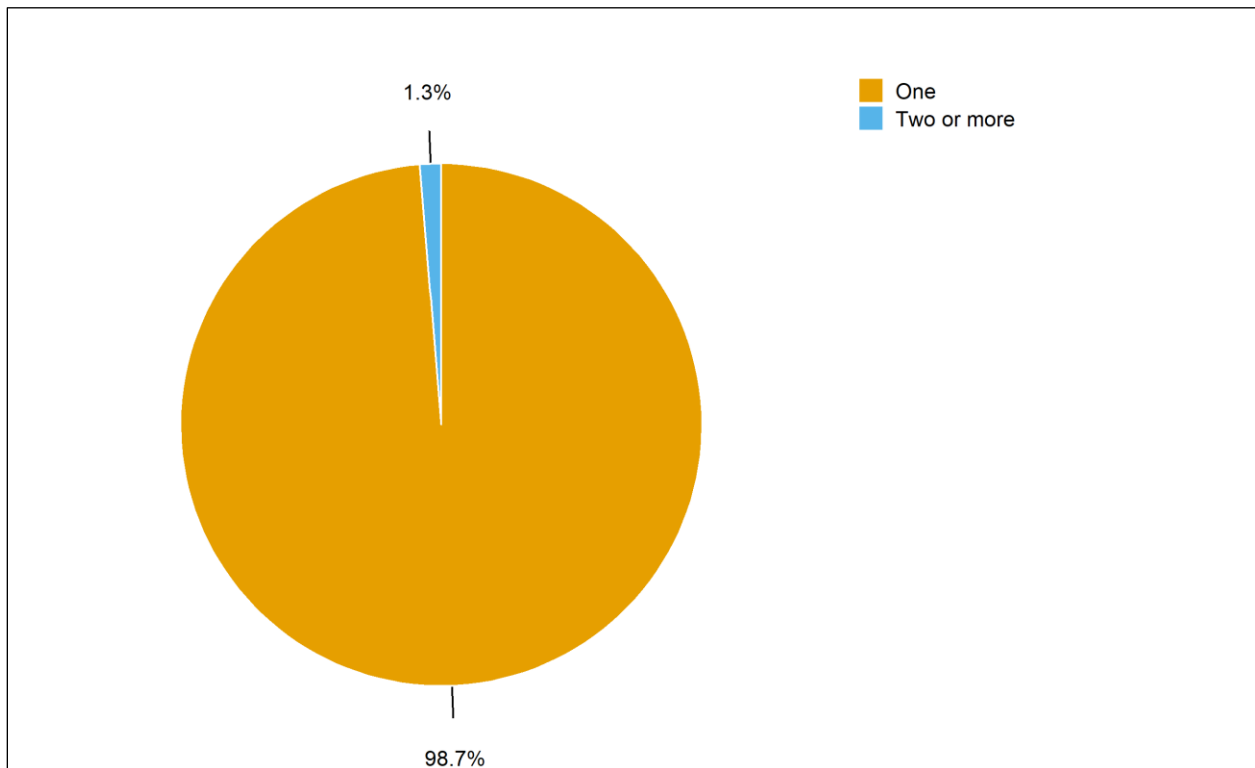
Arriving Units

Table 8-4, along with Figure 8-4, detail the number of calls with one and two or more units arriving to a call, broken down by call type. In this analysis, we limit ourselves to calls where a unit from AMR arrives. For this reason, there are fewer calls in Table 8-4 than in Table 8-2.

TABLE 8-4: Calls by Call Type and Number of Units Arriving

Call Type	Number of Units		Total Calls
	One	Two	
Breathing difficulty	780	7	787
Cardiac and stroke	848	4	852
Fall and injury	1,221	11	1,232
Illness and other	2,129	18	2,147
MVA	480	36	516
Overdose and psychiatric	227	4	231
Seizure and unconsciousness	818	7	825
EMS Total	6,503	87	6,590
Fire & FD assist	30	1	31
Total	6,533	88	6,621
Percentage	98.7	1.3	100.0

FIGURE 8-4: Calls by Number of Units Arriving



Observations:

- On average, 1.0 units arrived at all calls
- For 99 percent of calls, one unit arrived.
- For 1 percent of calls, two or three units arrived.

WORKLOAD: RUNS AND TOTAL TIME SPENT

The workload of each AMR units is measured in two ways: runs and deployed time. The deployed time of a run is measured from the time a unit is dispatched through the time the unit is cleared. Because multiple units respond to some calls, there are more runs than calls and the average deployed time per run varies from the total duration of calls.

Runs and Deployed Time – All Units

Deployed time is the total deployment time of all units deployed on all runs. Table 8-5 shows the total deployed time, both overall and broken down by type of run, for all units in 2019.

Table 8-6 and Figure 8-5 present the average deployed minutes by hour of day.

TABLE 8-5: Annual Runs and Deployed Time by Run Type

Call Type	Deployed Minutes per Run	Annual Hours	Percent of Total Hours	Deployed Minutes per Day	Annual Runs	Runs per Day
Breathing difficulty	61.3	916.6	12.5	150.7	897	2.5
Cardiac and stroke	60.4	995.3	13.6	163.6	988	2.7
Fall and injury	54.7	1,342.3	18.3	220.7	1,472	4.0
Illness and other	50.8	2,395.0	32.6	393.7	2,826	7.7
MVA	35.8	480.6	6.6	79.0	805	2.2
Overdose and psychiatric	47.1	244.7	3.3	40.2	312	0.9
Seizure and unconsciousness	58.2	936.2	12.8	153.9	966	2.6
EMS Total	53.1	7,310.7	99.7	1,201.8	8,266	22.6
Fire & FD assist	18.9	25.1	0.3	4.1	80	0.2
Total	52.7	7,335.9	100.0	1,205.9	8,346	22.9

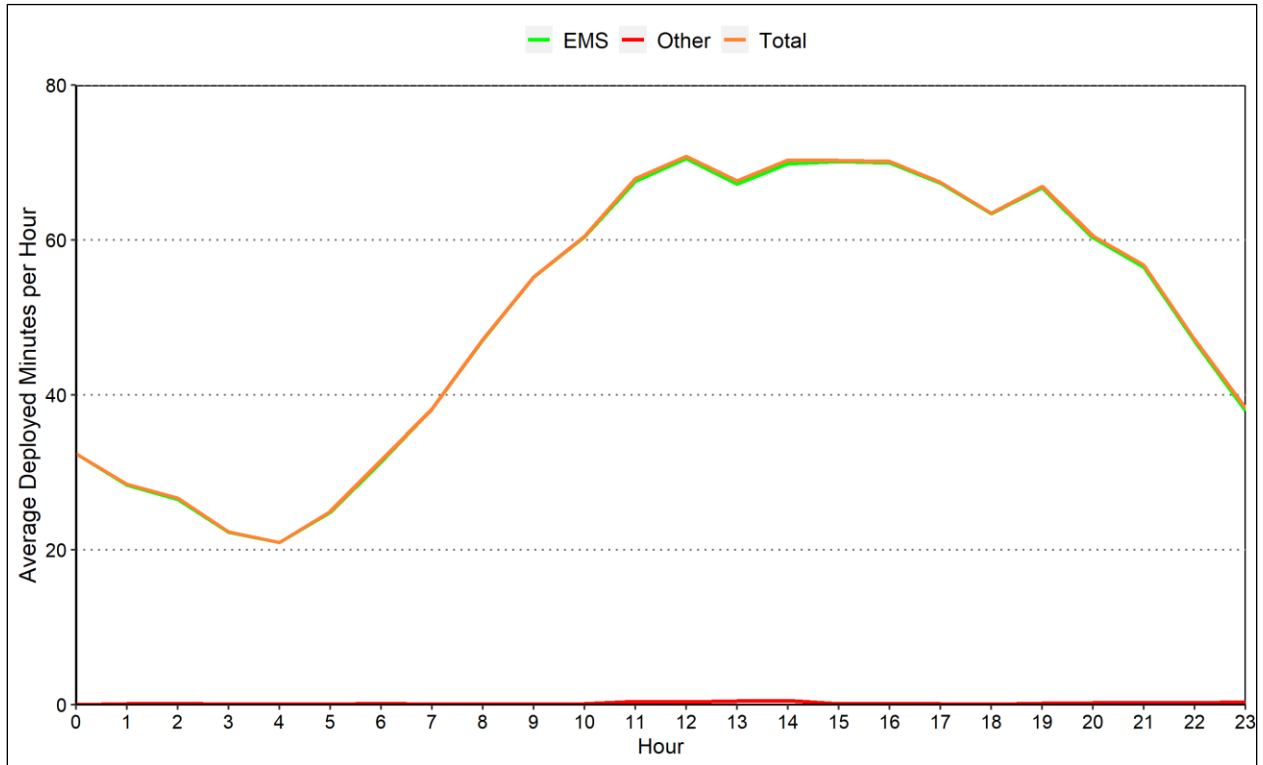
Observations:

- The total deployed time for the year was 7,335.9 hours. The daily average was 20.1 hours for all units combined.
- There were 8,346 runs. The daily average was 22.9 runs.
- The average deployed time for EMS runs was 53.1 minutes per run. The deployed time for all EMS runs averaged 20.0 hours per day.

TABLE 8-6: Average Deployed Minutes by Hour of Day

Hour	EMS	Fire & FD Assist	Total
0	32.4	0.0	32.4
1	28.4	0.1	28.5
2	26.5	0.2	26.7
3	22.3	0.0	22.3
4	20.9	0.0	21.0
5	24.8	0.1	24.9
6	31.4	0.2	31.5
7	38.2	0.0	38.2
8	47.1	0.0	47.1
9	55.2	0.0	55.2
10	60.4	0.1	60.4
11	67.5	0.4	67.9
12	70.5	0.3	70.8
13	67.2	0.5	67.7
14	69.8	0.5	70.3
15	70.1	0.1	70.2
16	69.9	0.2	70.1
17	67.3	0.1	67.4
18	63.4	0.1	63.5
19	66.7	0.2	66.9
20	60.3	0.2	60.5
21	56.5	0.3	56.8
22	46.9	0.2	47.2
23	38.0	0.3	38.3
Daily Avg.	1,201.8	4.1	1,205.9

FIGURE 8-5: Average Deployed Minutes by Hour of Day



Observations:

- Hourly deployed time was highest during the day from 9:00 a.m. to 9:00 p.m., averaging more than 65 minutes.
- Average deployed time peaked between noon and 1:00 p.m., averaging 70.8 minutes.
- Average deployed time was lowest between 4:00 a.m. and 5:00 a.m., averaging 21.0 minutes.

Workload by Unit

Tables 8-7 summarizes the overall workload of AMR's ambulances in 2019. Tables 8-8 and 8-9 provide a more detailed view of workload, showing each ambulance's runs broken out by run type (Table 8-8) and the resulting daily average deployed time broken out by run type (Table 8-9). Here, we grouped the ambulances by SA and SD types. SA ambulances primarily responded to general 9-1-1 medic calls and SD ambulances primarily responded to BLS calls. Additionally, we grouped together all SD ambulances that had less than seven total runs.

TABLE 8-1: Call Workload by Unit

Type	Unit	Deployed Minutes per Run	Total Hours	Total Pct.	Deployed Minutes per Day	Total Runs	Runs per Day
SA	AM254	24.1	11.6	0.2	1.9	29	0.1
	AM255	13.0	7.8	0.1	1.3	36	0.1
	AM256	82.4	30.2	0.4	5.0	22	0.1
	AM257	26.3	40.4	0.6	6.6	92	0.3
	AM401	57.6	98.9	1.3	16.3	103	0.3
	AM402	51.4	14.6	0.2	2.4	17	0.0
	AM411	53.0	210.4	2.9	34.6	238	0.7
	AM412	52.0	246.4	3.4	40.5	284	0.8
	AM413	38.7	87.0	1.2	14.3	135	0.4
	AM414	44.3	280.5	3.8	46.1	380	1.0
	AM415	48.3	286.4	3.9	47.1	356	1.0
	AM416	49.2	557.9	7.6	91.7	680	1.9
	AM417	54.1	2,218.3	30.2	364.7	2,460	6.7
	AM418	55.9	2,012.5	27.4	330.8	2,160	5.9
	AM419	49.3	109.3	1.5	18.0	133	0.4
	AM420	49.9	185.6	2.5	30.5	223	0.6
	AM492	45.6	49.4	0.7	8.1	65	0.2
	AM493	58.0	238.0	3.2	39.1	246	0.7
	AM494	82.0	5.5	0.1	0.9	4	0.0
	AM495	53.4	188.8	2.6	31.0	212	0.6
AM496	56.8	225.5	3.1	37.1	238	0.7	
AM980	55.9	42.8	0.6	7.0	46	0.1	
AM985	55.9	24.2	0.3	4.0	26	0.1	
	Total	52.6	7,172.0	97.8	1,179.0	8,185	22.4
SD	AM202	60.8	7.1	0.1	1.2	7	0.0
	AM205	81.2	10.8	0.1	1.8	8	0.0
	AM231	57.7	7.7	0.1	1.3	8	0.0
	AM239	37.2	4.3	0.1	0.7	7	0.0
	Other*	61.3	133.9	1.8	22.0	131	0.4
		Total	61.1	163.9	2.2	26.9	161
Total		52.7	7,335.9	100.0	1,205.9	8,346	22.9

Note: **"Other" is the group of SD ambulances that made less than seven total runs.

TABLE 8-8: Annual Runs by Run Type and Unit

Type	Unit	Breathing Difficulty	Cardiac and Stroke	Fall and Injury	Illness and Other	MVA	OD	Seizure and UNC	Fire & FD assist	Total
SA	AM254	2	4	3	11	4	2	3	0	29
	AM255	2	11	3	9	5	2	4	0	36
	AM256	2	4	3	9	2	1	1	0	22
	AM257	11	7	16	36	8	2	11	1	92
	AM401	0	2	1	12	1	0	1	0	17
	AM402	21	37	45	71	30	11	23	0	238
	AM411	22	27	51	90	39	9	41	5	284
	AM412	11	17	27	42	20	3	14	1	135
	AM413	36	52	65	124	44	12	47	0	380
	AM414	43	41	69	99	42	10	47	5	356
	AM415	76	79	118	213	65	21	102	6	680
	AM416	268	300	425	877	211	102	250	27	2,460
	AM417	267	259	387	687	214	74	250	22	2,160
	AM418	22	10	23	42	13	6	16	1	133
	AM419	28	25	35	75	20	9	28	3	223
	AM420	6	6	16	21	3	3	9	1	65
	AM492	15	33	47	76	28	7	39	1	246
	AM493	0	2	2	0	0	0	0	0	4
	AM494	21	22	41	69	20	7	29	3	212
	AM495	24	23	48	80	22	3	36	2	238
	AM496	4	9	14	11	4	0	4	0	46
	AM980	3	2	6	5	5	2	2	1	26
AM985	2	10	10	68	1	8	3	1	103	
	Total	886	982	1,455	2,727	801	294	960	80	8,185
SD	AM202	0	0	0	7	0	0	0	0	7
	AM205	0	0	1	7	0	0	0	0	8
	AM231	0	0	1	6	0	1	0	0	8
	AM239	2	0	1	2	1	1	0	0	7
	Other	9	6	14	77	3	16	6	0	131
		Total	11	6	17	99	4	18	6	0
Total		897	988	1,472	2,826	805	312	966	80	8,346

Note: OD=Overdose and psychiatric; UNC=Unconsciousness; "Other" is the group of SD ambulances that made less than seven total runs.

TABLE 8-9: Average Deployed Minutes by Run Type and Unit

Type	Unit	Breathing Difficulty	Cardiac and Stroke	Fall and Injury	Illness and Other	MVA	OD	Seizure and UNC	Fire & FD assist	Total
SA	AM254	0.1	0.2	0.2	0.5	0.4	0.0	0.4	0.0	1.9
	AM255	0.2	0.8	0.0	0.2	0.0	0.0	0.0	0.0	1.3
	AM256	0.6	1.5	0.5	1.9	0.2	0.3	0.0	0.0	5.0
	AM257	1.3	0.1	1.1	2.2	0.8	0.2	1.0	0.0	6.6
	AM401	0.0	0.1	0.0	2.2	0.0	0.0	0.0	0.0	2.4
	AM402	3.6	6.3	6.5	8.6	3.6	1.9	4.1	0.0	34.6
	AM411	3.9	4.7	8.3	12.0	4.2	1.0	6.0	0.4	40.5
	AM412	1.1	2.3	3.3	3.8	1.4	0.2	2.1	0.0	14.3
	AM413	4.9	8.4	8.4	13.6	3.5	1.3	6.0	0.0	46.1
	AM414	6.6	7.3	10.2	11.8	4.5	0.8	5.9	0.0	47.1
	AM415	12.4	11.8	17.0	27.6	4.6	2.8	15.5	0.1	91.7
	AM416	46.3	50.1	66.7	123.5	21.9	12.6	41.8	1.7	364.7
	AM417	47.9	47.1	61.5	98.1	20.9	10.7	43.5	1.2	330.8
	AM418	4.7	1.4	2.4	4.8	0.9	1.0	2.9	0.0	18.0
	AM419	4.2	2.6	5.1	10.5	1.9	0.9	5.2	0.1	30.5
	AM420	0.9	0.6	2.0	3.2	0.1	0.3	1.0	0.0	8.1
	AM492	2.9	6.1	6.6	11.8	4.1	1.3	6.2	0.2	39.1
	AM493	0.0	0.4	0.5	0.0	0.0	0.0	0.0	0.0	0.9
	AM494	2.8	4.0	5.6	10.5	2.1	0.8	5.1	0.2	31.0
	AM495	4.4	4.7	7.8	11.7	2.2	0.4	5.8	0.0	37.1
AM496	0.5	1.3	2.4	1.6	0.5	0.0	0.8	0.0	7.0	
AM980	0.5	0.5	0.9	0.9	0.9	0.2	0.2	0.0	4.0	
AM985	0.3	1.2	0.7	12.5	0.3	1.1	0.1	0.1	16.3	
	Total	150.1	163.4	217.8	373.6	78.9	37.7	153.5	4.1	1,179.0
SD	AM202	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	1.2
	AM205	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	1.8
	AM231	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	1.3
	AM239	0.1	0.0	0.1	0.3	0.1	0.2	0.0	0.0	0.7
	Other	0.5	0.2	2.8	15.7	0.0	2.3	0.4	0.0	22.0
		Total	0.6	0.2	2.9	20.1	0.1	2.6	0.4	0.0
Total		150.7	163.6	220.7	393.7	79.0	40.2	153.9	4.1	1,205.9

Note: OD=Overdose and psychiatric; UNC=Unconsciousness; "Other" is the group of SD ambulances that made less than seven total runs.

Observations:

- SA ambulances made 8,185 runs (22.4 runs per day) and had 7,172.0 hours of annual deployed time (19.6 hours per day).
- SD ambulances made 161 runs (0.4 runs per day) and had 163.9 hours of annual deployed time (26.9 minutes per day).
- Ambulance AM417 made the most runs (2,460, or an average of 6.7 runs per day) and had the highest total annual deployed time (2,218.3 hours or an average of 6.1 hours per day).
- Ambulance AM418 made the second most runs (2,160, or an average of 5.9 runs per day) and had the second highest total annual deployed time (2,012.5 hours or an average of 5.5 hours per day).

Workload by District

The following table breaks down AMR's annual workload by the service district of each NCFD fire station.

TABLE 8-10: Annual Workload by NCFD Station Service District

NCFD Station	Calls	Pct. Annual Calls	Runs	Runs Per Day	Deployed Minutes Per Run	Annual Hours	Pct. Annual Work	Deployed Minutes Per Day
31	3,350	45.7	3,785	10.4	55.1	3,477.3	47.4	571.6
34	3,978	54.3	4,561	12.5	50.8	3,858.5	52.6	634.3
Total	7,328	100.0	8,346	22.9	52.7	7,335.9	100.0	1205.9

Observations:

NCFD Station 31

- There were 3,350 calls, or 46 percent of the total calls.
- There were 3,785 runs. The daily average was 10.4 runs.
- Total deployed time for the year was 3,477.3 hours or 47 percent of the total annual workload. The daily average was 9.5 hours for all units combined.

NCFD Station 34

- There were 3,978 calls, or 54 percent of the total calls.
- There were 4,561 runs. The daily average was 12.5 runs.
- Total deployed time for the year was 3,858.5 hours or 53 percent of the total annual workload. The daily average was 10.6 hours for all units combined.

ANALYSIS OF BUSIEST HOURS

There is significant variability in the number of calls from hour to hour. One special concern relates to the resources available for hours with the heaviest workload. We tabulated the data for each of the 8,760 hours in the year. Table 8-11 shows the number of hours in the year in which there were zero to five or more calls during the hour. Table 8-12 shows the 10 one-hour intervals which had the most calls that AMR responded during the year. Table 8-13 examines the number of times a call overlapped with another call within the National City fire district.

TABLE 8-11: Frequency Distribution of the Number of Calls

Calls in an Hour	Frequency	Percentage
0	3,928	44.8
1	3,025	34.5
2	1,266	14.5
3	419	4.8
4	101	1.2
5+	21	0.2
Total	8,760	100.0

TABLE 8-12: Top 10 Hours with the Most Calls Received

Hour	Number of Calls	Number of Runs	Total Deployed Hours
11/15/2019, 2:00 p.m. to 3:00 p.m.	6	12	8.1
8/27/2019, 10:00 a.m. to 11:00 a.m.	6	7	9.0
6/21/2019, 5:00 p.m. to 6:00 p.m.	6	7	5.5
4/12/2019, 2:00 p.m. to 3:00 p.m.	6	6	6.7
3/10/2019, 4:00 p.m. to 5:00 p.m.	6	6	4.2
3/20/2019, 8:00 p.m. to 9:00 p.m.	5	7	9.4
4/23/2019, 5:00 p.m. to 6:00 p.m.	5	7	5.9
10/22/2019, 3:00 p.m. to 4:00 p.m.	5	6	12.0
5/28/2019, 5:00 p.m. to 6:00 p.m.	5	6	6.7
7/18/2019, 11:00 p.m. to midnight	5	6	5.9

Note: Total deployed hours is a measure of the total time spent responding to calls received in the hour. The deployed time from these calls may extend into the next hour or hours. The number of runs and deployed hours includes all AMR units.

TABLE 8-13: Frequency of Overlapping Calls

Scenario	Number of Calls	Percent of All Calls	Total Hours
No overlapped call	3,064	41.8	2,977.7
Overlapped with one call	2,540	34.7	1,274.6
Overlapped with two calls	1,177	16.1	390.3
Overlapped with three calls	393	5.4	98.8
Overlapped with four calls	123	1.7	22.7
Overlapped with five calls	24	0.3	4.3
Overlapped with six calls	5	0.1	1.3
Overlapped with seven calls	2	0.0	0.2

Observations:

- During 21 hours (0.2 percent of all hours), five or more calls occurred; in other words, AMR responded to five or more calls in an hour roughly once every 17 days.
 - The highest number of calls to occur in an hour was six, which happened five times.

RESPONSE TIME

In this part of the analysis, we present response time statistics for different call types. We separate response time into its identifiable components. *Dispatch time* is the difference between the time when AMR received a call and the earliest time an ambulance is dispatched. Dispatch time includes call processing time, which is the time required to determine the nature of the emergency and the types of resources to dispatch. *Turnout time* is the difference between the earliest dispatch time and the earliest time an ambulance is en route to a call's location. *Travel time* is the difference between the earliest en route time and the earliest arrival time. *Response time* is the total time elapsed between receiving a call to arriving on scene.

In this analysis, with all calls that were responded by AMR within the National City fire district, we excluded the fire & PD assist calls. In addition, calls with a total response time of more than 30 minutes were excluded. Finally, we focused on units that had complete time stamps, that is, units with all components recorded, so that we could calculate each segment of response time.

Based on the methodology above, we excluded 73 fire & PD calls, four non-emergency calls, 659 calls where no units recorded a valid on-scene time, 30 calls where the first arriving unit's response time was greater than 30 minutes, and 14 calls where one or more segments of the first arriving unit's response time could not be calculated due to missing or faulty data. As a result, the analysis in this section included 6,548 calls for 2019. Using the same method, we obtained 6,214 calls for the same analysis for 2020. 2020's response time analysis is compared with that of 2019 in Attachment I.

Response Time by Type of Call

Table 8-14 breaks down the average dispatch, turnout, travel, and total response times by call type for all calls that AMR responded within the National City fire district, and Table 8-15 does the same for 90th percentile response times. A 90th percentile response time means that 90 percent of calls had response times at or below that number. For example, Table 8-15 shows a 90th percentile response time of 13.2 minutes, which means that 90 percent of the time, a call had a response time of no more than 13.2 minutes. Figure 8-6 illustrates the components of the average response time.

TABLE 8-14: Average Response Time of First Arriving Unit, by Call Type

Call Type	Time in Minutes				Number of Calls
	Dispatch	Turnout	Travel	Total	
Breathing difficulty	0.7	0.8	5.9	7.4	786
Cardiac and stroke	0.8	0.8	6.2	7.7	851
Fall and injury	0.9	0.7	6.4	8.0	1,227
Illness and other	1.0	0.8	6.7	8.6	2,125
MVA	1.0	0.8	6.2	8.0	508
Overdose and psychiatric	1.0	0.9	6.7	8.6	225
Seizure and unconsciousness	0.8	0.8	6.1	7.7	826
Total	0.9	0.8	6.4	8.0	6,548

FIGURE 8-6: Average Response Time of First Arriving Unit, by Call Type

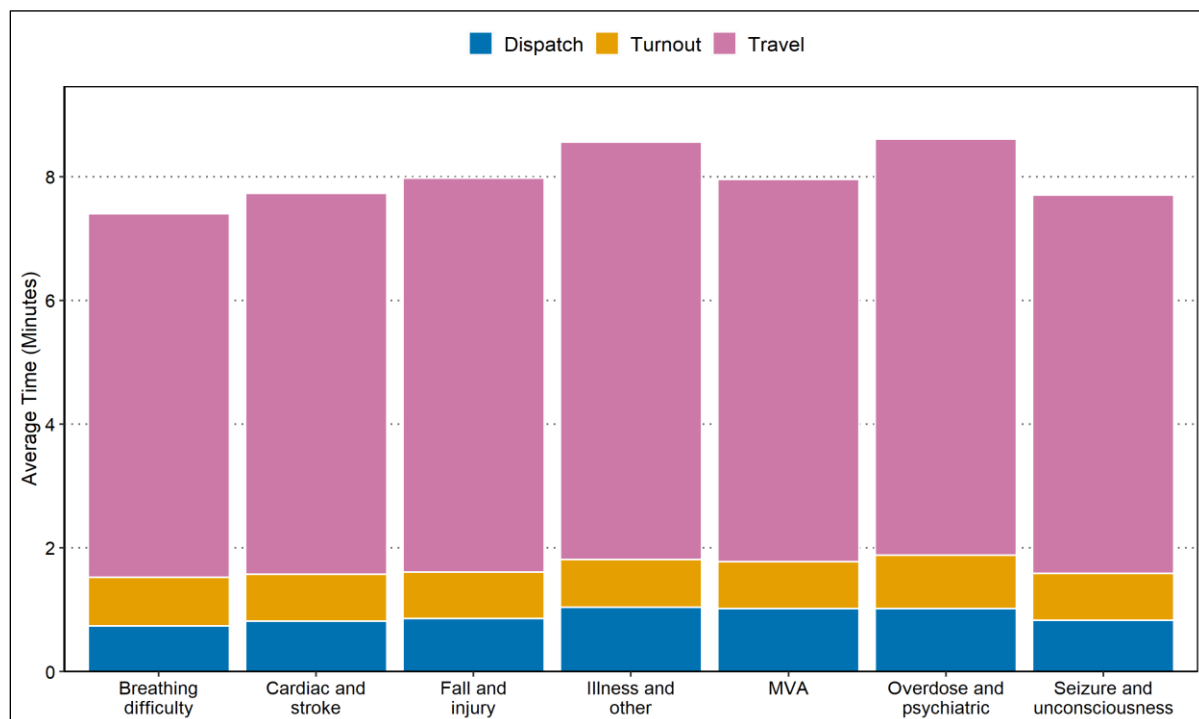


TABLE 8-15: 90th Percentile Response Time of First Arriving Unit, by Call Type

Call Type	Time in Minutes				Number of Calls
	Dispatch	Turnout	Travel	Total	
Breathing difficulty	1.6	1.8	10.1	11.6	786
Cardiac and stroke	2.0	1.8	10.7	12.6	851
Fall and injury	2.1	1.8	10.8	12.8	1,227
Illness and other	3.1	1.8	11.6	14.9	2,125
MVA	2.4	1.7	10.9	12.8	508
Overdose and psychiatric	3.1	2.0	11.7	14.2	225
Seizure and unconsciousness	2.0	1.7	10.4	12.2	826
Total	2.4	1.8	10.9	13.2	6,548

Observations:

- The average dispatch time was 0.9 minutes.
- The average turnout time was 0.8 minutes.
- The average travel time was 6.4 minutes.
- The average total response time was 8.0 minutes.
- The 90th percentile dispatch time was 2.4 minutes.
- The 90th percentile turnout time was 1.8 minutes.
- The 90th percentile travel time was 10.9 minutes.
- The 90th percentile total response time was 13.2 minutes.

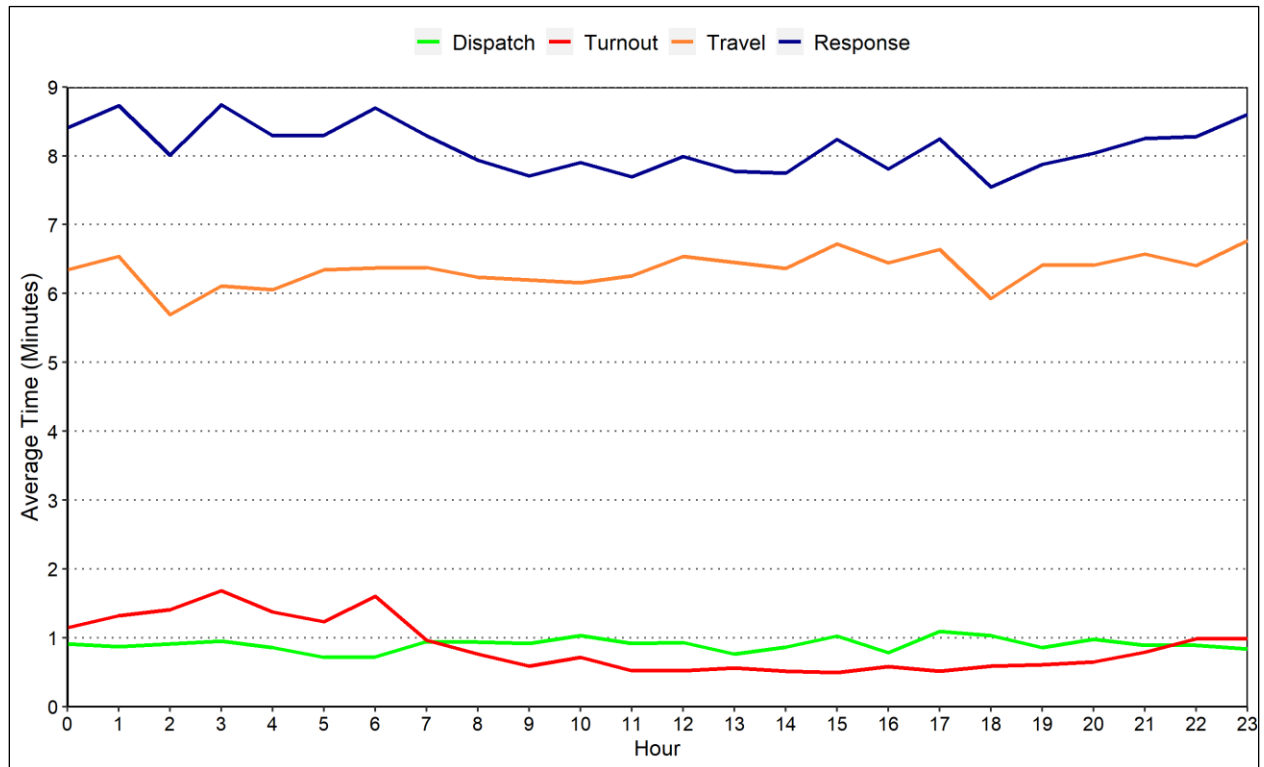
Response Time by Hour

The components of average response time by the time of day are shown in Table 8-16. The table also shows the 90th percentile response time. Figure 8-7 shows the same information.

TABLE 8-16: Average and 90th Percentile Response Time of First Arriving Unit, by Time of Day

Hour	Time in Minutes				90th Percentile Response Time	Number of Calls
	Dispatch	Turnout	Travel	Response Time		
0	0.9	1.1	6.3	8.4	13.5	168
1	0.9	1.3	6.5	8.7	14.3	160
2	0.9	1.4	5.7	8.0	13.3	153
3	1.0	1.7	6.1	8.7	13.4	130
4	0.9	1.4	6.1	8.3	13.5	130
5	0.7	1.2	6.3	8.3	12.6	155
6	0.7	1.6	6.4	8.7	14.3	188
7	0.9	1.0	6.4	8.3	13.6	232
8	0.9	0.8	6.2	7.9	13.5	312
9	0.9	0.6	6.2	7.7	12.1	303
10	1.0	0.7	6.2	7.9	13.2	350
11	0.9	0.5	6.3	7.7	12.3	369
12	0.9	0.5	6.5	8.0	13.3	357
13	0.8	0.6	6.5	7.8	12.8	363
14	0.9	0.5	6.4	7.7	12.5	367
15	1.0	0.5	6.7	8.2	12.4	363
16	0.8	0.6	6.4	7.8	12.5	358
17	1.1	0.5	6.6	8.2	14.1	354
18	1.0	0.6	5.9	7.6	12.4	338
19	0.9	0.6	6.4	7.9	13.0	344
20	1.0	0.6	6.4	8.0	12.8	323
21	0.9	0.8	6.6	8.3	13.6	291
22	0.9	1.0	6.4	8.3	13.5	223
23	0.8	1.0	6.8	8.6	13.3	217
Total	0.9	0.8	6.4	8.0	13.2	6,548

FIGURE 8-7: Average Response Time of First Arriving Unit, by Hour of Day



Observations:

- Average dispatch time was between 0.7 minutes (5:00 a.m. to 6:00 a.m.) and 1.1 minutes (5:00 p.m. to 6:00 p.m.).
- Average turnout time was between 0.5 minutes (3:00 p.m. to 4:00 p.m.) and 1.7 minutes (3:00 a.m. to 4:00 a.m.).
- Average travel time was between 5.7 minutes (2:00 a.m. to 3:00 a.m.) and 6.8 minutes (11:00 p.m. to midnight).
- Average response time was between 7.6 minutes (6:00 p.m. to 7:00 p.m.) and 8.7 minutes (3:00 a.m. to 4:00 a.m.).
- The 90th percentile response time was between 12.1 minutes (9:00 a.m. to 10:00 a.m.) and 14.3 minutes (1:00 a.m. to 2:00 a.m.).

Response Time Distribution

Here, we present a more detailed look at how response times to calls are distributed. The cumulative distribution of total response time for the first arriving unit is shown in Figure 8-8 and Table 8-17. Figure 8-8 shows response times for the first arriving unit as a frequency distribution in whole-minute increments.

The cumulative percentages here are read in the same way as a percentile. In Figure 8-8, the 90th percentile of 13.2 minutes means that 90 percent of calls had a response time of 13.2 minutes or less. In Table 8-17, the cumulative percentage of 61.8 means that 61.8 percent of calls had a response time under 8 minutes.

FIGURE 8-8: Cumulative Distribution of Response Time – First Arriving Unit

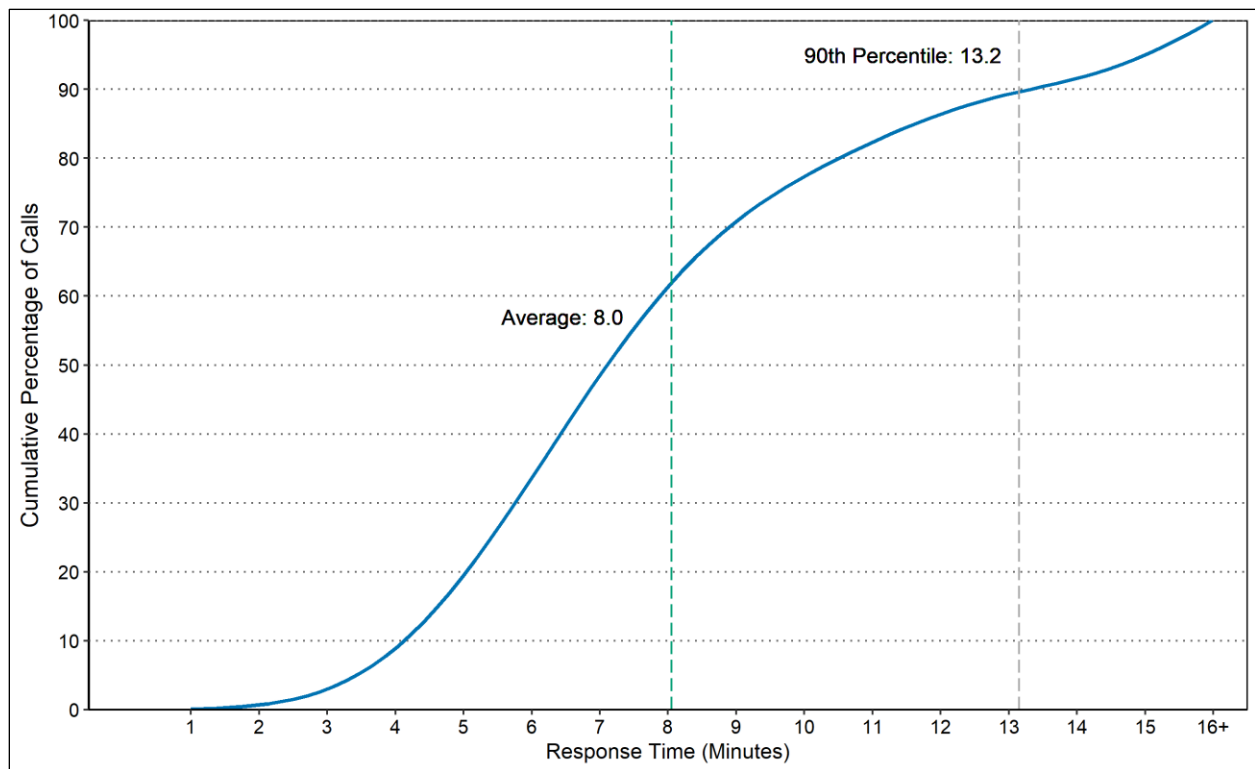


TABLE 8-17: Cumulative Distribution of Response Time – First Arriving Unit

Response Time (minute)	Frequency	Cumulative Percentage
1	13	0.2
2	33	0.7
3	150	3.0
4	360	8.5
5	721	19.5
6	918	33.5
7	990	48.6
8	863	61.8
9	586	70.8
10	430	77.3
11	315	82.1
12	272	86.3
13	221	89.7
14	152	92.0
15	118	93.8
16+	406	100.0

Observations:

- For 62 percent of calls, the response time of the first arriving unit was less than 8 minutes.

TRANSPORT CALL ANALYSIS

In this section, we present an analysis for unit activity that involved transporting patients, the variations by hour of day, and the average time for each stage of transport service. We identified transport calls by requiring that at least one responding unit had recorded both a “beginning to transport” time and an “arriving at the hospital” time. Based on these criteria, we note that eight non-EMS (fire & FD assist) calls that resulted in transports are included in this analysis.

Transport Calls by Type

Table 8-18 shows the number of calls by call type broken out by transport and non-transport calls.

TABLE 8-18: Transport Calls by Call Type

Call Type	Number of Calls			Conversion Rate
	Non-transport	Transport	Total	
Breathing difficulty	167	648	815	79.5
Cardiac and stroke	183	698	881	79.2
Fall and injury	458	838	1,296	64.7
Illness and other	846	1,607	2,453	65.5
MVA	422	255	677	37.7
Overdose and psychiatric	116	150	266	56.4
Seizure and unconsciousness	232	635	867	73.2
EMS Total	2,424	4,831	7,255	66.6
Fire & FD assist	65	8	73	11.0
Total	2,489	4,839	7,328	66.0

Observations:

- 67 percent of EMS calls involved transporting one or more patients
- On average, 13 EMS calls per day involved transporting one or more patients.

Average Transport Calls per Hour

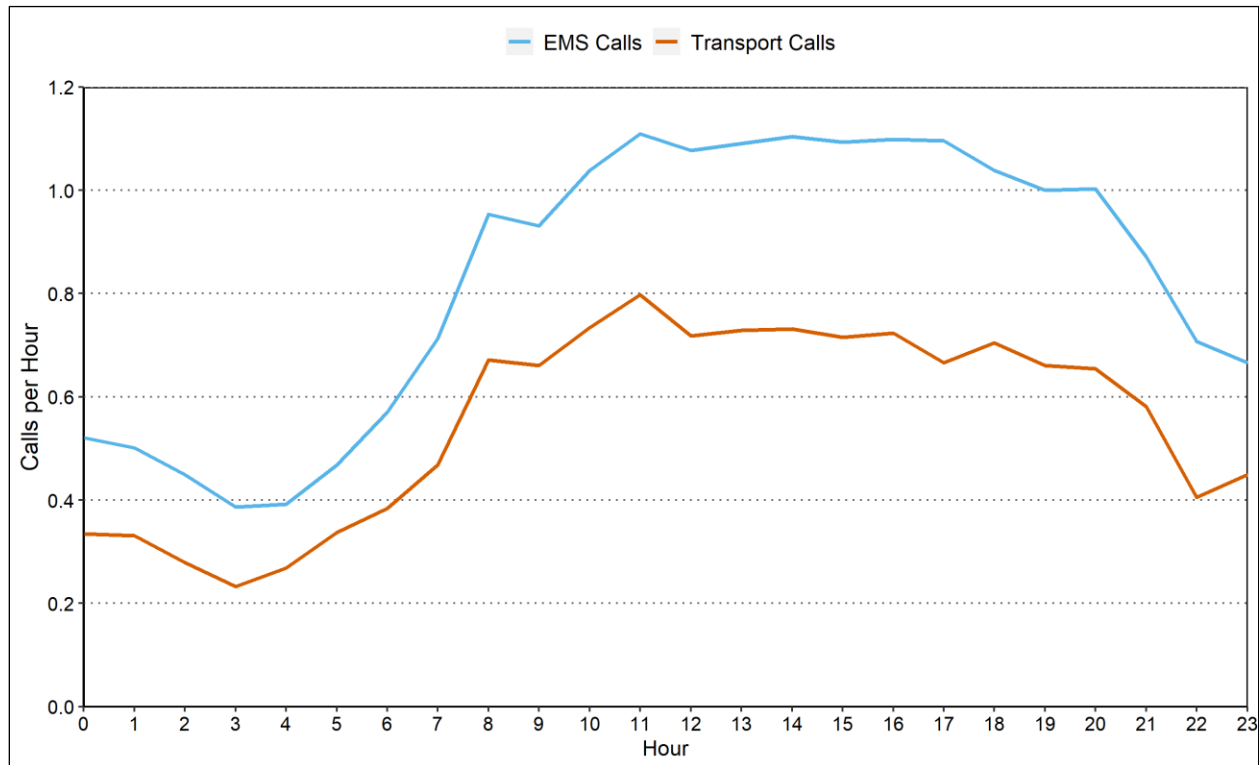
Table 8-19 and Figure 8-9 show the average number of EMS calls received each hour of the day during 2019. In the table the conversion rate measures the percent of EMS calls in which one or more patients was transported.

TABLE 8-19: EMS Transport Calls per Hour, by Time of Day

Hour	EMS Calls	Transport	EMS Calls per Day	Transports per Day	Conversion Rate
0	190	122	0.5	0.3	64.2
1	183	121	0.5	0.3	66.1
2	164	102	0.4	0.3	62.2
3	141	85	0.4	0.2	60.3
4	143	98	0.4	0.3	68.5
5	171	123	0.5	0.3	71.9
6	208	140	0.6	0.4	67.3
7	260	171	0.7	0.5	65.8
8	348	245	1.0	0.7	70.4
9	340	241	0.9	0.7	70.9
10	379	268	1.0	0.7	70.7
11	405	291	1.1	0.8	71.9
12	393	262	1.1	0.7	66.7
13	398	266	1.1	0.7	66.8
14	403	267	1.1	0.7	66.3
15	399	261	1.1	0.7	65.4
16	401	264	1.1	0.7	65.8
17	400	243	1.1	0.7	60.8
18	379	257	1.0	0.7	67.8
19	365	241	1.0	0.7	66.0
20	366	239	1.0	0.7	65.3
21	318	212	0.9	0.6	66.7
22	258	148	0.7	0.4	57.4
23	243	164	0.7	0.4	67.5
Total	7,255	4,831	19.9	13.2	66.6

Note: The conversion rate is measured by dividing the number of EMS transports by the number of EMS calls. For example, between midnight and 1:00 a.m., there were 122 EMS transports out of 190 EMS calls. This gives a conversion rate of $122 / 190 = 0.642$, or 64.2 percent.

FIGURE 8-9: Average Transport Calls by Hour of Day



Observations:

- Hourly EMS calls per day were highest during the day from 8:00 a.m. to 9:00 p.m., averaging between 0.9 and 1.1 calls per day.
- Average hourly EMS calls per day peaked between 11:00 a.m. and noon, averaging 1.1 calls per day.
- Average hourly EMS calls per day was lowest between 3:00 a.m. and 4:00 a.m., averaging 0.4 calls per day.
- Hourly transport calls per day were highest during the day from 8:00 a.m. to 8:00 p.m., averaging between 0.7 calls per day and 0.8 calls per day.
- Average hourly transport calls per day peaked between 11:00 a.m. and noon, averaging 0.8 calls per day.
- Average hourly transport calls per day was lowest between 3:00 a.m. and 4:00 a.m., averaging 0.2 calls per day.
- Average hourly transport conversion rates per day peaked between 5:00 a.m. and 6:00 a.m., averaging 72 percent per day.
- Average hourly transport conversion rates per day was lowest between 10:00 p.m. and 11:00 p.m., averaging 57 percent per day.

Calls by Type and Duration

The following table shows the average duration of transport and non-transport EMS calls by call type.

TABLE 8-20: Transport Call Duration by Call Type

Call Type	Non-transport		Transport	
	Average Duration	Number of Calls	Average Duration	Number of Calls
Breathing difficulty	34.4	167	75.2	648
Cardiac and stroke	33.6	183	76.2	698
Fall and injury	29.0	458	79.2	838
Illness and other	23.2	846	76.3	1,607
MVA	16.2	422	78.6	255
Overdose and psychiatric	28.3	116	74.7	150
Seizure and unconsciousness	31.1	232	76.8	635
EMS Total	25.6	2,424	76.8	4,831
Fire & FD assist	12.0	65	82.2	8
Total	25.3	2,489	76.8	4,839

Note: Duration of a call is defined as the longest deployed time of any of the units responding to the same call.

Observations:

- The average duration was 25.6 minutes for non-transport EMS calls.
- The average duration was 76.8 minutes for EMS calls where one or more patients were transported to a hospital.

Transport Time Components

Table 8-21 gives the average deployed time for an ambulance on a transport call, along with three major components of the deployed time: on-scene time, travel to hospital time, and at-hospital time.

The on-scene time is the interval from the unit arriving on-scene time through the time the unit departs the scene for the hospital. Travel to hospital time is the interval from the time the unit departs the scene to travel to the hospital through the time the unit arrives at the hospital. At-hospital time is the time it takes for patient turnover at the hospital.

This table analyzes times by run. Normally, the number of runs will exceed the number of calls as a call may have multiple runs. In addition, average times may differ slightly from similar averages measured per call.

TABLE 8-21: Time Component Analysis for Ambulance Transport Runs by Call Type

Call Type	Average Minutes Spent per Run				Number of Runs
	On Scene	Traveling to Hospital	At Hospital	Deployed	
Breathing difficulty	16.0	13.4	39.0	74.9	649
Cardiac and stroke	16.0	13.7	38.7	75.3	698
Fall and injury	17.9	15.3	38.1	78.5	842
Illness and other	16.5	13.8	37.9	75.8	1,612
MVA	13.8	16.1	39.4	76.6	279
Overdose and psychiatric	15.8	11.2	39.4	73.4	151
Seizure and unconsciousness	15.9	13.2	40.4	76.5	637
EMS Total	16.4	14.0	38.6	76.1	4,868
Fire & Other Total	17.0	16.8	42.8	82.0	8
Total	16.4	14.0	38.7	76.1	4,876

Note: Average unit deployed time per run is lower than average call duration for some call types because call duration is based on the longest deployed time of any of the units responding to the same call, which may include an engine or ladder. Total deployed time is greater than the combination of on-scene, transport, and hospital wait times as it includes turnout, initial travel, and hospital return times.

Observations:

- The average time spent on-scene for a transport EMS call was 16.4 minutes.
- The average travel time from the scene of the EMS call to the hospital was 14.0 minutes.
- The average deployed time spent on transport EMS calls was 76.1 minutes.
- The average deployed time at the hospital was 38.6 minutes, which accounts for approximately 51 percent of the average total deployed time for a transport EMS call.

ATTACHMENT I: 2019 & 2020 COMPARISON

In this analysis, we compare portions of the previous analysis with similar records for 2020. We compare calls by type, unit workload, response time, and transport workload over the two years.

Call Volume by Year

Table 8-22 shows the number of calls by call type for both 2019 and 2020. Figure 8-10 shows the monthly variation in the average daily number of calls in two years. Similarly, Figure 8-11 illustrates the average number of calls received each hour of the day in two years.

TABLE 8-22: Calls by Call Type and Year

Call Type	Number of Calls		Calls per Day	
	2019	2020	2019	2020
Breathing difficulty	815	758	2.2	2.1
Cardiac and stroke	881	864	2.4	2.4
Fall and injury	1,296	1,229	3.6	3.4
Illness and other	2,453	2,421	6.7	6.6
MVA	677	589	1.9	1.6
Overdose and psychiatric	266	286	0.7	0.8
Seizure and unconsciousness	867	726	2.4	2.0
EMS Total	7,255	6,873	19.9	18.8
Fire & FD assist	73	72	0.2	0.2
Total	7,328	6,945	20.1	19.0

Observations:

- The call volume decreased five percent, from 7,328 in 2019 to 6,945 in 2020.

FIGURE 8-10: Calls per Day by Month and Year

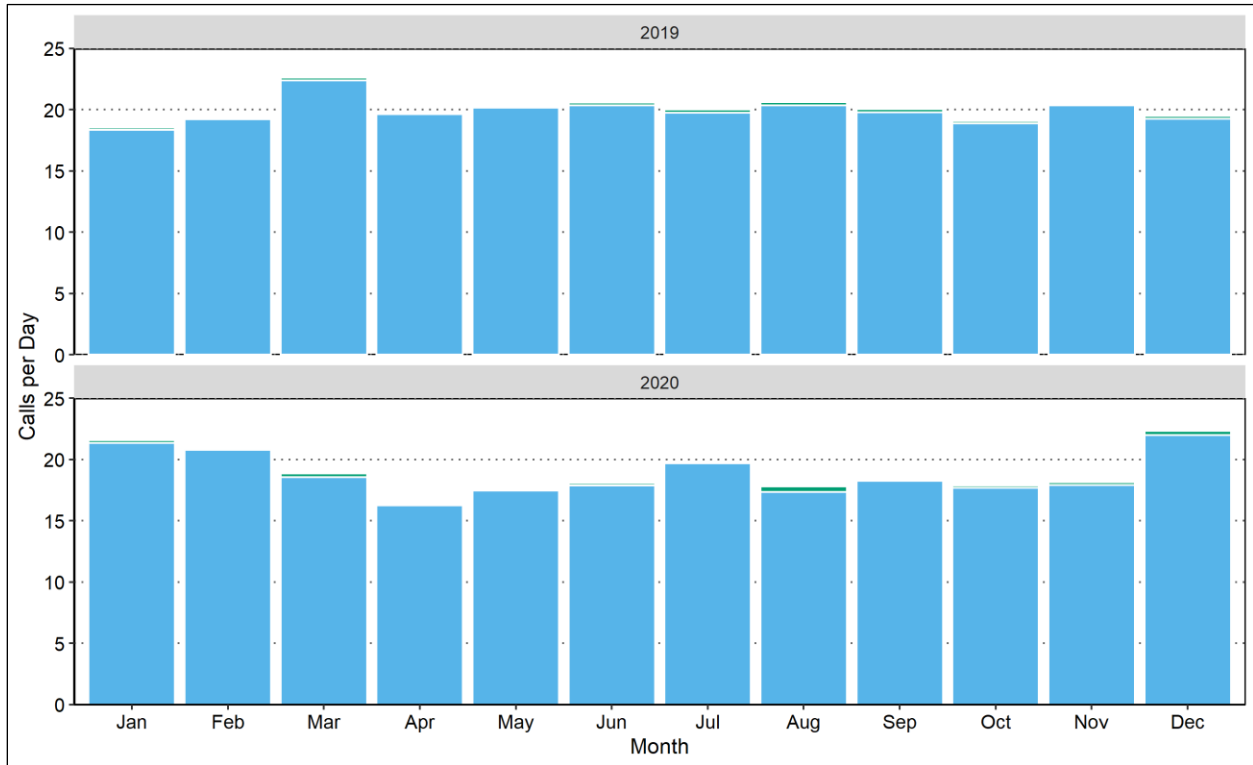
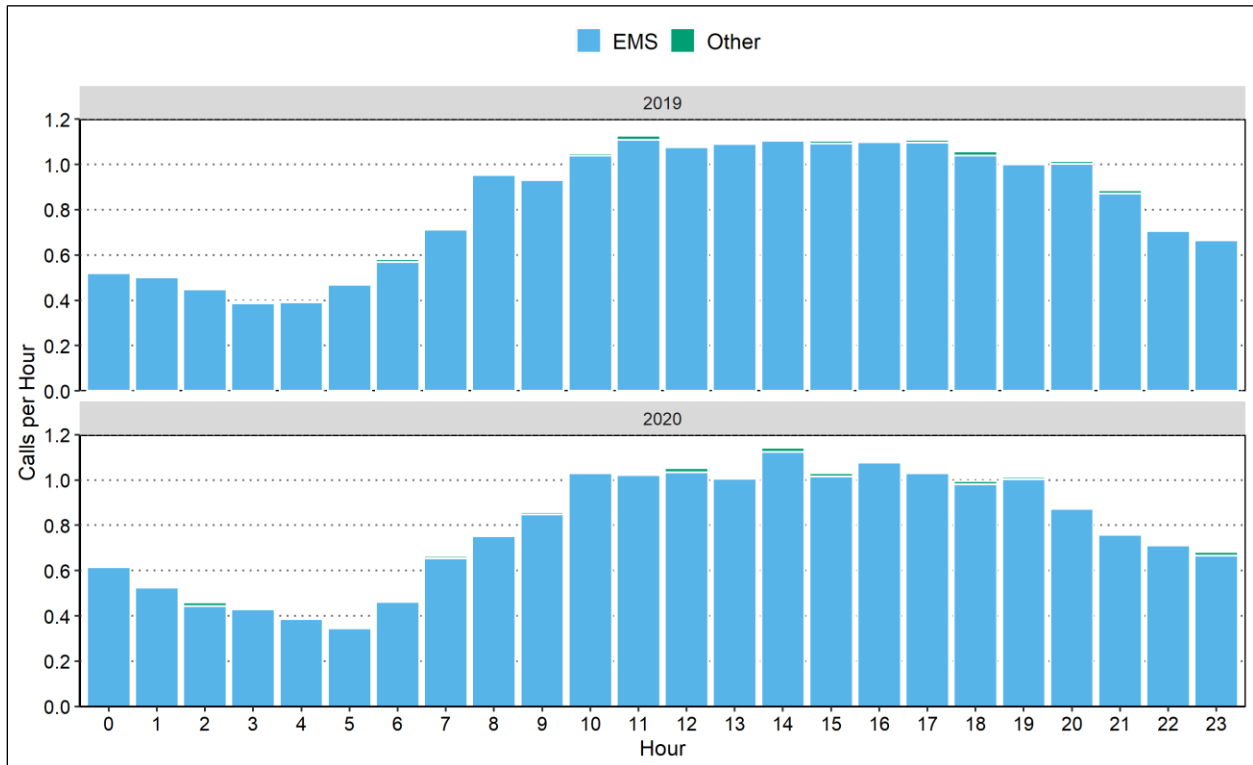


FIGURE 8-11: Calls per Hour by Time of Day and Year



Workload by Year

Table 8-23 compares the runs and workload for AMR units in 2019 and 2020. In the table, all SD type units are grouped. Figure 8-12 compares the average deployed minutes by the hour of the day in 2019 and 2020.

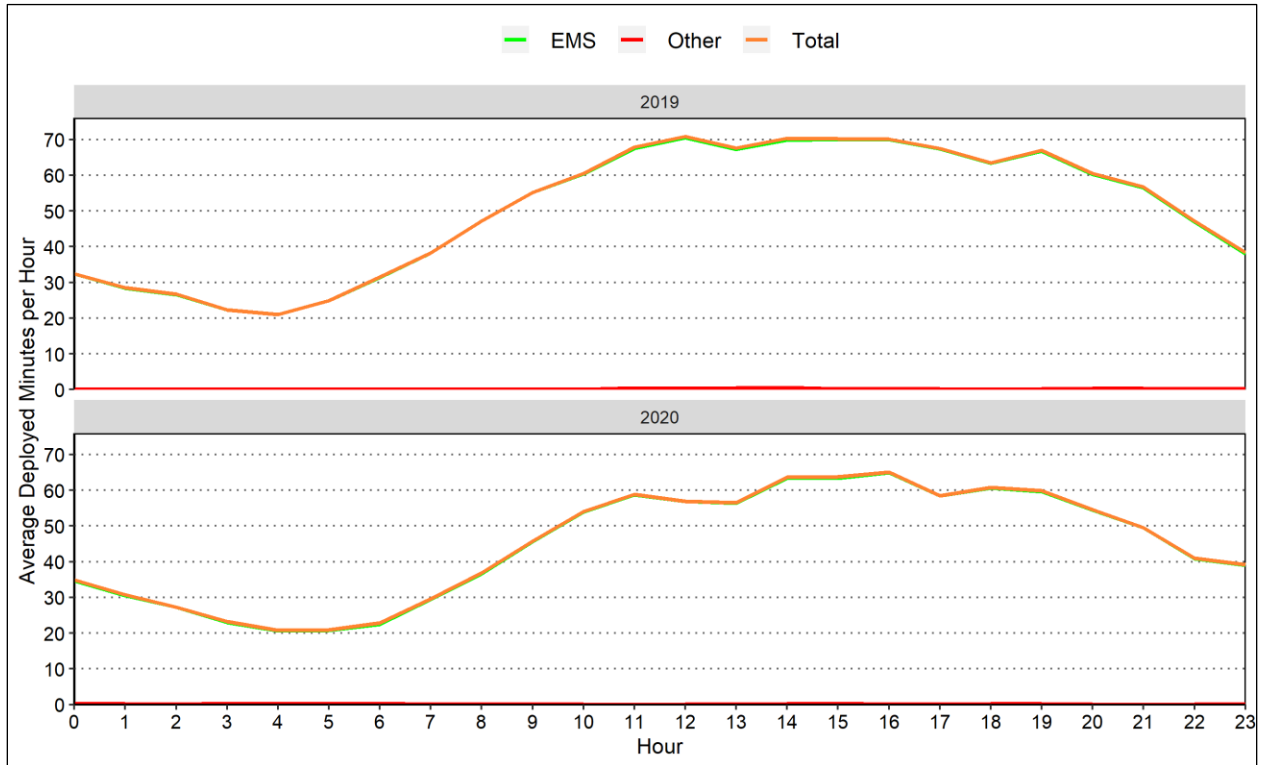
TABLE 8-23: Workload by Unit and Year

Type	Unit	Total Runs		Runs per Day		Total Hours		Deployed Minutes per Day	
		2019	2020	2019	2020	2019	2020	2019	2020
SA	AM254	29	49	0.1	0.1	11.6	26.4	1.9	4.3
	AM255	36	35	0.1	0.1	7.8	14.8	1.3	2.4
	AM256	22	19	0.1	0.1	30.2	28.5	5.0	4.7
	AM257	92	113	0.3	0.3	40.4	66.4	6.6	10.9
	AM401	103	78	0.3	0.2	98.9	84.5	16.3	13.8
	AM402	17	16	0.0	0.0	14.6	15.4	2.4	2.5
	AM411	238	189	0.7	0.5	210.4	171.6	34.6	28.1
	AM412	284	232	0.8	0.6	246.4	182.2	40.5	29.9
	AM413	135	187	0.4	0.5	87.0	117.3	14.3	19.2
	AM414	380	396	1.0	1.1	280.5	301.0	46.1	49.3
	AM415	356	326	1.0	0.9	286.4	266.3	47.1	43.7
	AM416	680	641	1.9	1.8	557.9	514.0	91.7	84.3
	AM417	2,460	2,352	6.7	6.4	2,218.3	1,983.9	364.7	325.2
	AM418	2,160	2,097	5.9	5.7	2,012.5	1,713.1	330.8	280.8
	AM419	133	280	0.4	0.8	109.3	221.1	18.0	36.3
	AM420	223	267	0.6	0.7	185.6	191.1	30.5	31.3
	AM492	65	56	0.2	0.2	49.4	38.7	8.1	6.3
	AM493	246	166	0.7	0.5	238.0	141.7	39.1	23.2
	AM494	4	16	0.0	0.0	5.5	10.9	0.9	1.8
	AM495	212	99	0.6	0.3	188.8	87.1	31.0	14.3
AM496	238	175	0.7	0.5	225.5	164.6	37.1	27.0	
AM980	46	14	0.1	0.0	42.8	10.1	7.0	1.7	
AM985	26	0	0.1	0.0	24.2	0.0	4.0	0.0	
	Total	8,185	7,803	22.4	21.3	7,172.0	6,350.7	1,179.0	1,018.8
SD	Total	161	208	0.4	0.6	163.9	211.2	26.9	34.6
Total		8,346	8,011	22.9	21.9	7,335.9	6,561.9	1,205.9	1,075.7

Observations:

- The total runs decreased 4 percent from 8,346 in 2019 to 8,011 in 2020.
- The total work hours decreased 11 percent from 7,335.9 hours in 2019 to 6,561.9 hours in 2020.

FIGURE 8-12: Average Deployed Minutes by Hour of Day in 2019 and 2020



Response Time Comparison by Year

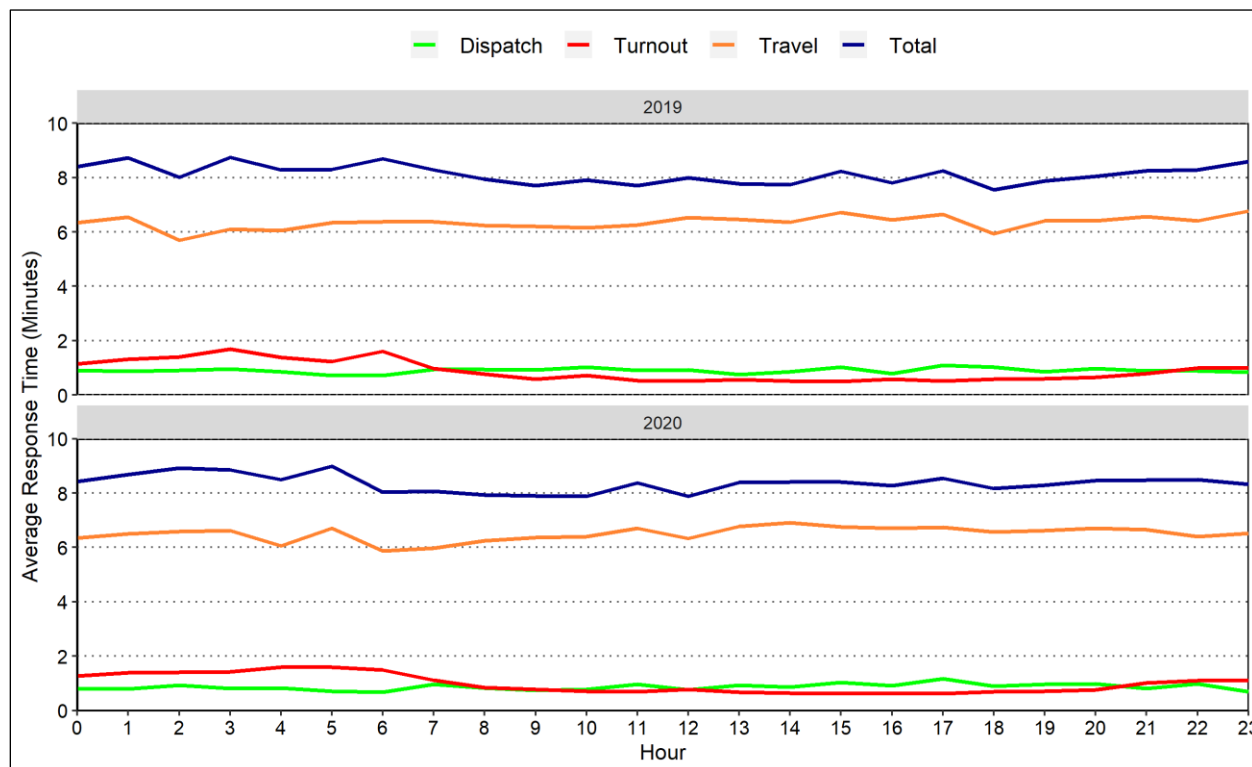
Tables 8-24 compares the average and 90th percentile response times broken out by call type and year. Figure 8-13 compares 2019's and 2020's average response time by hour of day.

TABLE 8-24: Average Response Time of First Arriving Unit by Call Type and Year

Call Type	2019			2020		
	Average	90th Percentile	Calls	Average	90th Percentile	Calls
Breathing difficulty	7.4	11.6	786	7.8	12.6	727
Cardiac and stroke	7.7	12.6	851	7.8	13.1	825
Fall and injury	8.0	12.8	1,227	8.2	13.1	1,131
Illness and other	8.6	14.9	2,125	8.9	14.8	2,145
MVA	8.0	12.8	508	8.1	13.1	454
OD	8.6	14.2	225	9.1	14.8	257
Seizure and UNC	7.7	12.2	826	7.8	12.3	675
Total	8.0	13.2	6,548	8.3	13.5	6,214

Note: OD= Overdose and psychiatric; UNC=Unconsciousness.

FIGURE 8-13: Average Response Time of First Arriving Unit, by Hour of Day and Year



Observations:

- The response times in two years did not change significantly.

TRANSPORT COMPARISON BY YEAR

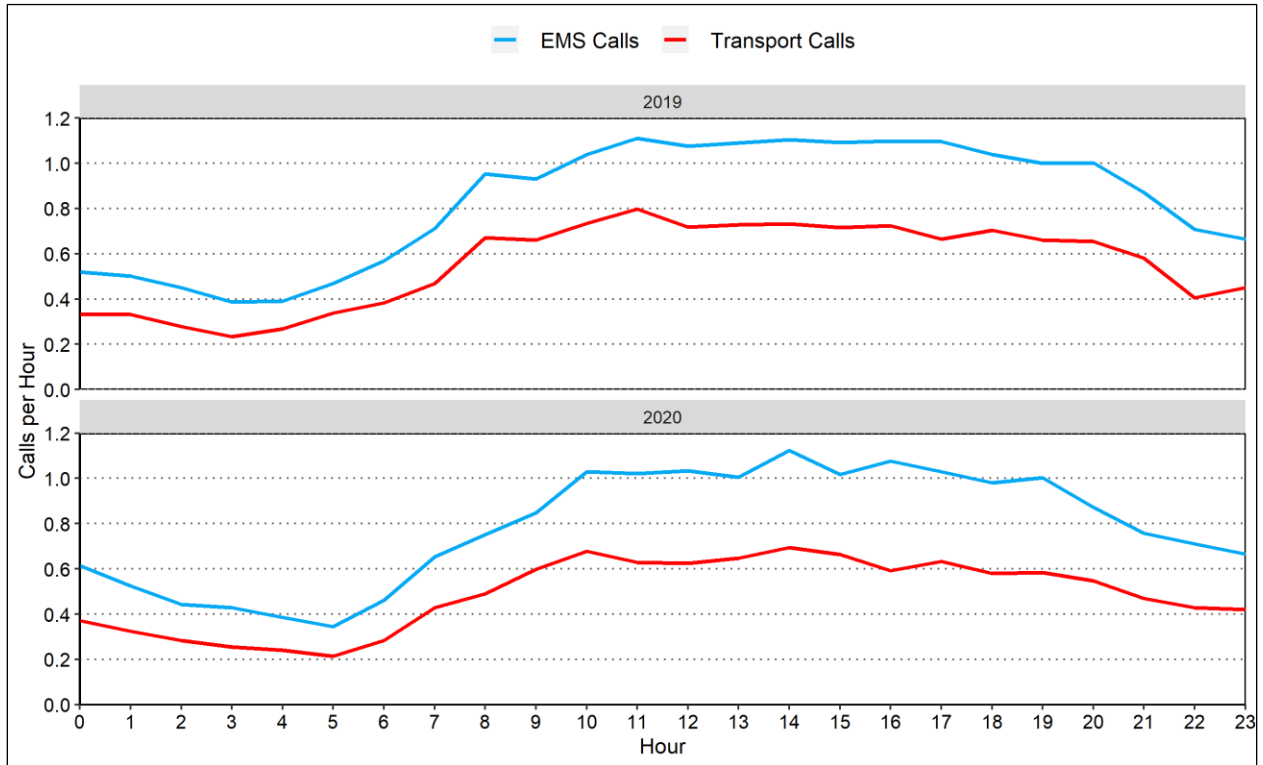
Table 8-25 compares the transport calls and workload in 2019 and 2020. Figure 8-14 compares the average number of EMS and transport EMS calls received each hour of the day over the two-year period.

TABLE 8-25: Transport Calls and Workload by Call Type and Year

Call Type	2019			2020		
	Calls	Runs	Average Call Duration (Minutes)	Calls	Runs	Average Call Duration (Minutes)
Breathing difficulty	648	649	75.2	569	569	72.2
Cardiac and stroke	698	698	76.2	625	626	71.7
Fall and injury	838	842	79.2	701	704	73.8
Illness and other	1,607	1,612	76.3	1,516	1,522	75.8
MVA	255	279	78.6	206	232	74.4
OD	150	151	74.7	166	167	72.4
Seizure and UNC	635	637	76.8	493	493	72.1
EMS Total	4,831	4,868	76.8	4,276	4,313	73.8
Fire & FD assist	8	8	82.2	4	6	66.2
Total	4,839	4,876	76.8	4,280	4,317	73.7

Note: OD= Overdose and psychiatric; UNC=Unconsciousness

FIGURE 8-14: Average Transport Calls by Hour and Year



ATTACHMENT II: CALL TYPE IDENTIFICATION

TABLE 8-26: Call Type by CAD Problem Description

Call Type	Problem	Frequency	
		2019	2020
Breathing Difficulty	Breathing Problems	781	723
	Choking	34	35
Cardiac and Stroke	Cardiac / Respiratory Arrest	110	142
	Chest Pain	485	465
	Heart Problems	112	114
	Stroke	174	143
Fire & PD Assist	Burns / Explosion	7	4
	.Nat Gas Leak Broken/Blowing	0	1
	.Natural Gas Odor - Outside	0	1
	AID - MEDIC	1	0
	Assist PD	3	2
	Carbon Monoxide Alarm	12	6
	Electrical Short	1	1
	Extinguished Fire	1	0
	Fuel Spill	4	4
	HazMat	1	0
	HazMat 1st Alarm	0	1
	HazMat Single Engine	3	2
	Illegal Burn	2	0
	Investigate	1	0
	Knocked Off Hydrant	1	0
	Lift Assist	1	0
	Lock in/out	3	2
	Odor of Chemical	0	1
	Oven Fire	1	0
	Ringling Alarm Highrise	0	1
	Rubbish Fire	1	2
	Safe Surrender	0	1
	SNAKE REMOVAL	1	0
	Special Service	2	1
	Structure Collapse	1	2
	Structure Fire - Comm / Apt	8	21
	Structure Highrise/Hospital	0	1
	Structure Residential	10	11
	Vegetation Initial Attack	1	2
	Vehicle Fire	4	1
	Vehicle Fire Freeway	2	4
	Wires down	1	0

Call Type	Problem	Frequency	
		2019	2020
Fall and Injury	Assault/Rape	227	238
	Drowning/Diving Accident	1	1
	Electrocution	4	1
	Falls / Back Inj	855	787
	Stabbing/Gunshot	34	36
	Traumatic Injuries, Spec	175	166
Illness and Other	Abdominal Pain/Problems	209	222
	Allergy/Hives/Med Rx/Stng	43	48
	Animal Bites/ Attacks	14	13
	Back Pain	75	67
	C O / Inhalation/ Haz Mat*	3	4
	Diabetic Problems	151	139
	Elevator Rescue	12	9
	Eye Problems / Injuries	3	8
	Headache	61	43
	Heat / Cold Exposure	6	6
	Hemorrhage / Lacerations	227	237
	Industrial Rescue	0	1
	Lift Assist*	1	1
	Medical Aid	7	4
	Medical Alert Alarm	95	76
	Miscellaneous Rescue	0	1
	NC Medical Aid	53	51
	Poison Control	2	1
	Preg/Birth/Miscarriage	29	29
	Sick Person	1,246	1,158
	Special Service*	0	3
	Suspected COVID19	0	108
	Unknown Problem*	189	162
	Vehicle vs. Pedestrian*	5	7
Vehicle Rescue	22	22	
Water Rescue 3	0	1	
MVA	Traffic Accident	589	529
	Traffic Accident FWY	74	50
	Vehicle vs Structure	13	9
	Vehicle vs. Pedestrian	1	1
Overdose and Psychiatric	OD/Ingestion/Poisonings	123	113
	Psych / Suicide Attempt	143	173
Seizure and UNC	Convulsions / Seizures	285	227
	Unc/Fainting	582	499
Total		7,328	6,945

Note: *NRIFS incident type code is 321; UNC = Unconsciousness.

- END -



Report on Residential Fireground Field Experiments



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Abstract

Service expectations placed on the fire service, including Emergency Medical Services (EMS), response to natural disasters, hazardous materials incidents, and acts of terrorism, have steadily increased. However, local decision-makers are challenged to balance these community service expectations with finite resources without a solid technical foundation for evaluating the impact of staffing and deployment decisions on the safety of the public and firefighters.

For the first time, this study investigates the effect of varying crew size, first apparatus arrival time, and response time on firefighter safety, overall task completion, and interior residential tenability using realistic residential fires. This study is also unique because of the array of stakeholders and the caliber of technical experts involved. Additionally, the structure used in the field experiments included customized instrumentation; all related industry standards were followed; and robust research methods were used. The results and conclusions will directly inform the NPPFA 1710 Technical Committee, who is responsible for developing consensus industry deployment standards.

This report presents the results of more than 60 laboratory and residential fireground experiments designed to quantify the effects of various fire department deployment configurations on the most common type of fire — a low hazard residential structure fire. For the fireground experiments, a 2,000 sq ft (186 m²), two-story residential structure was designed and built at the Montgomery County Public Safety Training Academy in Rockville, MD. Fire crews from Montgomery County, MD and Fairfax County, VA were deployed in response to live fires within this facility. In addition to systematically controlling for the arrival times of the first and subsequent fire apparatus, crew size was varied to consider two-, three-, four-, and five-person staffing. Each deployment performed a series of 22 tasks that were timed, while the thermal and toxic environment inside the structure was measured. Additional experiments with larger fuel loads as well as fire modeling produced additional insight. Report results quantify the effectiveness of crew size, first-due engine arrival time, and apparatus arrival stagger on the duration and time to completion of the key 22 fireground tasks and the effect on occupant and firefighter safety.

Executive Summary

Both the increasing demands on the fire service - such as the growing number of Emergency Medical Services (EMS) responses, challenges from natural disasters, hazardous materials incidents, and acts of terrorism — and previous research point to the need for scientifically based studies of the effect of different crew sizes and firefighter arrival times on the effectiveness of the fire service to protect lives and property. To meet this need, a research partnership of the Commission on Fire Accreditation International (CFAI), International Association of Fire Chiefs (IAFC), International Association of Firefighters (IAFF), National Institute of Standards and Technology (NIST), and Worcester Polytechnic Institute (WPI) was formed to conduct a multiphase study of the deployment of resources as it affects firefighter and occupant safety. Starting in FY 2005, funding was provided through the Department of Homeland Security (DHS) / Federal Emergency Management Agency (FEMA) Grant Program Directorate for Assistance to Firefighters Grant Program — Fire Prevention and Safety Grants. In addition to the low-hazard residential fireground experiments described in this report, the multiple phases of the overall research effort include development of a conceptual model for community risk assessment and deployment of resources, implementation of a generalizable department incident survey, and delivery of a software tool to quantify the effects of deployment decisions on resultant firefighter and civilian injuries and on property losses.

The first phase of the project was an extensive survey of more than 400 career and combination (both career and volunteer) fire departments in the United States with the objective of optimizing a fire service leader's capability to deploy resources to prevent or mitigate adverse events that occur in risk- and hazard-filled environments. The results of this survey are not documented in this report, which is limited to the experimental phase of the project. The survey results will constitute significant input into the development of a future software tool to quantify the effects of community risks and associated deployment decisions on resultant firefighter and civilian injuries and property losses.

The following research questions guided the experimental design of the low-hazard residential fireground experiments documented in this report:

1. How do crew size and stagger affect overall start-to-completion response timing?
2. How do crew size and stagger affect the timings of task initiation, task duration, and task completion for each of the 22 critical fireground tasks?
3. How does crew size affect elapsed times to achieve three critical events that are known to change fire behavior or tenability within the structure:
 - a. Entry into structure?
 - b. Water on fire?
 - c. Ventilation through windows (three upstairs and one back downstairs window and the burn room window).

4. How does the elapsed time to achieve the national standard of assembling 15 firefighters at the scene vary between crew sizes of four and five?

In order to address the primary research questions, the research was divided into four distinct, yet interconnected parts:

- Part 1 — Laboratory experiments to design appropriate fuel load
- Part 2 — Experiments to measure the time for various crew sizes and apparatus stagger (interval between arrival of various apparatus) to accomplish key tasks in rescuing occupants, extinguishing a fire, and protecting property
- Part 3 — Additional experiments with enhanced fuel load that prohibited firefighter entry into the burn prop – a building constructed for the fire experiments
- Part 4 — Fire modeling to correlate time-to-task completion by crew size and stagger to the increase in toxicity of the atmosphere in the burn prop for a range of fire growth rates.

The experiments were conducted in a burn prop designed to simulate a low-hazard¹ fire in a residential structure described as typical in NFPA 1710® *Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*. NFPA 1710 is the consensus standard for career firefighter deployment, including requirements for fire department arrival time, staffing levels, and fireground responsibilities.

Limitations of the study include firefighters' advance knowledge of the burn prop, invariable number of apparatus, and lack of experiments in elevated outdoor temperatures or at night. Further, the applicability of the conclusions from this report to commercial structure fires, high-rise fires, outside fires, terrorism/natural disaster response, HAZMAT or other technical responses has not been assessed and should not be extrapolated from this report.

Primary Findings

Of the 22 fireground tasks measured during the experiments, results indicated that the following factors had the most significant impact on the success of fire fighting operations. All differential outcomes described below are statistically significant at the 95 % confidence level or better.

Overall Scene Time:

The four-person crews operating on a low-hazard structure fire completed all the tasks on the fireground (on average) seven minutes faster — nearly 30 % — than the two-person crews. The four-person crews completed the same number of fireground tasks (on average) 5.1 minutes faster — nearly 25 % — than the three-person crews. On the low-hazard residential structure fire, adding a fifth person to the crews did not decrease overall fireground task times. However, it should be noted that the

¹ A low-hazard occupancy is defined in the NFPA Handbook as a one-, two-, or three-family dwelling and some small businesses. Medium hazards occupancies include apartments, offices, mercantile and industrial occupancies not normally requiring extensive rescue or firefighting forces. High-hazard occupancies include schools, hospitals, nursing homes, explosive plants, refineries, high-rise buildings, and other highlife hazard or large fire potential occupancies.

benefit of five-person crews has been documented in other evaluations to be significant for medium- and high-hazard structures, particularly in urban settings, and is recognized in industry standards.²

Time to Water on Fire:

There was a 10% difference in the “water on fire” time between the two- and three-person crews. There was an additional 6% difference in the “water on fire” time between the three- and four-person crews. (i.e., four-person crews put water on the fire 16% faster than two person crews). There was an additional 6% difference in the “water on fire” time between the four- and five-person crews (i.e. five-person crews put water on the fire 22% faster than two-person crews).

Ground Ladders and Ventilation:

The four-person crews operating on a low-hazard structure fire completed laddering and ventilation (for life safety and rescue) 30 % faster than the two-person crews and 25 % faster than the three-person crews.

Primary Search:

The three-person crews started and completed a primary search and rescue 25 % faster than the two-person crews. The four- and five-person crews started and completed a primary search 6 % faster than the three-person crews and 30 % faster than the two-person crew. A 10 % difference was equivalent to just over one minute.

Hose Stretch Time:

In comparing four- and five-person crews to two- and three-person crews collectively, the time difference to stretch a line was 76 seconds. In conducting more specific analysis comparing all crew sizes to the two-person crews the differences are more distinct. Two-person crews took 57 seconds longer than three-person crews to stretch a line. Two-person crews took 87 seconds longer than four-person crews to complete the same tasks. Finally, the most notable comparison was between two-person crews and five-person crews — more than 2 minutes (122 seconds) difference in task completion time.

Industry Standard Achieved:

As defined by NFPA 1710, the “industry standard achieved” time started from the first engine arrival at the hydrant and ended when 15 firefighters were assembled on scene.³ An effective response force was assembled by the five-person crews three minutes faster than the four-person crews. Based on the study protocols, modeled after a typical fire department apparatus deployment strategy, the total number of firefighters on scene in the two- and three-person crew scenarios never equaled 15 and therefore the two- and three-person crews were unable to assemble enough personnel to meet this standard.

Occupant Rescue:

Three different “standard” fires were simulated using the Fire Dynamics Simulator (FDS) model. Characterized in the *Handbook of the Society of Fire Protection Engineers* as slow-,

medium-, and fast-growth rate⁴, the fires grew exponentially with time. The rescue scenario was based on a non-ambulatory occupant in an upstairs bedroom with the bedroom door open.

Independent of fire size, there was a significant difference between the toxicity, expressed as fractional effective dose (FED), for occupants at the time of rescue depending on arrival times for all crew sizes. Occupants rescued by early-arriving crews had less exposure to combustion products than occupants rescued by late-arriving crews. The fire modeling showed clearly that two-person crews cannot complete essential fireground tasks in time to rescue occupants without subjecting them to an increasingly toxic atmosphere. For a slow-growth rate fire with two-person crews, the FED was approaching the level at which sensitive populations, such as children and the elderly are threatened. For a medium-growth rate fire with two-person crews, the FED was far above that threshold and approached the level affecting the general population. For a fast-growth rate fire with two-person crews, the FED was well above the median level at which 50 % of the general population would be incapacitated. Larger crews responding to slow-growth rate fires can rescue most occupants prior to incapacitation along with early-arriving larger crews responding to medium-growth rate fires. The result for late-arriving (two minutes later than early-arriving) larger crews may result in a threat to sensitive populations for medium-growth rate fires. Statistical averages should not, however, mask the fact that there is no FED level so low that every occupant in every situation is safe.

Conclusion:

More than 60 full-scale fire experiments were conducted to determine the impact of crew size, first-due engine arrival time, and subsequent apparatus arrival times on firefighter safety and effectiveness at a low-hazard residential structure fire. This report quantifies the effects of changes to staffing and arrival times for residential firefighting operations. While resource deployment is addressed in the context of a single structure type and risk level, it is recognized that public policy decisions regarding the cost-benefit of specific deployment decisions are a function of many other factors including geography, local risks and hazards, available resources, as well as community expectations. This report does not specifically address these other factors.

The results of these field experiments contribute significant knowledge to the fire service industry. First, the results provide a quantitative basis for the effectiveness of four-person crews for low-hazard response in *NFPA 1710*. The results also provide valid measures of total effective response force assembly on scene for fireground operations, as well as the expected performance time-to-critical-task measures for low-hazard structure fires. Additionally, the results provide tenability measures associated with a range of modeled fires.

Future research should extend the findings of this report in order to quantify the effects of crew size and apparatus arrival times for moderate- and high-hazard events, such as fires in high-rise buildings, commercial properties, certain factories, or warehouse facilities, responses to large-scale non-fire incidents, or technical rescue operations.

2 NFPA Standard 1710 - A.5.2.4.2.1 ...Other occupancies and structures in the community that present greater hazards should be addressed by additional fire fighter functions and additional responding personnel on the initial full alarm assignment.

3 NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments. Section 5.2.1 – Fire Suppression Capability and Section 5.2.2 Staffing.

4 As defined in the handbook, a fast fire grows exponentially to 1.0 MW in 150 seconds. A medium fire grows exponentially to 1 MW in 300 seconds. A slow fire grows exponentially to 1 MW in 600 seconds. A 1 MW fire can be thought of as a typical living room fire burning at its peak. A large sofa might be 2 to 3 MWs.

Background

The fire service in the United States has a deservedly proud tradition of service to community and country dating back hundreds of years. As technology advances and the scope of service grows (e.g., more EMS obligations and growing response to natural disasters, hazardous materials incidents, and acts of terrorism), the fire service remains committed to a core mission of protecting lives and property from the effects of fire.

Firefighting is a dangerous business with substantial financial implications. In 2007, U.S. municipal fire departments responded to an estimated 1,557,500 fires. These fires killed 3,430 civilians (non-firefighters) and contributed to 17,675 reported civilian fire injuries. Direct property damage was estimated at \$14.6 billion dollars (Karter, 2008). In spite of the vigorous nationwide efforts

to promote firefighter safety, the number of firefighter deaths has consistently remained tragically high. In both 2007 and 2008, the U.S. Fire Administration reported 118 firefighter fatalities (USFA 2008).

Although not all firefighter deaths occur on the fireground — accidents in vehicles and training fatalities add to the numbers — every statistical analysis of the fire problem in the United States identifies residential structure fires as a key component in firefighter and civilian deaths, as well as direct property loss. Consequently, community planners and decision-makers need tools for optimally aligning resources with the service commitments needed for adequate protection of citizens.

Problem

Despite the magnitude of the fire problem in the United States, there are no scientifically based tools available to community and fire service leaders to assess the effects of prevention, fixed sprinkler systems, fire fighting equipment, or deployment and staffing decisions. Presently, community and fire service leaders have a qualitative understanding of the effect of certain resource allocation decisions. For example, a decision to double the number of firehouses, apparatus, and firefighters would likely result in a decrease in community fire losses, while cutting the number of firehouses, apparatus, and firefighters would likely yield an increase in the community fire losses, both human and property. However, decision-makers lack a sound

basis for quantifying the total impact of enhanced fire resources on the number of firefighter and civilian lives saved and injuries prevented.

Studies on adequate deployment of resources are needed to enable fire departments, cities, counties, and fire districts to design an acceptable level of resource deployment based upon community risks and service provision commitment. These studies will assist with strategic planning and municipal and state budget processes. Additionally, as resource studies refine data collection methods and measures, both subsequent research and improvements to resource deployment models will have a sound scientific basis.

Review of Literature

Research to date has documented a consistent relationship between resources deployed and firefighter and civilian safety. Studies documenting engine and ladder crew performance in diverse simulated environments as well as actual responses show a basic relationship between apparatus staffing levels and a range of important performance variables and outcome measurements such as mean on-scene time, time-to-task completion, incidence of injury among fire service personnel, and costs incurred as a result of on-scene injuries (Cushman 1981, McManis 1984, Morrison 1990, Ontario 1991, Phoenix 1991, Roberts 1993).

Reports by fire service officials and consulting associates reviewing fire suppression and emergency response by fire crews in U.S. cities were the first publications to describe the relationship between adequate staffing levels and response time, time to completion of various fireground tasks, overall effectiveness of fire suppression, and estimated value of property loss for a wide range of real and simulated environments. In 1980, the Columbus Fire Division's report on firefighter effectiveness showed that for a predetermined number of personnel initially deployed to the scene of a fire, the proportion of incidents in which property loss exceeded \$5,000 and horizontal fire spread of more than 25 sq ft (2.3 m²) was significantly greater for crews whose numbers fell below the set thresholds of 15 total fireground personnel at residential fires and 23 at large-risk fires (Backoff 1980). The following year, repeated live experiments at a one-family residential site using modern apparatus and equipment demonstrated that larger units performed tasks and accomplished knockdown more quickly, ultimately resulting in a lower percentage of loss attributable to factors controlled by the fire department. The authors of this article highlighted that the fire company is the fire department's basic working unit and further emphasized the importance of establishing accurate and up-to-date performance measurements to help collect data and develop conclusive strategies to improve staffing and equipment utilization (Gerard 1981).

Subsequent reports from the United States Fire Administration (USFA) and several consulting firms continued to provide evidence for the effects of staffing on fire crews' ability to complete tasks involved in fire suppression efficiently and effectively. Citing a series of tests conducted in 1977 by the Dallas Fire Department that measured the time it took three-, four-, and five-person teams to advance a line and put water on a simulated fire at the rear of the third floor of an old school, officials from the USFA underscored that time-to-task completion and final level of physical exhaustion for crews markedly improved not after any one threshold, but with the addition of each new team member. This report went on to outline the manner in which simulated tests exemplify a clear-cut means to record and analyze the resources initially deployed and finally utilized at fire scenes (NFA 1981). A later publication detailing more Dallas Fire Department simulations — ninety-one runs each for a private residential fire, high-rise office fire, and apartment house fire — showed again that increased staffing levels greatly enhanced the coordination and effectiveness of crews' fire suppression efforts during a finite time span (McManis Associates 1984). Numerous studies of local departments have supported this conclusion using a diverse collection of data, including a report by the National Fire

Academy (NFA) on fire department staffing in smaller communities, which showed that a company crew staffed with four firefighters could perform rescue of potential victims approximately 80 % faster than a crew staffed with three firefighters (Morrison 1990).

During the same time period that the impact of staffing levels on fire operations was gaining attention, investigators began to question whether staffing levels could also be associated with the risk of firefighter injuries and the cost incurred as a result of such injuries at the fire scene. Initial results from the Columbus Fire Division showed that "firefighter injuries occurred more often when the total number of personnel on the fireground was less than 15 at residential fires and 23 at large-risk fires" (Backoff 1980), and mounting evidence has indicated that staffing levels are a fundamental health and safety issue for firefighters in addition to being a key determinant of immediate response capacity. One early analysis by the Seattle Fire Department for that city's Executive Board reviewed the average severity of injuries suffered by three-, four-, and five-person engine companies, with the finding that "the rate of firefighter injuries expressed as total hours of disability per hours of fireground exposure were 54 % greater for engine companies staffed with 3 personnel when compared to those staffed with 4 firefighters, while companies staffed with 5 personnel had an injury rate that was only one-third that associated with four-person companies" (Cushman 1981). A joint report from the International Association of Fire Fighters (IAFF) and Johns Hopkins University concluded, after a comprehensive analysis of the minimum staffing levels and firefighter injury rates in U.S. cities with populations of 150,000 or more, that jurisdictions operating with crews of less than four firefighters had injury rates nearly twice the percentage of jurisdictions operating with crews of four-person crews or more (IAFF, JHU 1991).

More recent studies have continued to support the finding that staffing per piece of apparatus integrally affects the efficacy and safety of fire department personnel during emergency response and fire suppression. Two studies in particular demonstrate the consistency of these conclusions and the increasing level of detail and accuracy present in the most recent literature, by looking closely at the discrete tasks that could be safely and effectively performed by three- and four-person fire companies. After testing drills comprised of a series of common fireground tasks at several fire simulation sites, investigators from the Austin Fire Department assessed the physiological impact and injury rates among the variably staffed fire crews. In these simulations, an increase from a three- to four-person crew resulted in marked improvements in time-to-task completion or efficiency for the two-story residential fire drill, aerial ladder evolution, and high-rise fire drill, leading the researchers to conclude that loss of life and property increases when a sufficient number of personnel are not available to conduct the required tasks efficiently, independent of firefighter experience, preparation, or training. Reviews of injury reports by the Austin Fire Department furthermore revealed that the injury rate for three-person companies in the four years preceding the study was nearly one-and-a-half that of crews staffed with four or more personnel (Roberts 1993). In a sequence of similar tests, the Office of the Fire Marshal of Ontario, Canada likewise found that three-person

fire companies were unable to safely perform deployment of backup protection lines, interior suppression or rescue operations, ventilation operations that required access to the roof of the involved structure, use of large hand-held hose lines, or establish a water supply from a static source without additional assistance and within the time limits of the study. Following these data, Fire Marshal officials noted that three-person crews were also at increased risk for exhaustion due to insufficient relief at fire scenes and made recommendations for the minimum staffing levels per apparatus necessary for suppression and rescue related tasks (Office of the Fire Marshal of Ontario 1993).

The most comprehensive contemporary studies on the implications of fire crew staffing now include much more accurate performance measures for tasks at the fireground, in addition to the basic metric of response time. They include environmental measures of performance, such as total water supply, which expand the potential for assessing the cost-effectiveness of staffing not only in terms of fireground personnel injury rates but also comparative resource expenditure required for fire suppression. Several examples from the early 1990s show investigators and independent fire departments beginning to gather the kind of specific, comprehensive data on staffing and fireground tasks such as those suggested and outlined in concurrent local government publications that dealt with management of fire services (Coleman 1988). A report by the Phoenix Fire Department laid out clear protocols for responding to structure fires and response evaluation in terms of staffing, objectives, task breakdowns, and times in addition to outlining the responsibilities of responding fire department members and the order in which they should be accomplished for a full-scale simulation activity (Phoenix 1991). One attempt to devise a prediction model for the effectiveness of manual fire suppression similarly reached beyond response time benchmarks to describe fire operations and the step-by-step actions of firefighters at incident scenes by delineating the time-to-task breakdowns for size-up, water supply, equipment selection, entry, locating the fire, and advancing hose lines, while also comparing the predicted time-to-task values with the actual times and total resources (Menker 1994). Two separate studies of local fire department performance, one from Taoyuan County in Taiwan and another from the London Fire Brigade, have drawn ties between fire crews' staffing levels and total water demand as the consequence of both response time and fire severity. Field data from Taoyuan County for cases of fire in commercial, business, hospital, and educational properties showed that the type of land use as well as response time had a significant impact on the water volume necessary for

fire suppression, with the notable quantitative finding that the water supply required on-scene doubled when the fire department response increased by ten minutes (Chang 2005).

Response time as a predictor of residential fire outcomes has received less study than the effect of crew size. A Rand Institute study demonstrated a relationship between the distance the responding companies traveled and the physical property damage. This study showed that the fire severity increased with response distance, and therefore the magnitude of loss increased proportionally (Rand 1978). Using records from 307 fires in nonresidential buildings over a three-year period, investigators in the United Kingdom correspondingly found response time to have a significant impact on final fire area, which in turn was proportional to total water demand (Sardqvist 2000).

Recent government and professional literature continues to demonstrate the need for more data that would quantify in depth and illustrate the required tasks, event sequences, and necessary response times for effective fire suppression in order to determine with accuracy the full effects of either a reduction or increase in fire company staffing (Karter 2008). A report prepared for National Institute of Standards and Technology (NIST) stressed the ongoing need to elucidate the relationship between staffing and personnel injury rates, stating that "a scientific study on the relationship between the number of firefighters per engine and the incidence of injuries would resolve a long-standing question concerning staffing and safety" (TriData 2005). While not addressing staffing levels as a central focus, an annual review of fire department calls and false alarms by the National Fire Protection Association (NFPA) exemplified the need to capture not only the number of personnel per apparatus for effective fire suppression but also to clarify the demands on individual fire departments with resolution at the station level (NFPA 2008).

In light of the existing literature, there remain unanswered questions about the relationships between fire service resource deployment levels and associated risks. For the first time this study investigates the effect of varying crew size, first apparatus arrival time, and response time on firefighter safety, overall task completion and interior residential tenability using realistic residential fires. This study is also unique because of the array of stakeholders and the caliber of technical advisors involved. Additionally, the structure used in the field experiments included customized instrumentation for the experiments; all related industry standards were followed; robust research methods were used; and the results and conclusions will directly inform the *NFPA 1710* Technical Committee, as well as public officials and fire chiefs.⁵

5 NFPA is a registered trademark of the National Fire Protection Association, Quincy, Massachusetts. NFPA 1710 defines minimum requirements relating to the organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by substantially all career fire departments. The requirements address functions and objectives of fire department emergency service delivery, response capabilities, and resources. The purpose of this standard is to specify the minimum criteria addressing the effectiveness and efficiency of the career public fire suppression operations, emergency medical service, and special operations delivery in protecting the citizens of the jurisdiction and the occupational safety and health of fire department employees. At the time of the experiments, the 2004 edition of NFPA 1710 was the current edition.

Purpose and Scope of the Study

This project systematically studies deployment of fire fighting resources and the subsequent effect on both firefighter safety and the ability to protect civilians and their property. It is intended to enable fire departments and city/county managers to make sound decisions regarding optimal resource allocation to meet service commitments using the results of scientifically based research. Specifically, the residential fireground experiments provide quantitative data on the effect of crew size, first-due engine arrival time, and subsequent apparatus stagger on time-to-task for critical steps in response and fire fighting.

The first phase of the multiphase project was an extensive survey of more than 400 career and combination fire departments in the United States with the objective of optimizing a fire service leader's capability to deploy resources to prevent or mitigate adverse events that occur in risk- and hazard-filled environments. The results of this survey are not documented in this report, which is limited to the experimental phase of the project, but they will constitute significant input into future applications of the data presented in this document.

This report describes the second phase of the project, divided into four parts:

- Part 1 — Laboratory experiments to design the appropriate fuel packages to be used in the burn facility specially constructed for the research project
- Part 2 — Field tests for critical time-to-task completion of key tasks in fire suppression
- Part 3 — Field tests with real furniture (room and contents experiments)
- Part 4 — Fire modeling to apply data gathered to slow-, medium-, and fast-growth rate fires

The scope of this study is limited to understanding the relative influence of deployment variables on low-hazard, residential structure fires, similar in magnitude to the hazards described in NFPA® 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*. The standard uses as a typical residential structure a 2,000 sq ft (186 m²) two-story, single-family dwelling with no basement and no exposures (nearby buildings or hazards such as stacked flammable material).

The limitations of the study, such as firefighters' advance knowledge of the facility constructed for this experiment, invariable number of apparatus, and lack of experiments in extreme temperatures or at night, will be discussed in the Limitations section of this report. It should be noted that the applicability of the conclusions from this report to commercial structure fires, high-rise fires, outside fires, and response to hazardous material incidents, acts of terrorism, and natural disasters or other technical responses has not been assessed and should not be extrapolated from this report.

A Brief Overview of the Fireground Operations

Regardless of the size of a structure on fire, firefighting crews identify four priorities: life safety of occupants and firefighters, confinement of the fire, property conservation, and reduction of adverse environmental impact. Interdependent and coordinated activities of all fire fighting personnel are required to meet the priority objectives.

NFPA 1710 specifies that the number of on-duty fire suppression personnel must be sufficient to carry out the necessary fire fighting operations given the expected fire fighting conditions. During each fireground experiment, the following were dispatched to the test fire building:

- three engine companies
- one truck company
- a command vehicle with a battalion chief and a command aide

Staffing numbers for the engine and truck crews and response times were varied for the purposes of the tests. Additional personnel available to ensure safety will be described later in this report.

The following narrative account describes the general sequence of activities in part 2 of the experiments (time-to-task), when the fuel load permitted firefighter entry:

The first arriving engine company conducts a size-up or initial life safety assessment of the building to include signs of occupants in the home, construction features, and location of the original fire and any extension to other parts of the structure. This crew lays a supply line from a hydrant close to the building for a continuous water supply.

The truck company usually arrives in close proximity to the first engine company. The truck company is responsible for gaining access or forcing entry into the building so that the engine company can advance the first hose line into the building to locate and extinguish the fire. Usually, they assist the engine company in finding the fire. The NFPA and OSHA 2 In/2 Out⁶ crew is also assembled prior to anyone entering an atmosphere that is immediately dangerous to life or health (IDLH). This important safety requirement will have a large impact on availability of firefighters to enter the building when small crews are deployed.

Once a door is opened, the engine crew advances a hose line (attack line) toward the location of the fire. At the same time, members from the truck crew accompany the engine crew and

assist in ventilating the building to provide a more tenable atmosphere for occupants and firefighters. Ventilation also helps by improving visibility in an otherwise “pitch black” environment, but it must be coordinated with the attack line crew to ensure it helps control the fire and does not contribute to fire growth. The truck crew performs a systematic rapid search of the entire structure starting in the area where occupants would be in the most danger. The most dangerous area is proximate to the fire and the areas directly above the fire.

Depending upon the travel distance, the battalion chief and command aide will have arrived on the scene and have taken command of the incident and established a command post. The role of the incident commander is to develop the action plan to mitigate the incident and see that those actions are carried out in a safe, efficient, and effective manner. The command aide is responsible for situational assessment and communications, including communications with crew officers to ensure personnel accountability.

Depending on response time or station location, the second (engine 2) and possibly the third engine company (engine 3) arrive. The second arriving engine (engine 2) connects to the fire hydrant where the first engine (engine 1) laid their supply line. Engine 2 pumps water from the hydrant through the supply line to the first engine for fire fighting operations. According to *NFPA 1710*, water should be flowing from the supply line to the attack engine prior to the attack crew’s entry into the structure.

The crew from the second engine advances a second hand line as a backup line to protect firefighters operating on the inside and to prevent fire from spreading to other parts of the structure.

The third engine crew is responsible for establishing a Rapid Intervention Team (RIT), a rescue team staged at or near the command post or as designated by the Incident Commander (in the front of the building) with all necessary equipment needed to locate and/or rescue firefighters that become trapped or incapacitated. The RIT plans entry/exit portals and removes hazards, if found, to assist interior crews.

As the fire fighting, search and rescue, and ventilation operations are continuing, two members of the truck company are tasked with placing ground ladders to windows and the roof to provide a means of egress for occupants or firefighters. The truck crew is responsible for controlling interior utilities such as gas and electric after their ventilation, search, and rescue duties are completed.

Once the fire is located and extinguished and occupants are

6 The “2 In/2 Out” policy is part of paragraph (g)(4) of OSHAs revised respiratory protection standard, 29 CFR 1910.134. This paragraph applies to private sector workers engaged in interior structural fire fighting and to Federal employees covered under Section 19 of the Occupational Safety and Health Act. States that have chosen to operate OSHA-approved occupational safety and health state plans are required to extend their jurisdiction to include employees of their state and local governments. These states are required to adopt a standard at least as effective as the Federal standard within six months.

OSHA’s interpretation on requirements for the number of workers required to be present when conducting operations in atmospheres that are immediately dangerous to life and health (IDLH) covers the number of persons who must be on the scene before fire fighting personnel may initiate an attack on a structural fire. An interior structural fire (an advanced fire that has spread inside of the building where high temperatures, “heat” and dense smoke are normally occurring) would present an IDLH atmosphere and therefore, require the use of respirators. In those cases, at least two standby persons, in addition to the minimum of two persons inside needed to fight the fire, must be present before fire fighters may enter the building.

Letter to Thomas N. Cooper, Purdue University, from Paula O. White, Director of Federal-State Operations, U.S. Department of Labor, Occupational Safety & Health Administration, November 1, 1995.

removed, the incident commander reassesses the situation and provides direction to conduct a very thorough secondary search of the building to verify that the fire has not extended into void spaces and that it is fully extinguished. (In a nonexperimental fire situation, salvageable property would be covered or removed to minimize damage.)

Throughout the entire incident, each crew officer is responsible for the safety and accountability of his or her personnel along with air management. The location and wellness of crews is tracked by the command aide through a system of personal accountability checks conducted at 20-minute intervals.

Following extinguishment of the fire, an onsite review is conducted to identify actions for improvement. Crews are monitored, hydrated and rested before returning to work in the fire building.

the compartment, with results for occupants, even firefighters in full gear, that are frequently deadly.

Successful containment and control of a fire require the coordination of many separate tasks. Fire suppression must be coordinated with rescue operations, forcible entry, and utilities control. Ventilation typically occurs only after an attack line is in place and crews are ready to move in and attack the fire. The incident commander needs up-to-the-minute knowledge of crew activities and the status of task assignments which could result in a decision to change from an offensive to a defensive strategy.

Standards of Response Cover

Developing a standard of response cover — the policies and procedures that determine the distribution, concentration, and reliability of fixed and mobile resources for response to fire (as well as other kinds of technical response) — related to service commitments to the community is a complex task. Fire and rescue departments must evaluate existing (or proposed) resources against identified risk levels in the community and against the tasks necessary to conduct safe, efficient and effective fire suppression at structures identified in these various risk levels. Leaders must also evaluate geographic distribution and depth or concentration of resources deployed based on time parameters.

Recognition and reporting of a fire sets off a chain of events before firefighters arrive at the scene: call receipt and processing, dispatch of resources, donning protective gear, and travel to the scene. *NFPA 1710* defines the overall time from dispatch to scene arrival as the *total response time*. The standard divides total

The Relation of Time-to-Task Completion and Risk

Delayed response, particularly in conjunction with the deployment of inadequate resources, reduces the likelihood of controlling the fire in time to prevent major damage and possible loss of life and increases the danger to firefighters.

Figure 1 illustrates a hypothetical sequence of events for response to a structure fire. During fire growth, the temperature of a typical compartment fire can rise to over 1,000° F (538° C). When a fire in part of a compartment reaches flashover, the rapid transition between the growth and the fully developed fire stage, flame breaks out almost at once over the surface of all objects in

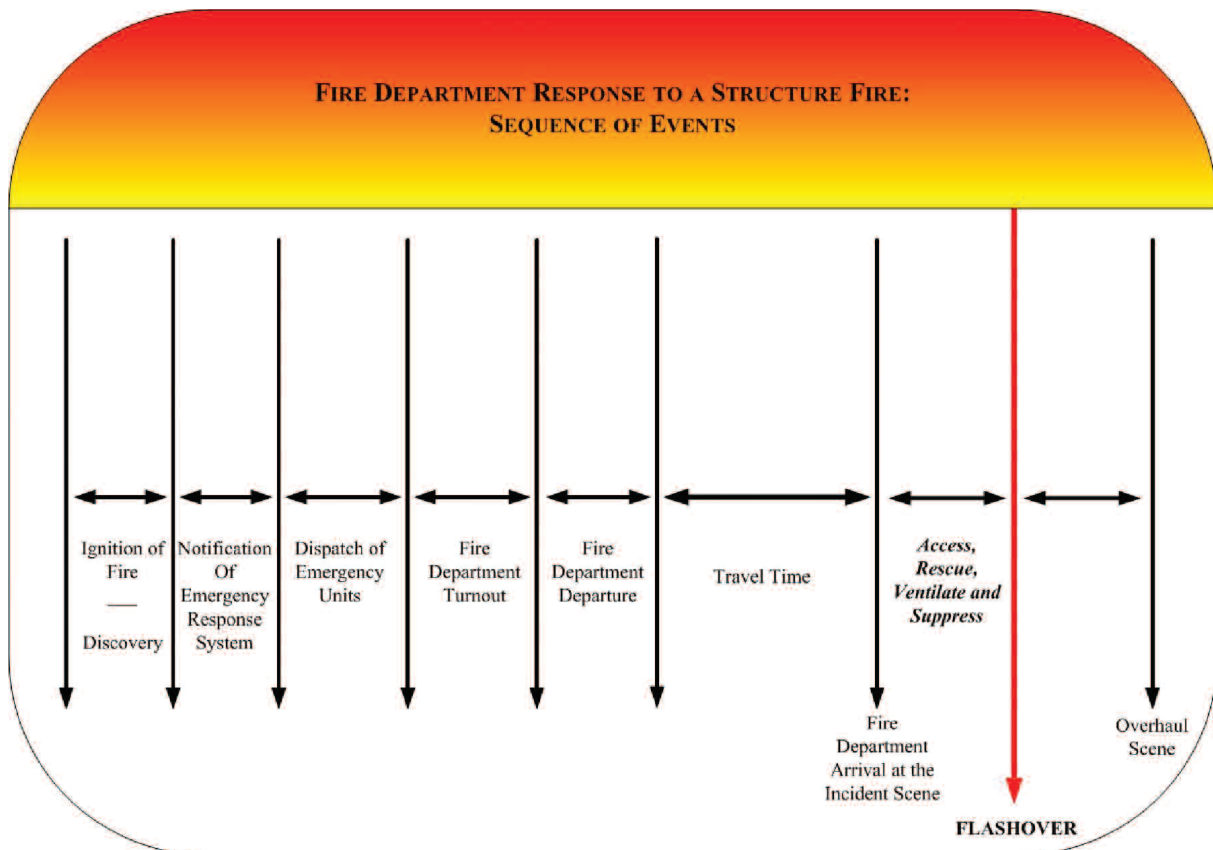


Figure 1: Hypothetical Timeline of Fire Department Response to Structure Fire

response time into a number of discrete segments, of which travel time — the time interval from the beginning of travel to the scene to the arrival at the scene — is particularly important for this study.

Arrival of a firefighting response force must be immediately followed by organization of the resources into a logical, properly phased sequence of tasks, some of which need to be performed simultaneously. Knowing the time it takes to accomplish each task with the allotted number of personnel and equipment is critical. Ideally crews should arrive and intervene in sufficient time to prevent flashover or spread beyond the room of origin.

Decision-making about staffing levels and geographic distribution of resources must consider those times when there will be simultaneous events requiring resource deployment. There should be sufficient redundancy or overlap in the system to

allow for simultaneous calls and high volume of near simultaneous responses without compromising the safety of the public or firefighters.

Policy makers have long lacked studies that quantify changes in fireground performance based on apparatus staffing levels and on-scene arrival time intervals. These experiments were designed to observe the impact of apparatus staffing levels and apparatus arrival times on the time it takes to execute essential fireground tasks and on the tenability inside the burn prop for a full initial alarm assignment response. It is expected that the results of this study will be used to evaluate the related performance objectives in *NFPA 1710*.

Part 1: Planning for the Field Experiments

Laboratory Experiments

The purpose of the first segment, the laboratory experiments, was to characterize the burning behavior of the wood pallets as a function of:

- number of pallets and the subsequent peak heat release rate (HRR)
- compartment effects on burning of wood pallets
- effect of window ventilation on the fire
- effect on fire growth rate of the loading configuration of excelsior (slender wood shavings typically used as packing material)

Characterization of the fuel package was critical in order to ensure that the field experiments would not result in a flashover condition, one of the primary safety considerations in complying with the protocols in *NFPA 1403: Standard on Live Fire Training Evolutions*.⁷ Appendix A of this report contains the methods and full results for the laboratory experiments, which are summarized below. Figure 2 shows a test burn of pallets in the laboratory.

Results of Laboratory Experiments

The objective of the laboratory experiments was to quantify the spread of heat and smoke throughout the planned burn prop in order to ensure that the fuel package would result in a fire large enough to generate heat and smoke consistent with a residential structure fire, yet not so large as to transition to flashover. The full results of the laboratory experiments and modeling are shown in Appendix A and Appendix B. To summarize briefly, a four-pallet configuration, which produced a peak of approximately 2 MW, was determined to be the largest fuel load the room could support without the threat of transitioning to flashover. The compartment produced a negligible effect on the heat release rate of the fire compared to open burning conditions. The presence of an open window in the burn room reduced the



Figure 2: Test Burn of Pallets in Laboratory

production of carbon monoxide and carbon dioxide gases, primarily through enhanced oxygen availability and dilution, respectively. The location and quantity of excelsior had a significant impact on the growth rate of fire. More excelsior located nearer the bottom of the pallets resulted in a more rapid achievement of peak burning.

The results of the fuel load experiments to inform the building and experimental design indicated development of untenable conditions in the field experiments between 5 min and 15 min, depending upon several factors: fire growth rate, ventilation conditions, the total leakage of heat into the building and through leakage paths, and manual fire suppression. This time frame allowed for differentiation of the effectiveness of various fire

⁷ NFPA 1403 contains the minimum requirements for training all fire suppression personnel engaged in firefighting operations under live fire conditions.

Part 2: Field Experiment Methods

department response characteristics.

In part 2, fire experiments were conducted in a residential-scale burn prop at the Montgomery County Public Safety Training Academy in Rockville, MD.

Field Site

Montgomery County (MD) Fire and Rescue Department provided an open space to construct a temporary burn prop, with ready access to water and electrical utilities, at the Montgomery County Fire and Rescue Training Facility in Rockville, MD.

The burn prop was constructed as a two-story duplex with a common stairwell and movable walls between the sections to allow for multiple experiments daily. Symmetrically dividing the structure about the short axis allowed one side of the test structure to cool and dry out after a fire test with suppression. The burn prop contained two mirror-image, two-story units each totaling 2,000 ft² (186 m²), without basement or nearby exposures — each therefore a typical model of a low-hazard single-family residence identified in *NFPA 1710*. An exterior view of the burn prop is shown in Figure 3. For each experiment there was a confirmed fire in the living room in the first floor rear of one unit of the structure.



Figure 3: Exterior View of Burn Prop

Details and dimension are shown in the floor plan in Figure 4.

The black lines in Figure 4 indicate load-bearing reinforced concrete walls and red lines indicate the gypsum over steel stud partition walls. The ceiling height was 94 in (2.4 m) throughout the entire structure except in the burn compartments, where additional hardening was installed to protect against repeated exposure to fire during the experiments. This additional fire proofing slightly reduced the ceiling height. Complete details about the building construction are included in Appendix C.

Noncombustible furniture (angle iron and gypsum board construction) was fashioned to represent obstacles of realistic size and location for firefighters navigating the interior of the structure. The dimensions were typical of residential furnishings. Figure 5 shows an example of the noncombustible furniture used in the time-to-task experiments.

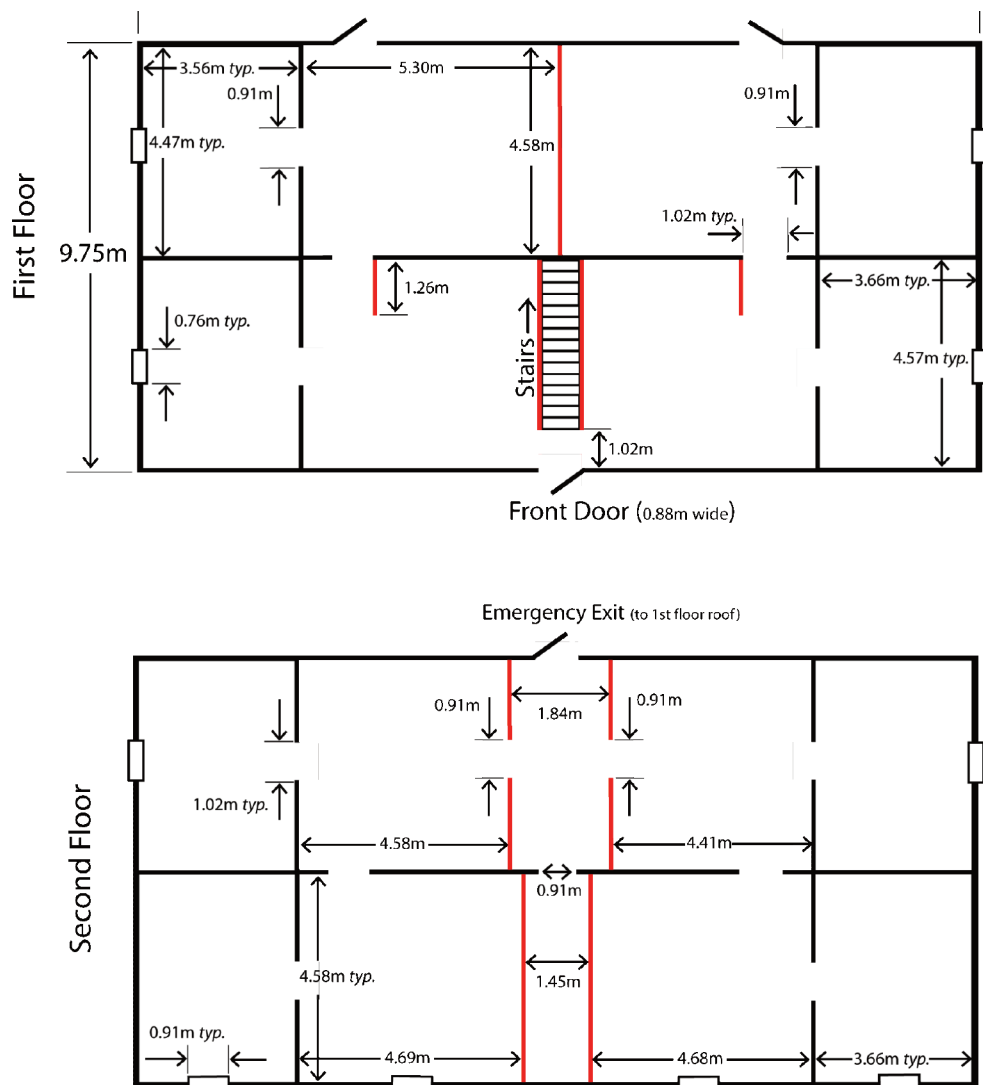


Figure 4: Dimensions of the Burn Prop Floor Plan
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Overview of Field Experiments

In order to evaluate the performance representative of a *NFPA 1710*-compliant fire department, the field experiments consisted of two parts (the second and third parts of the four described in this report). In the first of the two parts of the field experiments, firefighter participants from Montgomery County (MD) and Fairfax County (VA) Fire Departments simulated an initial alarm assignment response to a structure described in *NFPA 1710* as a low-hazard residential structure to which firefighters respond on a regular basis. The staffing level of fire apparatus was varied incrementally from two to five personnel per piece. The interval between apparatus on-scene arrival times was varied at either 60 s or 120 s. Trained timing staff were used to record the start and completion times of 22 tasks deemed essential for mitigation of a residential fire incident by the study's technical experts. The pallet and excelsior configuration chosen from the laboratory experiments repeatably produced a consistent and realistic quantity of heat and smoke, similar to what firefighters encounter at a residential structure fire.

Although the fire source used in part 2 of the field experiments created a realistic amount of heat and smoke, the requirements of *NFPA 1403* prevented use of a fire source which could potentially reach flashover within the structure. Therefore, part 3 of the fire experiments was conducted in order to change the fuel package to be representative of realistic fuel loading that could be found in a living room in a residential structure (sleeper-sofa, upholstered chairs, end tables, etc).

The intent of this part of the study was to determine how the times of firefighter interactions, averaged with respect to the staffing and arrival intervals, impacted the interior tenability conditions. Fire fighting tactics were performed in a manner which complied with *NFPA 1403*; ventilation was performed with proper personal protective equipment (PPE) and hand tools from the exterior of the burn prop. Suppression was performed with an interior remote suppression device operated from the exterior of the burn prop.

Instrumentation

Instrumentation to measure gas temperature, gas concentrations, heat flux, visual obscuration, video, and time during the experiments was installed throughout the burn prop. The data were recorded at 1-second intervals on a computer-based data acquisition system. Figure 6 presents a schematic plan view of the instrumentation. All instruments were wired to a centralized data collection room attached as a separate space on the west side of the building, which is described later in this

report ensuring physical separation for the data collection personnel from the effects of the fire, while minimizing the wire and tube lengths to the data logging equipment. See Appendix C for additional details about the instrumentation.



Figure 5: Noncombustible Furniture Used in the Time-to-Task Experiments



Figure 6: Instrumentation and Furniture Prop Layout



Figure 7: Fireground Safety Officer

Safety Protocols

Firefighter safety was always a primary concern in conducting the research. Participants were drawn from two departments — Fairfax County, VA and Montgomery County, MD — that regularly conduct NFPA 1403 compliant live fire training for their staff and recruits.

A safety officer was assigned to the experiments by the Montgomery County Fire and Rescue Department to assure compliance with *NFPA 1403*. The safety officer (Figure 7) participated in all orientation activities, daily briefings, and firefighter gear checks and was always actively involved in overseeing all experiments. The safety officer had full authority to terminate any operation if any safety violation was observed. In addition to the safety officer, a rapid intervention team (RIT), assigned from dedicated crews not in the actual experiment, was in place for each experiment, and a staffed ambulance was on standby at the site. Radio communication was always available during the experiments should a “mayday” emergency arise.

Experiments were stopped for any action considered to be a protocol breach or safety concern. For example, all ladders — 24 ft (7.3 m) or 28 ft (8.5 m) — were to be raised by two firefighters. As crew sizes were reduced, some firefighters attempted to place ladders single-handedly in an effort to complete the task more quickly. This procedure, while vividly illustrating how firefighters try to do more with less in the field, is unsafe and could potentially result in strain or impact injuries.

Additional safety features were built in to the field structure. A deluge sprinkler system oriented to the known location of the fuel package could be remotely activated for rapid fire suppression. All first floor rooms had direct access to the exterior of the building through either doors or windows. The second story had an emergency exit to the roof of the attached instrumentation room.

A closely related concern to ensure firefighter safety and readiness to repeat experiments with equivalent performance was adequate rehabilitation (see Figure 8). At the beginning and end of each day, crews completed a health and safety check. The importance of staying well-hydrated before and during experiments was especially emphasized.



Figure 8: Crew Rehabilitation

Time-to-Task Experiments

On-Scene Fire Department Tasks

The on-scene fire department task part of the study focused on the tasks firefighters perform after they arrive on the scene of a low-hazard residential structure fire. A number of nationally recognized fire service experts were consulted during the development of the on-scene fire department tasks in order to ensure a broad applicability and appropriateness of the task distribution.⁸ The experiments compared crew performance and workload for a typical fire fighting scenario using two-, three-, four-, and five-person crews. 24 total experiments were conducted to assess the time it took various crew sizes to complete the same tasks on technically similar fires in the same structure. In addition to crew sizes, the experiments assessed the effects of stagger between the arriving companies. Close stagger was defined as a 1-minute time difference in the arrival of each responding company. Far stagger was defined as a 2-minute time difference in the arrival of each responding company. One-minute and two-minute arrival stagger times were determined from analysis of deployment data from more than 300 U.S. fire departments responding to a survey of fire department operations conducted by the International Association of Fire Chiefs (IAFC) and the International Association of Fire Fighters (IAFF). Considering both crew size and company stagger there were eight experiments conducted in triplicate totaling twenty-four tests, as shown in the full replicate block in Table 1. A full replicate was completed in a randomized order (determined by randomization software) before a test configuration was repeated.

Crew Size

For each experiment, three engines, a ladder-truck and a battalion chief and an aide were dispatched to the scene of the residential structure fire. The crew sizes studied included two-, three-, four-, and five-person crews assigned to each engine and truck dispatched. Resultant on-scene staffing totals for each experiment follow: (FF = firefighter)

- Two Person crews = 8 FFs + Chief and Aide = 10 total on-scene
- Three Person crews = 12 FFs + Chief and Aide = 14 total on-scene
- Four Person crews = 16 FFs + Chief and Aide = 18 total on-scene
- Five Person crews = 20 FFs + Chief and Aide = 22 total on-scene⁹

Department Participation

The experiments were conducted in Montgomery County, MD at the Montgomery County Fire Rescue Training Academy during the months of January and February 2009. All experiments took place in daylight between 0800 hours and 1500 hours. Experiments were postponed for heavy rain, ice, or snow and rescheduled for a later date following other scheduled experiments.

Montgomery County (MD) and Fairfax County (VA) firefighters participated in the field experiments. Each day both departments committed three engines, a ladder truck and

Crew Size	Apparatus Stagger
2 Person	Close Stagger (One minute)
3 Person	Close Stagger (One minute)
4 Person	Close Stagger (One minute)
5 Person	Close Stagger (One minute)
2 Person	Far Stagger (Two minutes)
3 Person	Far Stagger (Two minutes)
4 Person	Far Stagger (Two minutes)
5 Person	Far Stagger (Two minutes)

Table 1: Primary Variables for Time-to-Task Experiments

associated crews, as well as a battalion chief to the experiments. The two battalion chiefs, alternated between the roles of battalion chief and aide. Firefighters and officers were identified by participating departments and oriented to the experiments. Each experiment included engine crews, truck crews and command officers from each participating department. Participants varied with regard to age and experience. Crews that normally operated together as a company were kept intact for the experiments to assure typical operation for the crew during the scenarios. However, in all experiments crews were used from both departments, including engine crews, truck crews, and officers.

This allocation of resources made it possible to conduct back-to-back experiments by rotating firefighters between field work and rehabilitation areas.

Crew Orientation

All study participants were required to attend an orientation prior to the beginning of the experiments (see Figure 9, page 25). The orientations were used to explain experiment procedures, task flows, division of labor between crews, and milestone events in the scenario.

Daily orientations were conducted for all shifts to assure every participant attended. Orientations included a description of the overall study objectives as well as the actual experiments in which they would be involved. Per the requirements of *NFPA 1403*, full disclosure regarding the structure, the fire, and the tasks to be completed were provided. Crews were also oriented to the fireground props, instrumentation used for data collection, and the specific scenarios to be conducted. Every crew member was provided a walkthrough of the structure during the orientation and each day prior to the start of the experiments.

⁸ Technical experts included Dennis Compton, Russell Sanders, William "Shorty" Bryson, Vincent Dunn, David Rohr, Richard Bowers, Michael Clemens, James Walsh, Larry Jenkins and Doug Hinkle. More information about the experts is presented in the Acknowledgments later in this report.

⁹ Note that the on-scene totals account for only the personnel assigned to "work" the fire. Additional personnel were provided for an RIT team, a staffed ambulance on site, and a safety officer specific to the experiments. The additional personnel are not included in the staffing described above.

Tasks

Twenty-two fireground tasks were completed in each experiment. Meticulous procedures gathered data to measure key areas of focus, such as individual task start times, task completion times, and overall scenario performance times. Each task was assigned a standardized start and end marker, such as crossing the threshold to enter the building with a hose line or touching a ladder to raise it to a second story window. The 22 tasks, with the events for measuring start and stop times, are shown in Table 2 (page 26). Figures 10 — 19 illustrate firefighter activity in a number of the tasks to complete experiments or prepare for the next experiment.

For reasons of both safety and cost efficiency, two tasks — forcible entry of the front door and ventilation of the windows on the first and second stories — required special procedures.

The study could not accommodate replacing the doors and windows daily for the fire suppression experiments. Before the start of experiments with the full sequence of tasks, these two tasks were measured in a realistic manner using training props constructed at the site of the fireground experiments. As with the overall experiments, these two tasks were repeated in triplicate and the times averaged. The average time to complete the tasks was then used in the larger scale experiment. As firefighters came to the point of breaching the door or windows, the timers would hold them for the time designated by the earlier experiments and then give them the approval to open the door or windows. The start and end times were then recorded just as other tasks were.

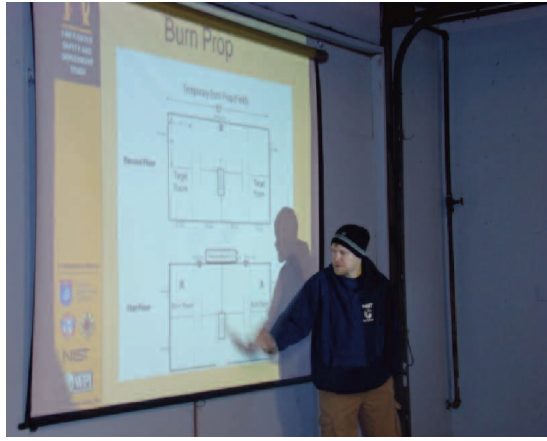


Figure 9: Crew Orientation and Walkthrough



Figure 10: Ground Ladders



Figure 11: Ventilation



Figure 12: Ground Level Window Breakage Prop



Figure 13: Second Story Window Breakage Prop



Figure 14: Door Forcible Entry Prop



Figure 15: Crew Preparation and Cue Cards

Table 2: Tasks and Measurement Parameters

Tasks	Measurement Parameters	Tasks	Measurement Parameters
1. Stop at Hydrant, Wrap Hose	START - Engine stopped at hydrant STOP - Firefighter back on engine and wheels rolling	13. Conduct Primary Search	START - Firefighters enter front door STOP - Firefighters transmit "search complete"
2. Position Engine 1	START - Wheels rolling from hydrant STOP - Wheels stopped at structure	14. Ground Ladders in Place	START - Firefighter touches ladder to pull it from truck STOP - 4 Ladders thrown: 3 ladders on the 2 nd -story windows and 1 to the roof
3. Conduct Size-up (360-degree lap), transmit report, establish command	START - Officer off engine STOP - Completes radio transmission of report	15. Horizontal Ventilation (Ground)	START- Firefighter at 1 st window to begin ventilation (HOLD for 8 seconds) STOP - Hold time complete - window open
4. Engage Pump	START - Driver off engine STOP - Driver throttles up pump	16. Horizontal Ventilation (2nd Story)	START - Firefighter grabs ladder for climb. (Firefighter must leg lock for ventilation. HOLD time at each window is 10 seconds) STOP - All 2 nd -story windows open - descend ladder - feet on ground.
5. Position Attack Line (Forward Lay)	START - Firefighter touches hose to pull it from engine STOP - Flake, charge and bleed complete (hose at front door prepared to advance)	17. Control Utilities (Interior)	START - Radio transmission to control utilities STOP - When firefighter completes the task at the prop
6. Establish 2 In/2 Out	Company officer announces – "2 In/2 Out established" (4 persons assembled on scene OR at the call of the Battalion Chief/Company Officer)	18. Control Utilities (Exterior)	START - Radio transmission to control utilities STOP - When firefighter completes the task at the prop
7. Supply Attack Engine	START - Firefighter touches hydrant to attach line STOP - Water supply to attack engine	19. Conduct Secondary Search	START - Firefighters enter front door STOP - Firefighters transmit "secondary search complete"
8. Establish RIT	Time that Company Officer announces RIT is established	20. Check for Fire Extension (walls)	START- Firefighters pick up check-for-extension prop STOP- Completion of 4 sets total (1 set = 4 in and 4 out) This task may be done by more than one person.
9. Gain/Force Entry	START - Action started (HOLD time= 10 seconds)	21. Check for Fire Extension (ceilings)	START - Firefighters pick up check-for-extension prop STOP - Completion of 4 sets total (1 set = 3 up and 5 down) This task may be done by more than one person.
10. Advance Attack Line	STOP - Door opened for entry START – Firefighter touches hose STOP – Water on fire	22. Mechanical Ventilation	START - Firefighters touch fans to remove from truck STOP - Fans in place at front door and started
11. Advance Backup Line (stop time at front door)	START - Firefighter touches hose to pull from engine bed STOP - Backup line charged to nozzle		
12. Advance Backup Line/Protect Stairwell	START - Firefighter crosses threshold STOP - Position line for attack at stairwell		

Data Collection: Standardized Control Measures

Several control measures were used to collect data, including crew cue cards, radio communications, task timers, and video recording. Performance was timed for each task in each scenario including selected milestone tasks such as door breach, water-on-fire, and individual window ventilation. Data were collected for crew performance on each task, and individual firefighter performance was not considered.

Task Flow Charts and Crew Cue Cards

Task procedures were standardized for each experiment/scenario. Technical experts worked with study investigators to break down crew tasks into individual tasks based on crew size. Task flow charts were created and then customized for the various crew sizes. The carefully designed task flow ensured that the same overall workload was maintained in each experiment, but was redistributed based on the number of personnel available for the work. See Appendix D for additional details.

All tasks were included in each scenario and cue cards were developed for each individual participant in each scenario. For example, a four-person crew would have a cue card for each person on the crew including the officer, the driver, and the two firefighters. Cards were color coded by crew size to assure proper use in each scenario.

Radio communications

Interoperability of radio equipment used by both participating departments made it possible to use regular duty radios for communication during the experiments. Company officers were instructed to use radios as they would in an actual incident. Montgomery County Fire and Rescue Communications recorded all radio interaction as a means of data backup. Once all data quality control measure were complete, the records were then overwritten as a routine procedure.

Task Timers

Ten observers/timers, trained in the use of a standard stop watch with split-time feature, recorded time-to-task data for each field experiment. To assure understanding of the observed tasks,



Figure 16: Connecting to the Hydrant



Figure 17: Crews Responding



Figure 18: Ceiling Breach/Molitor Machine



Figure 19: Incident Command



Figure 20: Task Timers



Figure 21: Video Recording for Quality Control

firefighters were used as timers, each assigned specific tasks to observe and to record the start and end times.

To enhance accuracy and consistency in recording times, the data recording sheets used several different colors for the tasks (see Appendix D). Each timer was assigned tasks that were coded in the same color as on the recording sheet. All timers wore high-visibility safety gear on the fireground (see Figure 20).

Video records

In addition to the timers, video documentation provided a backup for timed tasks and for quality control (see Figure 21). No less than six cameras were used to record fireground activity from varied vantage points. Observer/timer data were compared to video records as part of the quality control process.

Crew Assignment

Crews from each department that regularly operated together were assigned to work as either engine or truck companies in each scenario. Both Fairfax County and Montgomery County crews participated in each experiment.

Crews assigned to each responding company position in one scenario were assigned to another responding company position in subsequent scenarios, with the objective of minimizing learning from one experiment to another. For example, crews in the role of engine 1 in a morning scenario might be assigned to the engine 3 position in the afternoon, thus eliminating learning from exact repetition of a task as a factor in time to completion. Additionally, participating crews from both Montgomery County and Fairfax County were from three different shifts, further reducing opportunities for participant repetition in any one position.

Response Time Assumptions

Response time assumptions were made based on time objectives set forth in the *NFPA 1710*. Time stagger allocations were set by the project technical advisors in order to assess the impact of arriving unit time separation on task start and completion times, as well as the overall scene time.

Below are the values assigned to the various time segments in the overall response time. The total of the response time segments may also be referred to as the total reflex time.

1. Fire ignition = time zero
2. 60 s for recognition (detection of fire) and call to 9-1-1
3. 60 s for call processing/dispatch
4. 60 s for turnout¹⁰
5. Close Stagger = 240 s travel time FIRST engine with 60 s ladder-truck lag and 90 s lag for each subsequent engine
 - a. Truck arrives at 300 s from notification
 - b. Second engine at 330 s from notification
 - c. Third engine at 420 seconds from notification
6. Far Stagger = 240 s travel time FIRST engine with 120 s ladder-truck lag and 150 s lag for each subsequent engine
 - a. Truck arrives at 360 s from notification
 - b. Second engine arrives at 390 s from notification
 - c. Third engine arrives at 540 s from notification.

The design of this part of the experiments allowed firefighter entry into the burn building. The next part of the experiments required a modified methodology.

¹⁰ After the experiments were complete, the NFPA 1710 technical committee released a new edition of the standard that prescribes 80 seconds for turnout time.

Part 3: Room and Contents Fires

As previously discussed, *NFPA 1403* prohibits firefighters in a training exercise from entering a structure with sufficient fuel load to result in room flashover. But the value of the data from the time-to-task experiments lies not just in the duration and time-of-completion statistics for tasks, but also in measuring the tenability of the atmosphere for occupants urgently needing firefighter assistance. Therefore Part 3 of the experiments (room and contents fires) used a larger fuel load to focus on the seven of the 22 tasks that cause a change in the fire behavior through ventilation or active suppression:

1. Forced entry of the front door
2. Water on fire
3. Second floor window #1 ventilated (burn room window)
4. Second floor window #2 ventilated (front window, near corner)
5. Second floor window #3 ventilated (front window, near front door)
6. First floor window #1 ventilated (window beside the fire room)
7. First floor window #2 ventilated (self-ventilated at flashover)

Because the fuel load was sufficient for flashover, all firefighter activity was conducted outside the building. Tasks that in Part 3 required entry into the building, such as search or interior utility control, were factored into this part by delaying the next task for the average duration of the task from Part 2. Firefighters in full gear opened the door with a gloved hand or opened windows from the ground with a tool such as a pike pole or angle iron, again at the time specified by the averages from Part 2. Averages were derived from the three iterations of each scenario. The different number of iterations in Part 3 will be explained later in this report.

Because firefighters could not enter the building, a nozzle controlled from the instrumentation room was installed. The nozzle was placed in the room directly outside the burn room and oriented toward the burn room near the doorway in order to best emulate the nozzle location of live firefighter suppression (see Figure 22). The nozzle was encased with mineral wool and heavy-duty aluminum foil (bottom picture in Figure 22) to protect the electronics and wiring from the intense radiation energy emitted by the fire. Blocks were used to anchor the nozzle against the lateral forces exerted by the momentum of the water supply. The activation time for suppression was determined by the data from the time-to-task test results.

A 15° spray pattern was directed toward the seat of the fire and swept horizontally from side to side. While the remotely controlled hose line knocked down the majority of the fire, it was



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Figure 22: Remotely Controlled Fire Suppression Nozzle for Room and Contents Fires

not as effective as a live firefighter with a better view into the room of origin. Therefore, after the fire was diminished, a supplemental stream was applied through the burn room window in order to control the fire (see Figure 23). All personnel on the hose line were in full turnout gear and self-contained breathing apparatus during the exterior application of water.

Fuel Packages for the Room and Contents Fires

In order to maximize the repeatability of the fire development, nominally identical rooms of furniture of identical manufacturer, style, and age were used for each test. A plan-view schematic of the furniture is shown in Figure 24 and pictures of the burn room prior to testing are shown in Figure 25. Key dimensions, mass, and materials for combustible furnishings are detailed in Appendix C.



Figure 23: Supplemental Suppression Applied for Room and Contents Tests

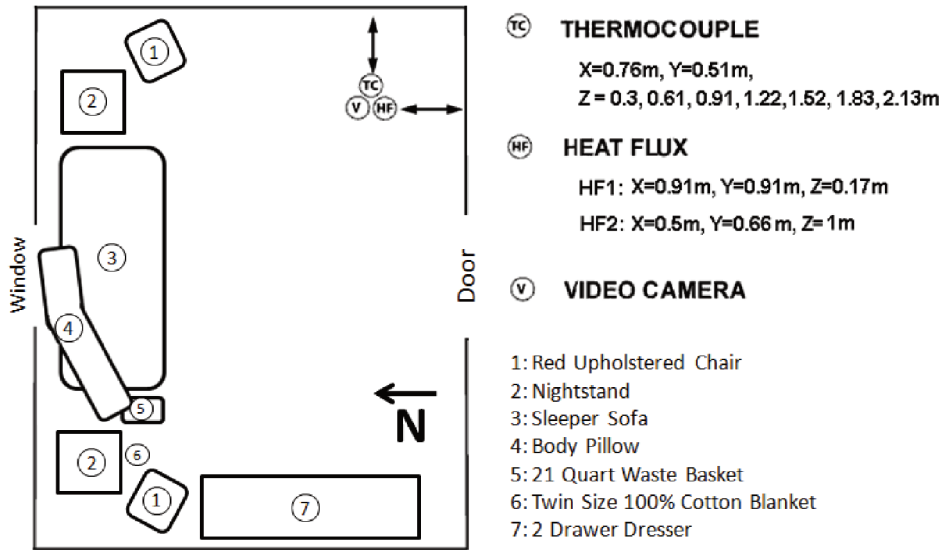


Figure 24: Configuration of Furnishings in Burn Room (Room and Contents Fires)

The ignition source consisted of a cardboard book of 20 matches that was ignited by an electrically heated wire, often referred to as an electric match. The electric match was placed near the bottom of a 21 qt (19.9 L) polypropylene waste container. The height of the waste container was 15.5 in (394 mm) with interior dimensions at the top opening of 14.5 in (368 mm) by 11.3 in (287 mm). Approximately 0.7 lbs (0.3 kg) of dry newspaper was added to the waste container. The majority of the newspaper was folded flat, and placed on edge along the sides of the waste container. Four sheets of newspaper, 22 in (559 mm) by 25 in (635 mm) were crumpled into “balls” approximately 3.9 in (100 mm) diameter and placed on top of the electric match in the center of the waste container.

Experimental Matrix for Room and Contents Fires

Sufficient amounts of furniture for 16 rooms were available for the room and contents fires, so eight experiment scenarios were conducted — each with a replicate. Because the time to untenable conditions was a primary variable of interest in the room and contents fires, the arrival time of the first due engine was a paramount consideration. Because the effects of the subsequent apparatus stagger were explored in the time-to-task tests, the stagger was fixed at the “close arrival” time. Additionally, a baseline measurement was required to compare the effectiveness of response to the absence of a fire department response. Therefore, a five-person, later arrival combination was eliminated in favor of a no-response scenario (with replicate). Table 3 summarizes the 16 tests conducted.

The first due engine arrival times were determined using the following assumptions: ignition of the fire occurs at



Figure 25: Pictures of the Room and Contents Furnishings

Crew Size	First Due Arrival Time
2-Person	Early Arrival of First Engine (6.5 min) – close stagger
3-Person	Early Arrival of First Engine (6.5 min) – close stagger
4-Person	Early Arrival of First Engine (6.5 min) – close stagger
5-Person	Early Arrival of First Engine (6.5 min) – close stagger
2-Person	Later Arrival of First Engine (8.5 min) – close stagger
3-Person	Later Arrival of First Engine (8.5 min) – close stagger
4-Person	Later Arrival of First Engine (8.5 min) – close stagger
No Response (Baseline)	N/A

Table 3: Experimental Matrix for Room and Contents Tests (Each Conducted in Replicate)

time zero. Smoke detector activation and a call to 9-1-1 occurs at 60 seconds after the fire starts. Call intake and processing requires an additional 90 seconds. The firefighters take 60 seconds to complete their turnout at the station and begin travel to the scene. Thus travel time begins 3.5 minutes into experiment. The two levels of arrival time are then determined by two different travel times: early arrival assumes a three-minute travel time, while later arrival assumes a five-minute travel time. For all scenarios in the room and contents experiments, the close stagger (60 seconds) between subsequent apparatus times was used.

Procedure for Minimizing the Effect of Variance in Fire Growth Rate

Fires involving furnishings have inherent variance in burning behaviors. Factors such as humidity and minor variations in materials (particularly worn furnishings that may have different foam compression or fabric wear patterns), can result in uncertainty of 20 % or more, despite significant efforts to enhance repeatability. The early growth period of fire development is often associated with the greatest variance, since minor factors (as discussed above) can influence the thermal environment more easily when the fire is small. Therefore, the room and contents fires were normalized to the 212 °F (100 °C) temperature near the ceiling in the burn room in order to minimize the variance of the room and contents fires. The time at which the burn room reached this temperature (usually in approximately 180 seconds) rather than the actual ignition time, was designated as the “zero time.”

Figure 26 shows the time-temperature curves before and after normalizing at 100°C. This approach was implemented during the experiments by watching the time temperature data in real-time from the instrumentation room and announcing the “zero-time” over the fireground radio system. The normalization procedure did not negatively affect tenability measurements in the target room because when the fire is small, products of combustion do not reach the room because of lack of momentum. Therefore, adjusting all room and contents tests to the same upper layer temperature was an appropriate way to minimize variance.

Milestone Times for Critical Tasks

As stated earlier, firefighters could not enter the burn building during the room and contents experiments because of the danger for potential flashover in an experimental scenario. Therefore, prescribed tasks were performed at specified times based on data from part 2. In this section we report on significant data gathered from instrumentation and describe an additional part of the experiments designed to extend our understanding of the effect of crew size and stagger on the tenability of the atmosphere in a burning structure.

Table 4 (page 32) identifies significant tasks selected as key milestones because of the way they affect fire behavior and atmospheric tenability inside the structure.

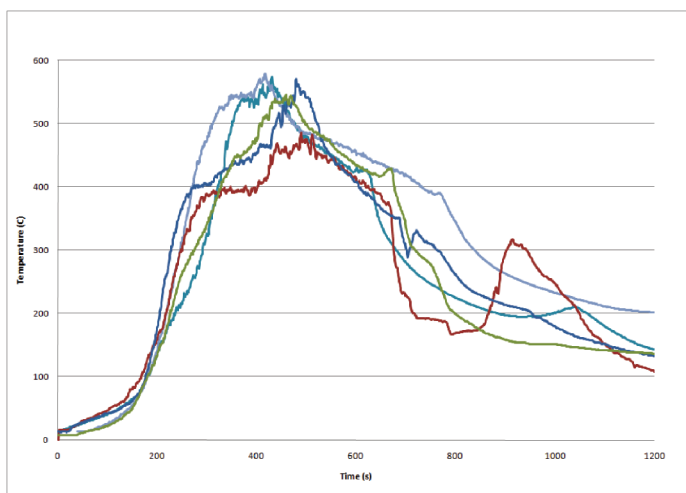
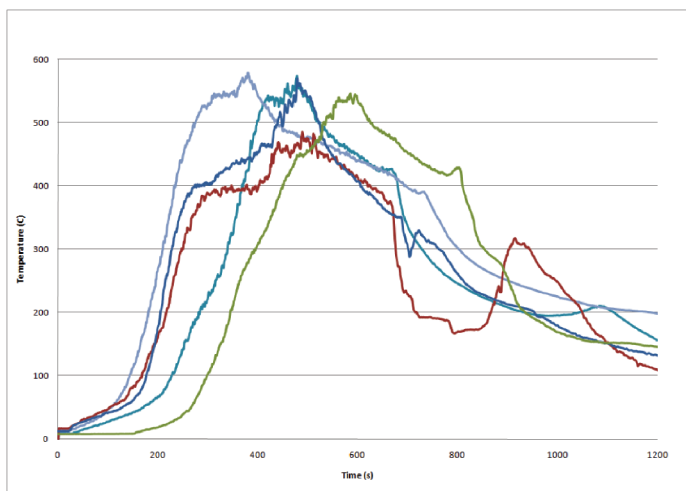


Figure 26: Direct Comparison of Temperatures, Before (Top) and After Adjustment (Bottom)

Milestone Tasks		2-Person Close Stagger	
		Time from ignition (min : s)	
Breached Door		8:44	
Water On Fire		9:56	
Upper Fire Window		13:01	
Ground Non-fire Window		14:51	
Upper Corner Window		17:55	
Upper Front Door Window		19:55	
Ground Fire Window		4:30	
Milestone Tasks		3-Person Close Stagger	
		Time from ignition (min : s)	
Breached Door		7:48	
Water On Fire		8:54	
Upper Fire Window		11:26	
Ground Non-fire Window		13:31	
Upper Corner Window		15:54	
Upper Front Door Window		17:58	
Ground Fire Window		4:30	
Milestone Tasks		4-Person Close Stagger	
		Time from ignition (min : s)	
Breached Door		7:46	
Water On Fire		8:41	
Upper Fire Window		9:23	
Ground Non-fire Window		10:32	
Upper Corner Window		11:46	
Upper Front Door Window		13:45	
Ground Fire Window		4:30	
Milestone Tasks		5-Person Close Stagger	
		Time from ignition (min : s)	
Breached Door		7:35	
Water On Fire		8:03	
Upper Fire Window		10:11	
Ground Non-fire Window		10:54	
Upper Corner Window		12:31	
Upper Front Door Window		12:47	
Ground Fire Window		04:30	

Table 4: Tasks That Affect Fire Behavior and Atmospheric Tenability

Analysis of Experimental Results

This section describes the analytic approaches used to address the research objectives of the study. First the statistical methods used to analyze the fireground time-to-task observations are presented. Then the time-to-task data and the room and contents data were combined to assess crew performance in relation to tenability within the structure.

Time-to-Task Analysis

Time-to-task data were compiled into a database and assessed for outliers and missing entries. Because all time-to-task experiments were conducted in triplicate, missing data were apparent and were reviewed via video and radio tapes. Missing data attributable to timer error were replaced by a time observed in the video. Where video and/or radio documentation was not adequate, missing data were recoded to the mean of the task times from the other two experiments.

Data Queries

The statistical methods used to analyze the time-to-task data were driven by a principal goal of this research project — to assess the effect of crew size, first-due engine arrival time, and subsequent apparatus stagger on time-to-task for critical steps in response and fire fighting. This research goal motivated the development of four specific research questions (see Figure 27) that in turn pointed to specific statistical analyses for generating inference and insight.

Statistical Methods – Time-to-Task

The analysis of the time-to-task data involved a sequence of multiple linear regressions using Ordinary Least Squares to generate and test the effects of staffing and stagger on timings.

The regressions were of the form:

$$y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \dots + \beta_k x_{ik} + \epsilon_i$$

where the x_{ik} reflect factors such as stagger and crew size, and the y represents our dependent/outcome variable.

Time-related outcomes (i.e., the dependent variables in the regression equations) could include task duration, elapsed time to start the task, and elapsed time until task completion, all measured in seconds. Table 5 (page 34) lists the time-related outcomes used to test the effect of crew size and stagger for the tasks in the field experiments.

The effects of crew size and stagger were explored using indicator variables in the regression analyses. The coefficient for a given indicator (for example, crew size of four relative to a crew size of two) indicated the number of seconds the larger crew size added or reduce the timing outcome of a task. Crew sizes were collapsed in some regressions to test whether the timings of “larger” crew sizes of four and five were significantly different than “smaller” crew sizes of two and three. Interaction terms were not assessed in these regression analyses because of the small number of experiments available for analysis.

Standard t-tests examined statistical significance (i.e., to see if the hypothesis of “no impact” could be rejected) to estimate the impact of several specific configurations:

- crew sizes of three versus two
- crew sizes of four versus three
- crew sizes of five versus four

Time-to-Task Research Questions

- 1) How do crew size and stagger (i.e., timing of between first engine and subsequent apparatuses) affect overall (i.e., start to completion) response timing?
 - a. To what extent do variations in crew size affect overall response timing?
 - b. To what extent do variations in both crew size and stagger affect overall response timing?
- 2) How do crew size and stagger affect the timings of task initiation, task duration, and task completion for each of the tasks comprising the suite of 22 tasks?
 - a. To what extent do variations in crew size affect timings across the suite of tasks?
 - b. To what extent do variations in both crew size and stagger affect response timings across the suite of tasks?
- 3) How does crew size affect elapsed times to achieve three critical events known to change fire behavior or atmospheric tenability for occupants?
 - a. Entry into structure
 - b. Water on fire
 - c. Ventilation of each window (three upstairs and one downstairs window and the burn room window)
- 4) How does the elapsed time to achieve the national standard of assembling 15 firefighters at the scene (measured using “at hydrant” as the start time) vary by crew sizes of 4 and 5?

Figure 27: Research Questions for Time-to-Task Experiments

- (occasionally) five versus two, and four versus two
- larger (four & five combined) versus smaller (two & three combined) and
- stagger

The specific tests for each task (regression analysis) are shown in the Appendix E. The actual coefficients of each regression and their corresponding standard errors are presented in Appendix F. To infer impact, significant tests were conducted at the 0.05 significance level. Only statistically significant contrasts of crew size and/or stagger are included in this section of the report. Graphic expositions of relevant time/task related findings are then presented as well. Where stagger was statistically significant, the effects are graphed separately. Where stagger was not statistically significant, the data for crew size were combined.

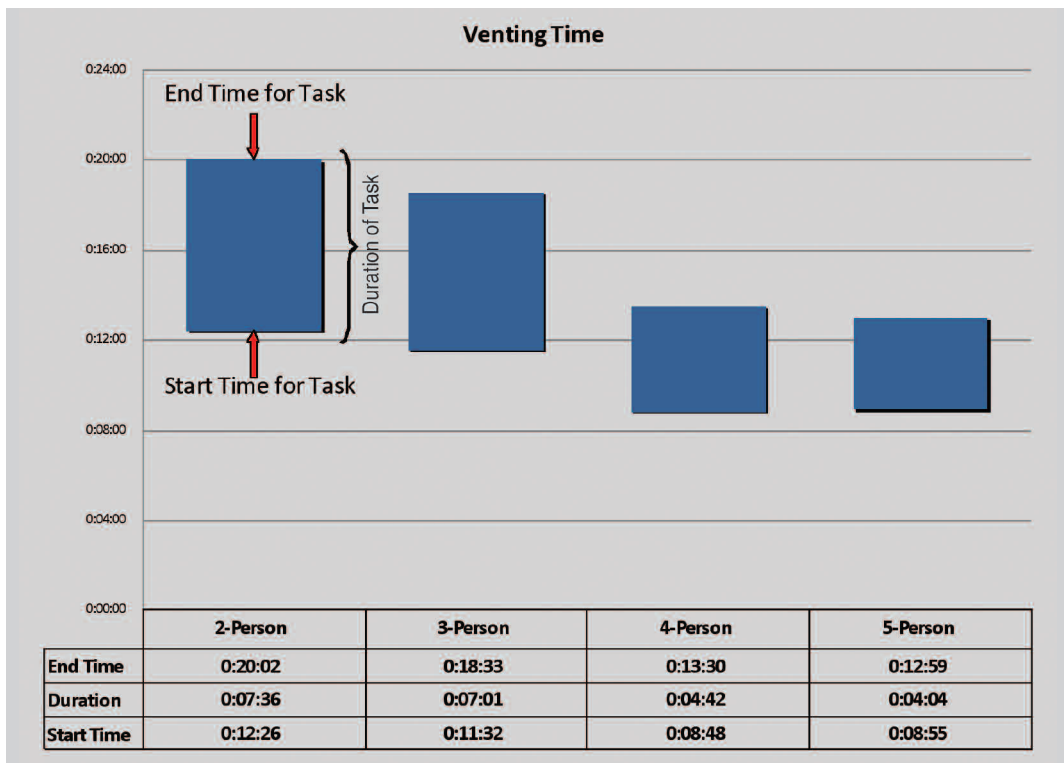


Figure 28: Example Time-to-Task Graph

Regression analyses

Appendix F presents the regression results for each task and relevant outcome, along with their corresponding standard errors. The results of conducting significance tests at the 0.05 level of significance are shown in Appendix E. Rather than detailing each of the lengthy lists of coefficients found to be significant, only the answers to the primary research questions are presented for each task.

Measurement Uncertainty

The measurements of length, temperature, mass, moisture content, smoke obscuration, and stopwatch timing taken in these experiments have unique components of uncertainty that must be evaluated in order to determine the fidelity of the data. Appendix G summarizes the uncertainty of key measurements taken during the experiments. Importantly, the magnitudes of uncertainties associated with these measurements have no impact on the statistical inferences presented in this report.

How to Interpret Time-to-Task Graphs

Figure 28 presents a sample time-to-task analysis, in this case results for venting time. Each crew size has a column graphic showing the start time and completion time for the task. Visually, columns starting lower on the graph depict deployment configurations that resulted in earlier start times. The height of the column graphic is a visualization of the duration of the task, taller columns indicating longer times to task completion. Time data are also shown in a table below the graph. Where stagger was statistically significant, the effects are graphed separately. Where stagger was *not* statistically significant, as in the illustration, the data for crew size were combined.

Task:	Time-to-Task Outcome Measures		
	Elapsed Time Until Start*	Elapsed Time for Task Completion*	Duration*
Conduct size-up	X	X	X
Position attack line	X		X
Establish 2 in - 2 out		X	
Establish RIT		X	
Gain forced entry	X		
Advance line	X		
Advance line		X	
Advance backup line to door	X	X	
Advance backup line to stairwell	X		
Advance backup line 2		X	
Conduct primary search 1	X		
Ground ladders in place		X	X
Horizontal ventilation, second story, window 3	X	X	
Horizontal ventilation, second story, window 2	X	X	
Horizontal ventilation, second story, window 1	X	X	
Horizontal ventilation, first story, window 2	X	X	
Control utilities interior	X		
Control utilities exterior	X		
Conduct secondary search	X		
Check for fire extension walls	X		
Check for fire extension ceiling	X		

* The columns of this table show the dependent variables, and the rows indicate the Tasks; an 'X' in a cell indicates that a separate regression analysis was conducted for a given dependent variable.

Table 5: Dependent Variables Used in a Regression Analysis of the Effect of Crew Size and Stagger on Time-to-Task Outcomes

Time-to-Task Graphs

Overall Scene Time (Time to Complete All 22 Tasks)

The four-person crews operating on a low-hazard structure fire completed the same number of tasks on the fireground (on average) 7 minutes faster than the two-person crews (see Figure 29). The four-person crews completed the same number of fireground tasks (on average) 5.1 minutes faster than the three-person crew. The four-person crews were able to complete necessary fireground tasks on a low-hazard residential structure fire nearly 30 % faster than the two-person crews and nearly 25 % faster than the three-person crews. Although on the low-hazard residential structure fire, adding a fifth person to the crews did not show any additional decrease in fireground task times, the benefits of a five-person vs. a four-person crew are significant in other measurements, particularly the “water-on-fire” time. Additionally, the greater need for five-person crews for medium- and high-hazard structures, particularly in urban settings, has been documented in other studies (Backoff et al., 1980; Cushman, 1982; McManis Associates et al., 1984) and five-person crews are required for areas that contain medium and high-hazard structures in fire protection consensus standards.¹¹

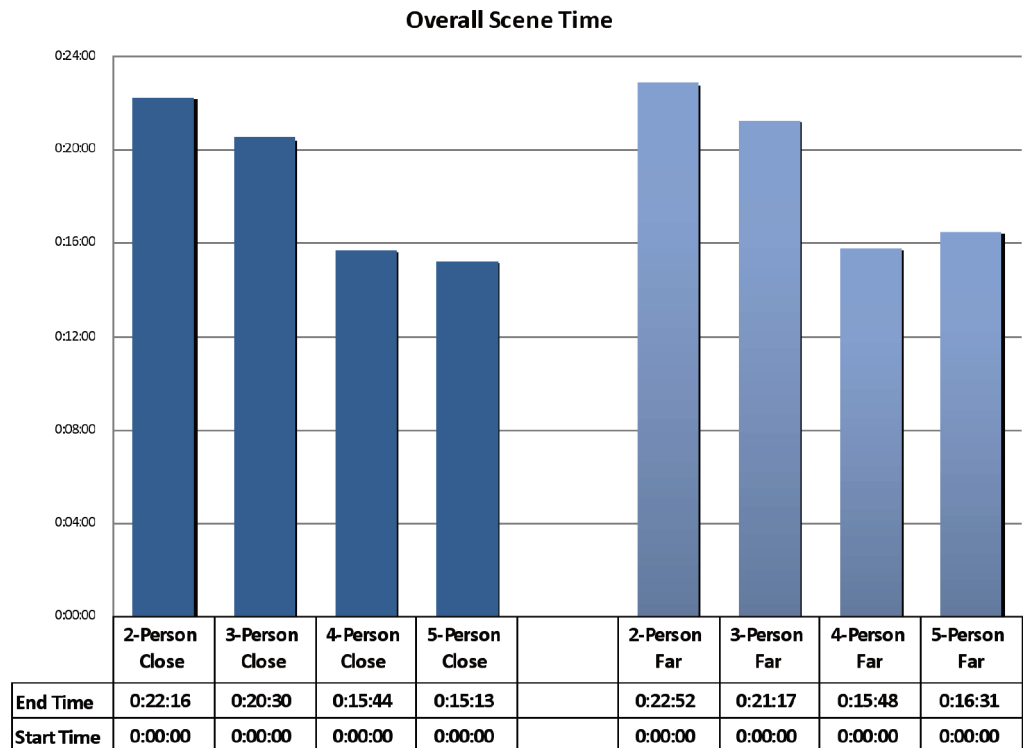


Figure 29: Overall Scene Time

¹¹ NFPA 1710, Section 5.2.3.1.2 and Section 5.2.3.2.2: In jurisdictions with tactical hazards, high-hazard occupancies, high incident frequencies, geographical restrictions, or other pertinent factors as identified by the AHJ, these companies shall be staffed with a minimum of five or six on duty members.

Overall Scene Time and Crew Sizes

The graphs in Figure 30 show average times for each task by crew size.

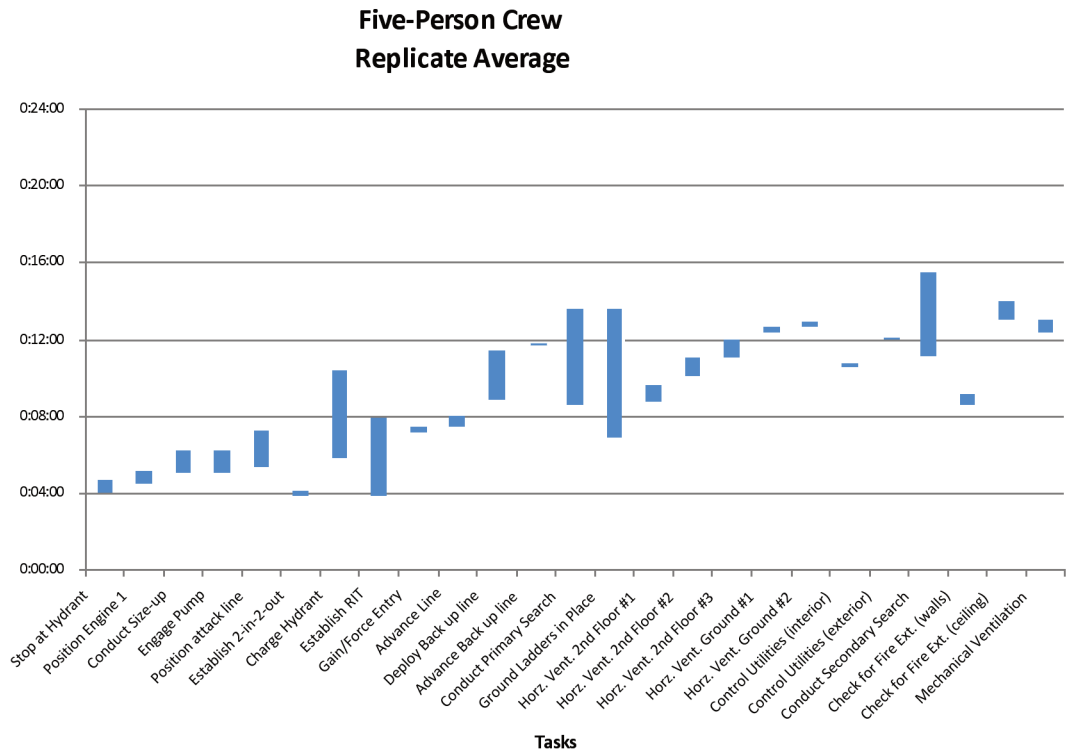


Figure 30 a: Overall Scene Time-Five Person Crew

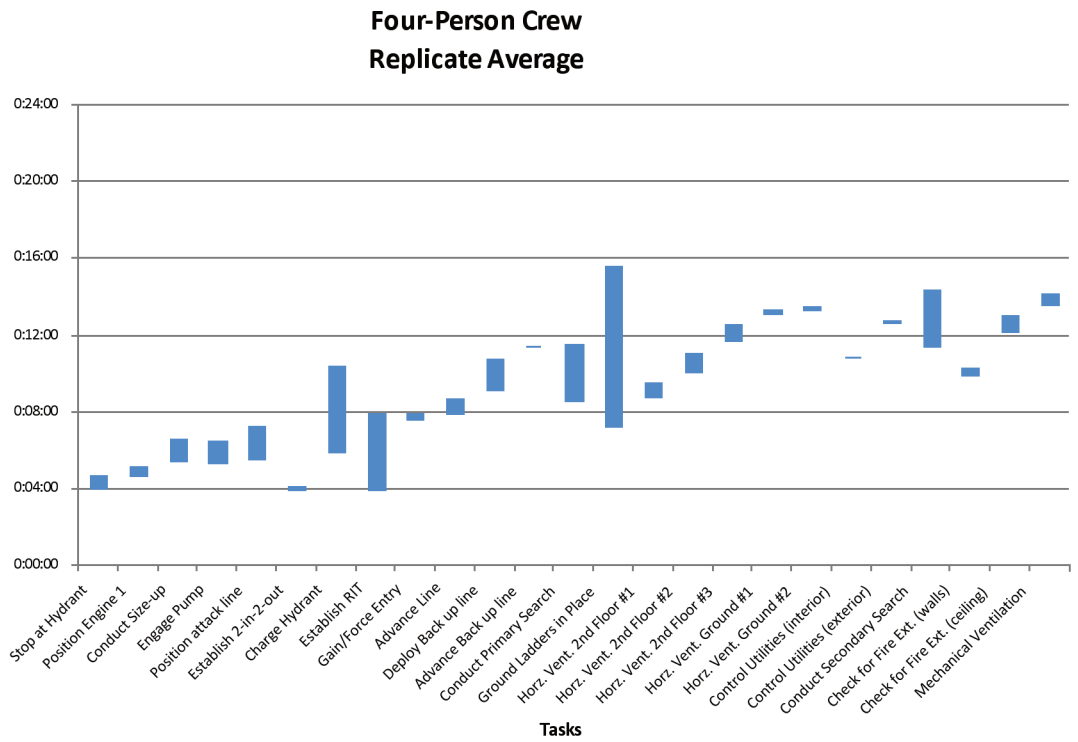


Figure 30 b: Overall Scene Time-Four Person Crew

Three-Person Crew Replicate Average

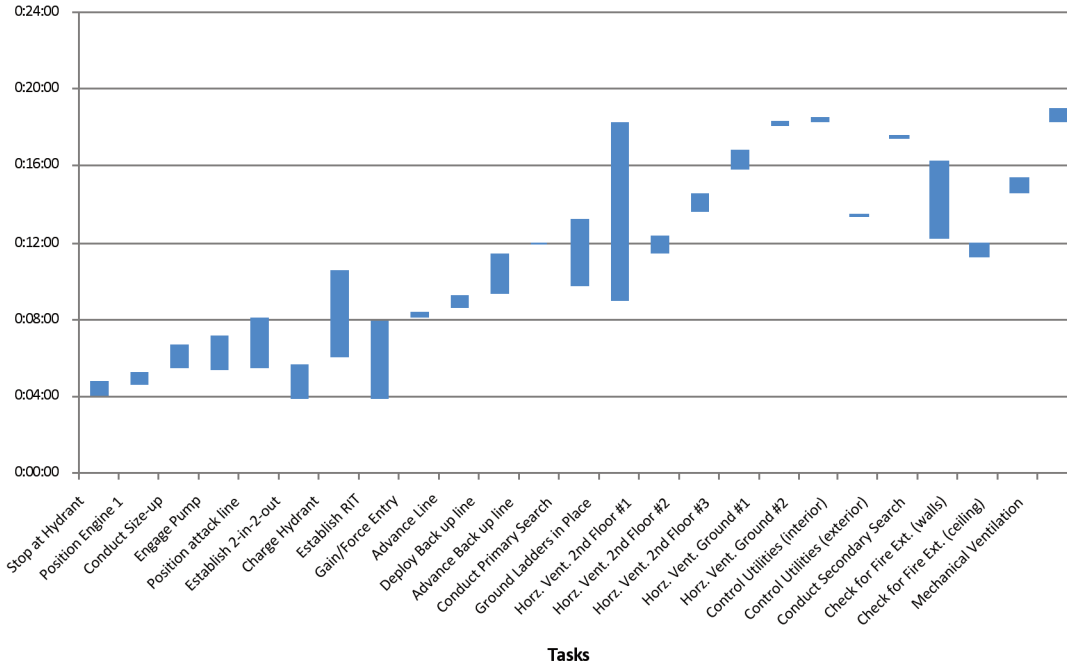


Figure 30 c: Overall Scene Time-Three Person Crew

Two-Person Crew Replicate Average

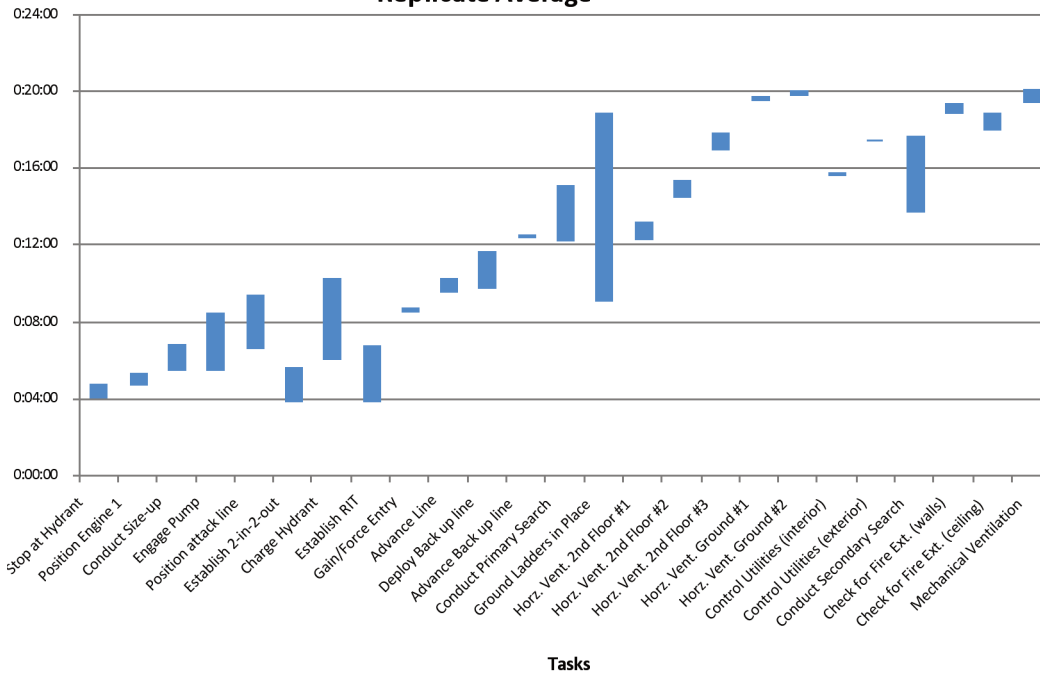


Figure 30 d: Overall Scene Time-Two Person Crew

Advance Attack Line Time (Hose Stretch Time)

Figure 31 measures the interval from the start of the task “Position Attack Line” to the end of the task “Advance Attack Line.” In comparing four- and five-person crews to two and three-person crews collectively, the time difference for this measure was statistically significant at 76 seconds (1 minute 16 seconds). In conducting more specific analysis comparing all crew sizes to a two-person crew the differences are more distinct. A two-person crew took 57 seconds longer than a three-person crew to stretch a line. A two-person crew took 87 seconds longer than a four-person crew to complete the same task. Finally, the most notable comparison was between a two-person crew and a five-person crew, with a 122-second difference in task completion time.^{12, 13}

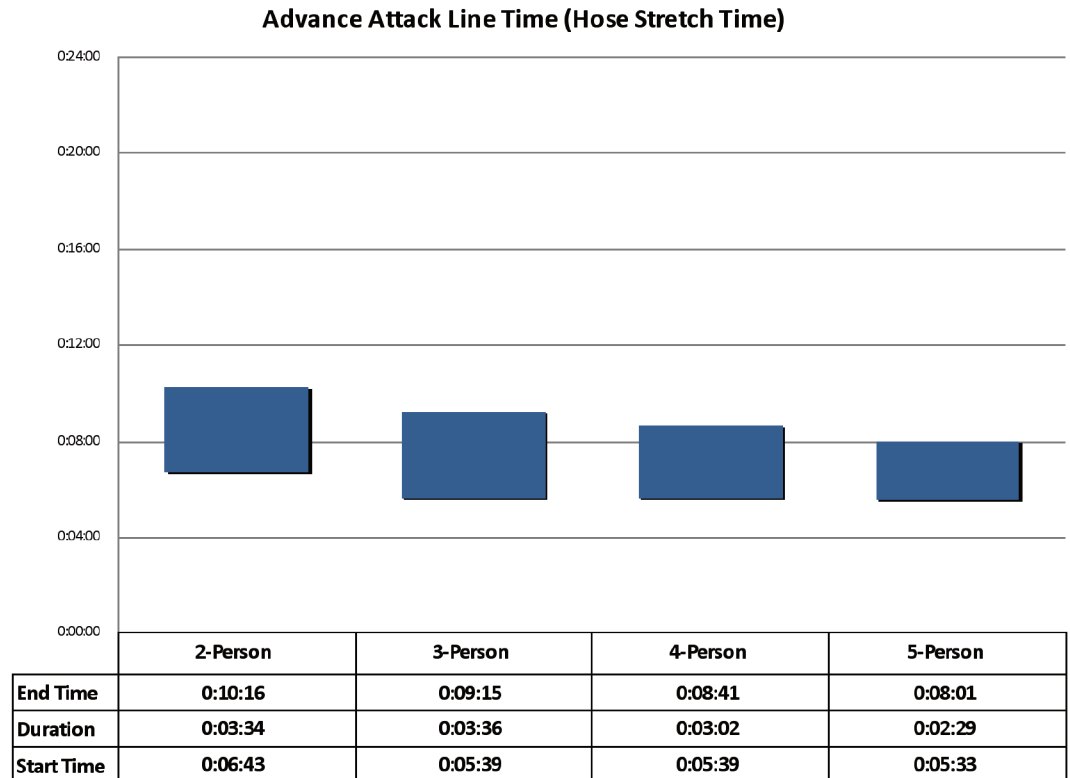


Figure 31: Advance Line Time (Hose Stretch Time) by Crew Size

¹² Apparatus stagger was not statistically significant, so the data for crew size were combined.

¹³ Where subtracting the start time from the end time yields a result that differs from the duration noted in the chart by one second, it is the result of rounding fractional seconds to the nearest whole second.

Water on Fire Time

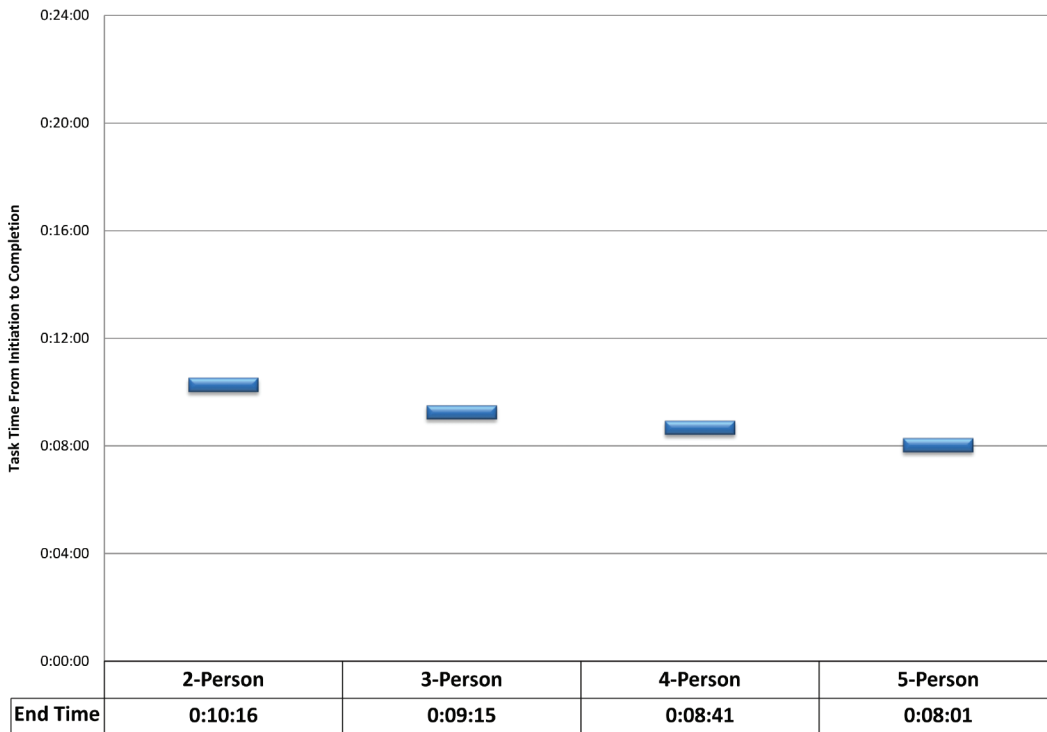


Figure 32: Water on Fire Time by Crew Size and Stagger

Time to Water on Fire

There was a 10% difference in the “water on fire” time between the two- and three-person crews. There was an additional 6% difference in the “water on fire” time between the three- and four-person crews. (i.e., four-person crews put water on the fire 16% faster than two person crews). There was an additional 6% difference in the “water on fire” time between the four- and five-person crews (i.e. five-person crews put water on the fire 22% faster than two-person crews).

Advance Back Up Line

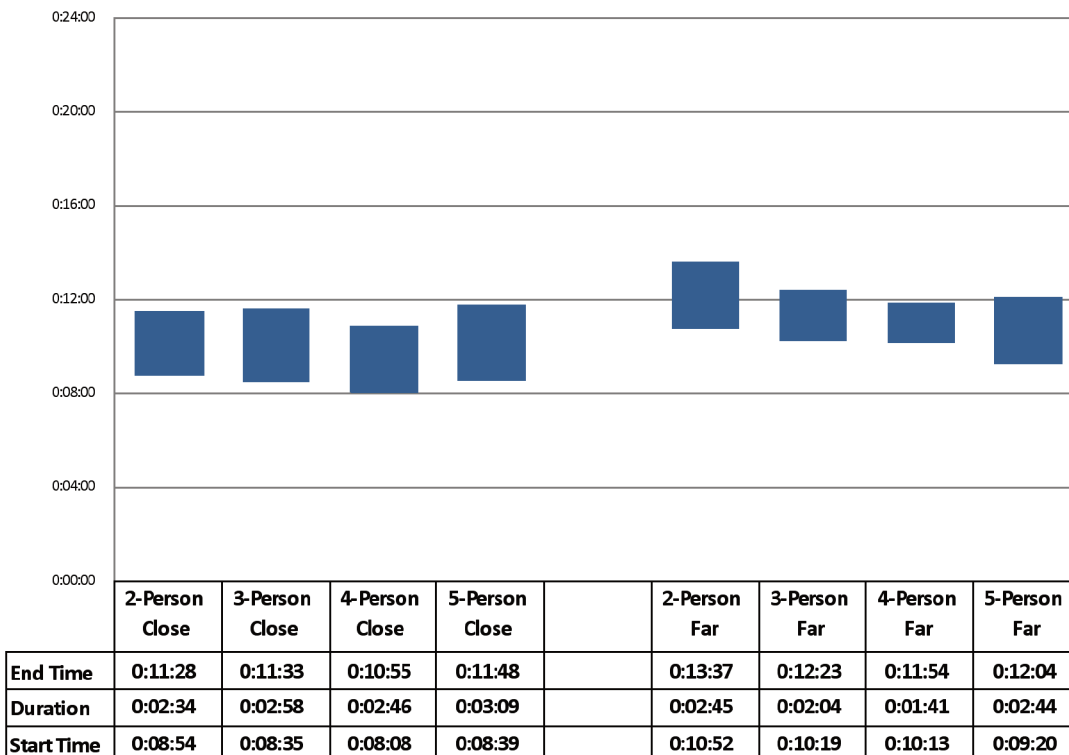


Figure 33: Times to Advance Backup Line by Crew Size and Stagger

Advancing a Backup Line

Advancing a backup line to the door and stairwell was started 16 % faster and completed 9 % for replicates with shorter staggers between company arrivals. Advancing a backup line is typically a task completed by the third arriving engine on a full alarm assignment and is critical to the safety of firefighters already in the building on the initial attack line. For this task, stagger of arrival was statistically significant and is an important consideration for overall station location and full alarm response capability. The differences can be seen in Figure 33, which shows the time from the start for the task “Deploy Backup Line” to the end of the task “Advance Backup Line.”

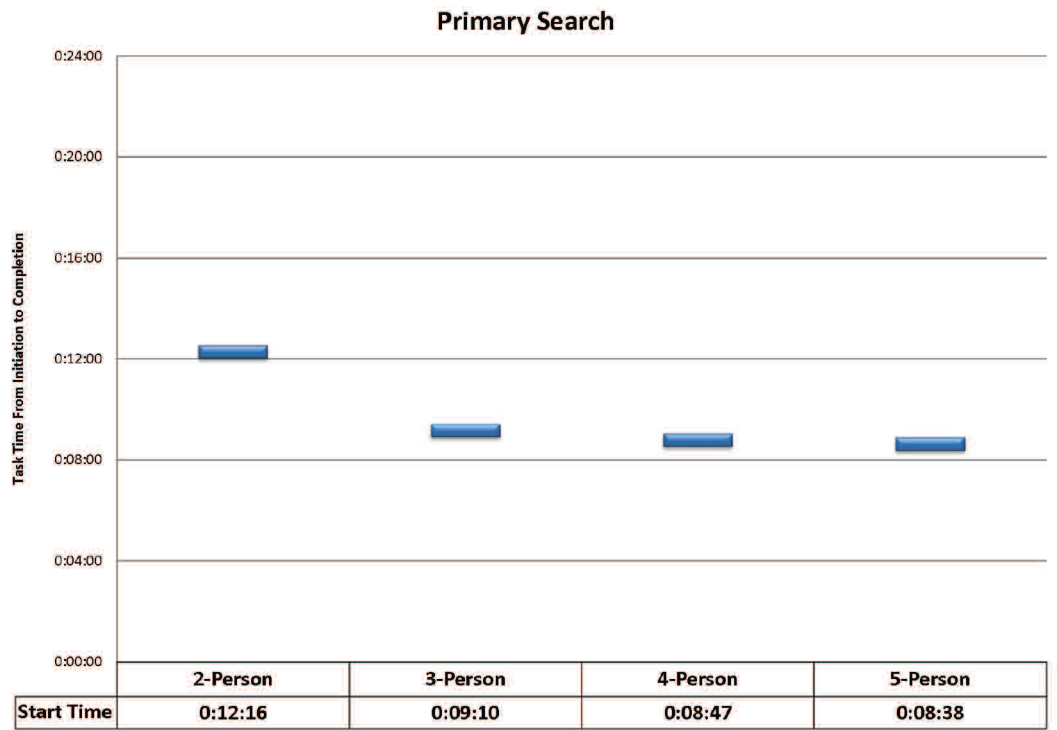


Figure 34: Times to Conduct Primary Search by Crew Size

14 Stagger was not significant, so data from close and far were combined to increase statistical power.

Laddering Time

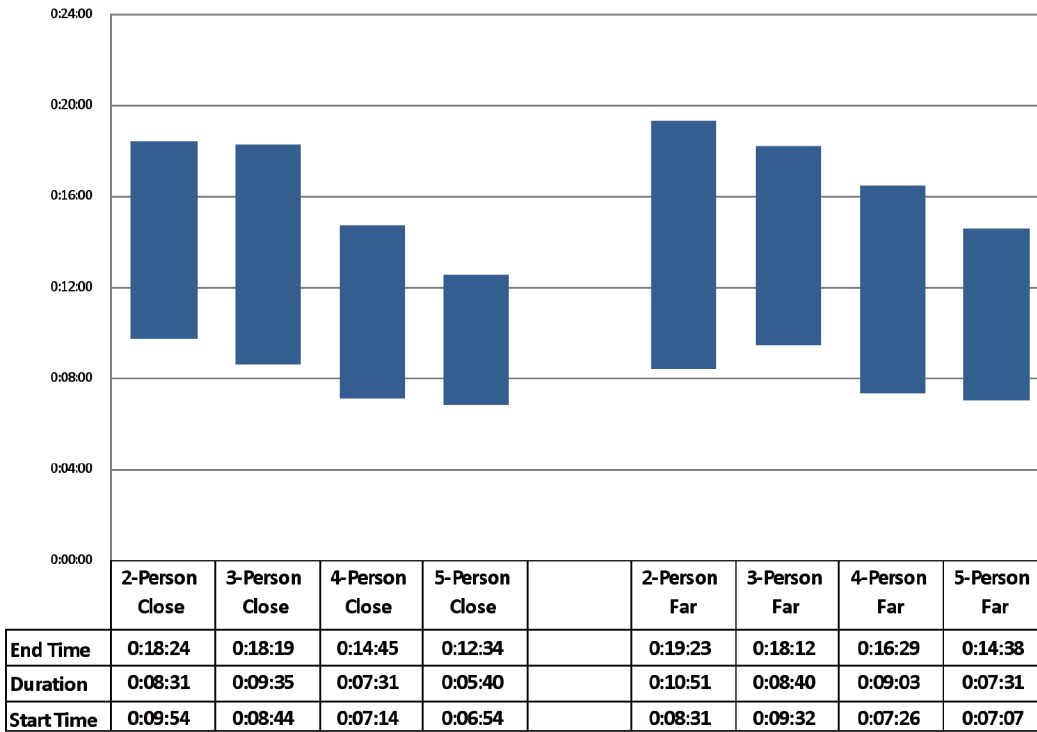


Figure 35: Laddering Time by Crew Size

Venting Time

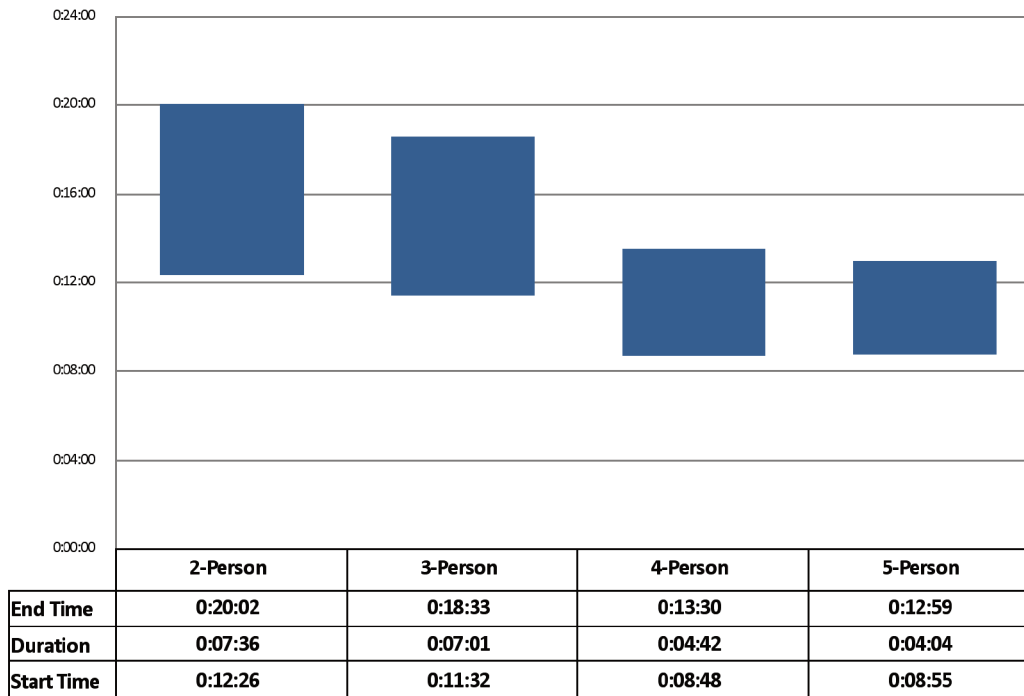


Figure 36: Ventilation Times by Crew Size¹⁵

Primary Search

Figure 34 summarizes the times that crews took to start the primary search. On the low-hazard, two-story single-family dwelling 2,000 sq ft (186 m²), the three-person crew started a primary search/rescue more than 25 % faster than the two-person crew. In the same structure, the four- and five-person crews started a primary search 6 % faster than the three-person crews and 30 % faster than the two-person crew. Note that there is no end time included in this figure. Primary search end times were reliant upon radio communication by firefighters inside the structure. On occasion this communication did not occur or was delayed. Therefore data reliability was insufficient for analysis of task duration and end time.¹⁴

Laddering and Venting Time

A four-person crew operating on a low-hazard structure fire completed laddering and ventilation (for life safety and rescue) 30 % faster than a two-person crew and 25 % faster than a three-person crew.

Ground laddering time started with the removal of the first ladder from the truck and stopped at end time of the last ladder put in place. A total of four ladders were raised on each experiment.

Truck operations ventilation time is the time from the start time of ventilation of the first window until the last window ventilation was complete.

The differences in start times and duration of the tasks can be seen in Figure 35 and Figure 36.

15 Stagger was not statistically significant, so the data for crew size were combined.

Industry Standard Effective Response Force Assembly Time

NFPA 1710 requires that a fire department have the capability to deploy an initial full-alarm assignment to a scene within eight-minutes (480 seconds). The number of people required falls between 15 and 17, depending on whether an aerial apparatus is used, and/or if two engines are being used to provide a continuous water supply. In these experiments, the measurement for an effective response force assembly time started from the first engine arrival at the hydrant and ended when 15 firefighters were assembled on scene. Figure 37 reveals the differences in assembly times between the four and five-person crews. An effective response force was assembled by the five-person crews a full three minutes faster than the four-person crews. It is important to note that (by definition), the two- and three-person crews were unable to meet this standard at any time during the experiments.¹⁶

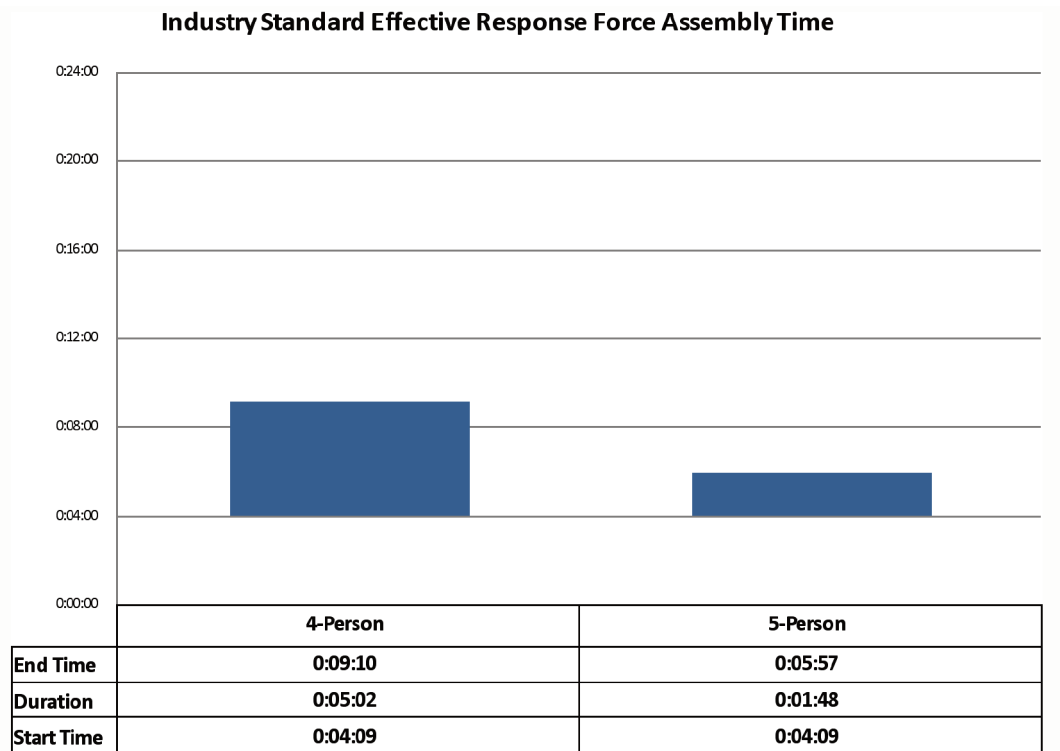


Figure 37: Industry Standard Effective Response Force Assembly Time

¹⁶ Stagger was not statistically significant, so the data for far and near stagger were combined.

Part 4: Fire Modeling

In the room and contents experiments conducted in Part 3 of the study, instrumentation measured oxygen, carbon dioxide, and carbon monoxide concentrations. Data were grouped by the type of experiment conducted with respect to crew size and first due engine arrival time. As previously shown in the experimental matrix, each group contained two replicate tests. In each group of data the results of the replicates were averaged to simplify the data for further comparison. Figure 38 and Figure 39 show the typical concentration curves for the experiments.

These two graphs show the ranges representative of those found in the experiments. Charts of gas curves for the remainder of the experiments — for both the burn room and the target room — can be found in Appendix H.

Fire Modeling Methods

A primary goal of fire department response is to prevent civilian injuries and deaths. Because the significant majority of fire deaths in the United States occur in residences, a rapid fire service response provides the last line-of-defense against civilian fire deaths. Further, because the fire service is less likely to rescue occupants intimate with the fire (i.e., inside the room of origin where conditions deteriorate rapidly), tenability measurements were taken in a remote bedroom on the second floor of the residential burn structure. The gas and temperature measurements were taken at the 5 ft (1.5 m) height above the floor, 3 ft (0.9 m) from the west wall in order to simulate a nonambulatory occupant (e.g, someone asleep, under the influence of alcohol or drugs, or otherwise mobility impaired).

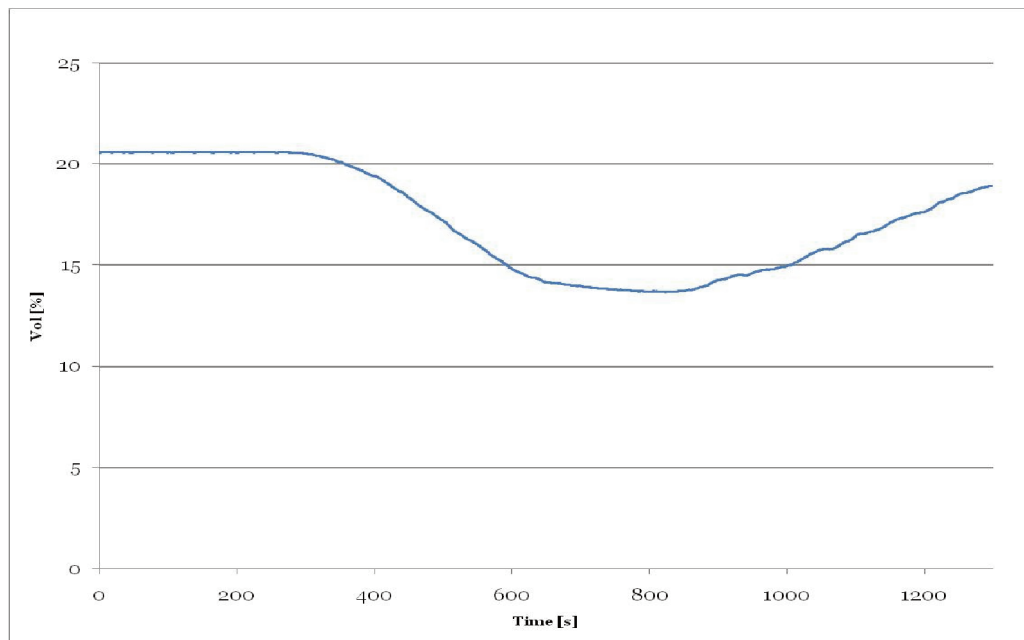


Figure 38: Representative Oxygen Concentration

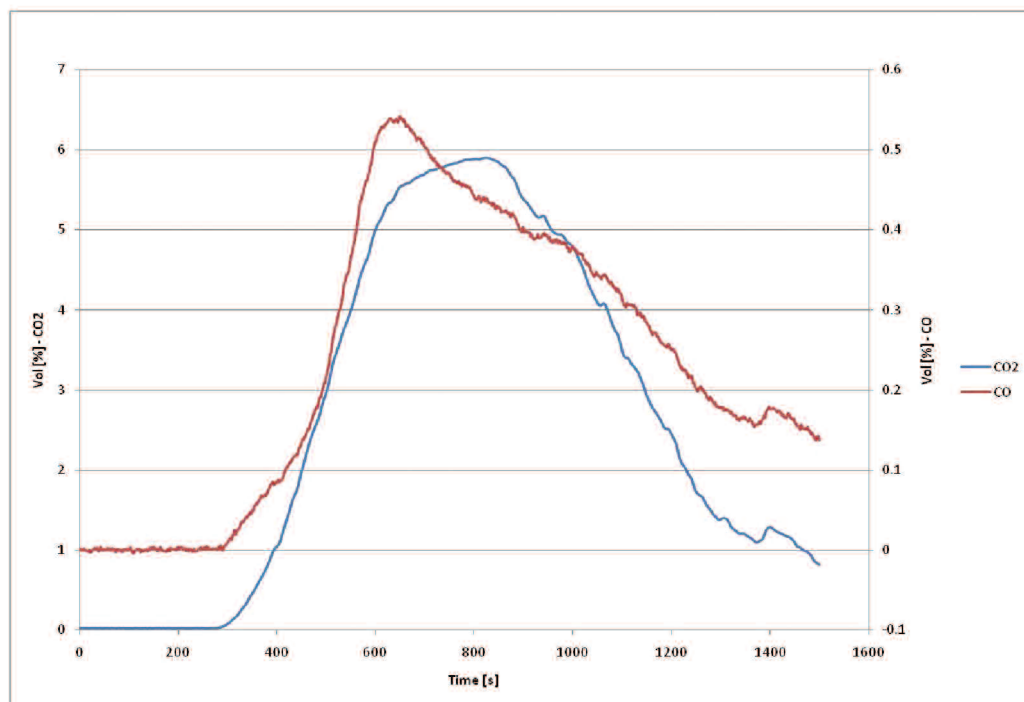


Figure 39: Representative Carbon Monoxide and Carbon Dioxide Concentrations

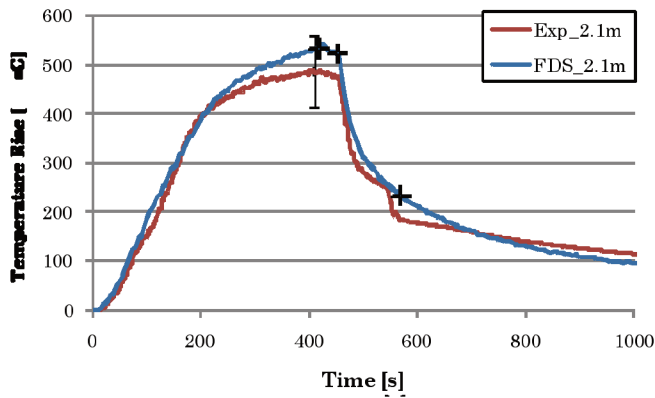


Figure 40: Measured vs. Predicted Temperature at the 2.1 m (6.9 ft) Thermocouple Location in the Burn Compartment

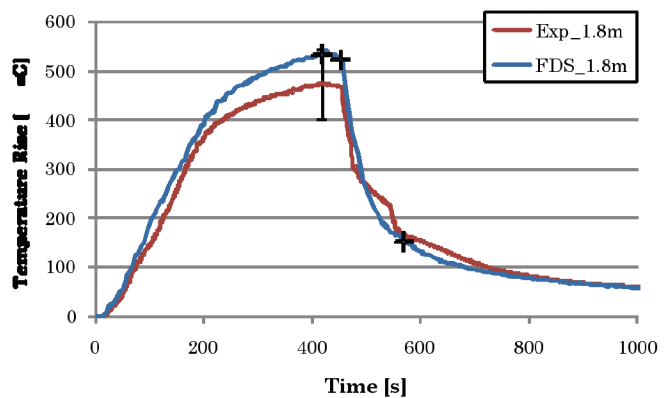


Figure 41: Measured vs. Predicted Temperature at the 1.8 m (5.9 ft) Thermocouple Location in the Burn Compartment

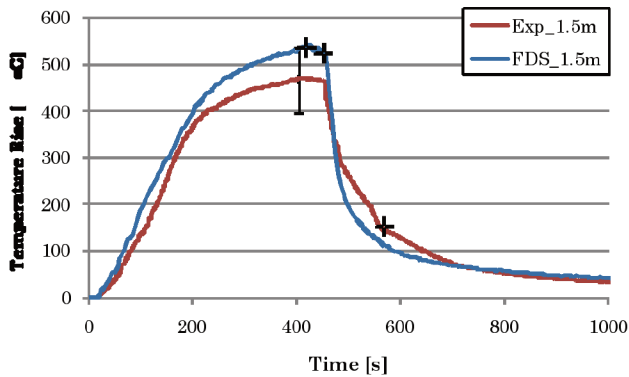


Figure 42: Measured vs. Predicted Temperature at the 1.5 m (4.9 ft) Thermocouple Location in the Burn Compartment

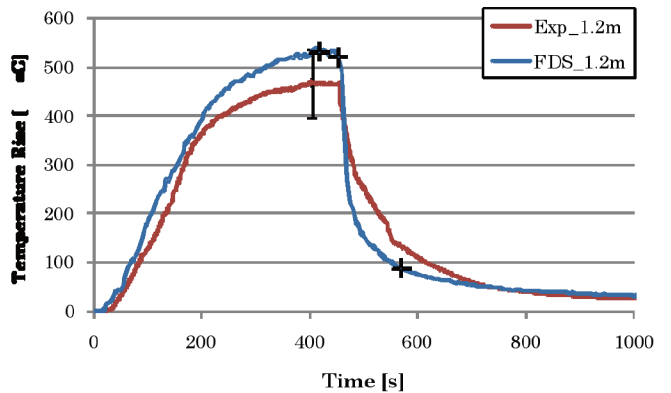


Figure 43: Measured vs. Predicted Temperature at the 1.2 m (3.9 ft) Thermocouple Location in the Burn Compartment

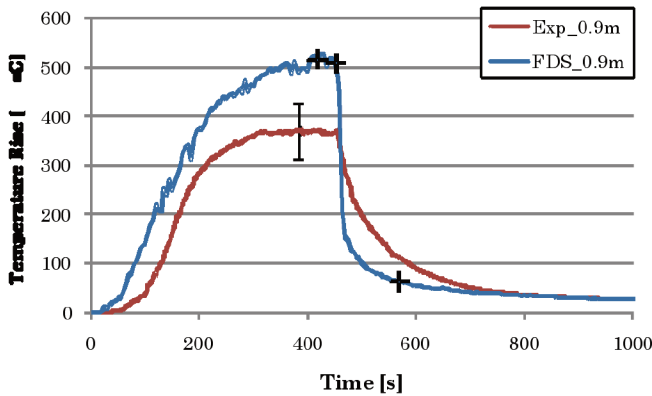


Figure 44: Measured vs. Predicted Temperature at the 0.9 m (2.9 ft) Thermocouple Location in the Burn Compartment

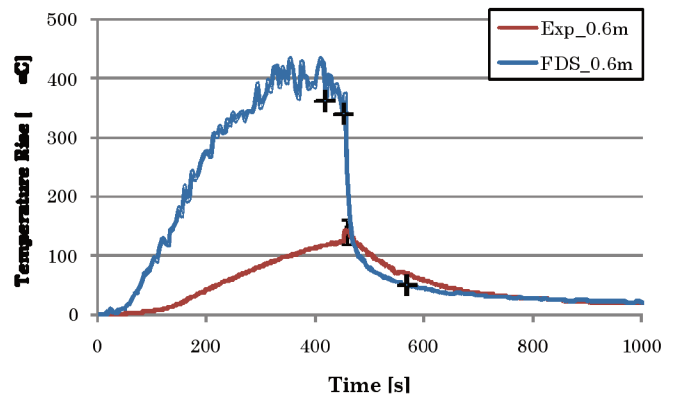


Figure 45: Measured vs. Predicted Temperature at the 0.6 m (1.9 ft) Thermocouple Location in the Burn Compartment

Computational fire models used the average suppression timings obtained from the time-to-task experiments under specific deployment configurations as inputs to the model. This quantitative approach eliminated the experimental variance of the fire. The resulting “computational” fire is repeatable, and therefore, any differences in occupant exposure to toxic gases will be due to the intervention times associated with a specific deployment configuration rather than the random variation that naturally occurs from fire to fire.

Fire simulations were completed using the NIST Fire Dynamics Simulator (FDS). FDS is a computational fluid dynamics model of fire-driven fluid flow. The first version of the FDS was released in 2000. FDS has been extensively verified and validated (USNRC 2007). Since the initial release, numerous improvements have been made and new features added. This study used FDS version 5.4.2 (Sub-version #4957), which was released on October 19, 2009. In order to calibrate the model, simulations were performed to replicate the experimental results observed in the

room-and-contents fires. Once the ability of the model to replicate experimental results was established, the different fire growth rates and deployment configurations were simulated to characterize the effectiveness of different responses relative to different fire growth rates.

The occupant exposure to toxic gases was assumed to occur until the occupant is rescued by the truck crew (start time of primary search plus one minute). Table 6 shows the “rescue time” for the various crew sizes that correspond to the test matrix for the room and contents experiments.

Part 4 of the experiments used fire modeling to correlate response times to atmospheric tenability in a burning structure. In order to calibrate the computer fire model, simulations were performed to replicate the experimental results observed in the room-and-contents fires.

Model inputs include building geometry and material properties, ventilation paths (doors, windows, leakage paths), and heat release rate of the fuel package. While the building geometry is easily measured and material properties (such as the thermal properties of drywall and concrete) are readily estimated, the heat release rate was not directly measured during the experiments. The heat release rate of the fuel package is the primary determinant of the production rate of heat, smoke, and gas species (e.g., carbon dioxide, carbon monoxide).

Figures 40 through 45 compare the experimental and simulated burn room temperatures using the burn room thermocouple tree. The tree contained thermocouples located at 0.6 m (1.9 ft), 0.9 m (2.9 ft), 1.2 m (3.9 ft), 1.5 m (4.9 ft), 1.8 m (5.9 ft), and 2.1 m (6.9 ft) above the floor. For additional information about the instrumentation type location, see Appendix C. The results for thermocouples located in the hot gas layer show excellent agreement. The temperature at the lower two thermocouples show an overprediction of the hot gas layer depth in the computer simulation. A small difference in the location of the interface height (the steep temperature gradient between the relatively cool lower gas layer and the hot upper gas layer), can result in significant predicted temperature differences with relatively little effect on the bulk heat and mass transport accuracy. This explanation is supported by the agreement of the temperatures in the remote bedroom.

Figure 46 compares the experimental and predicted oxygen concentration levels in the upstairs bedroom (measured at 5 ft (1.5 m) above the floor, centered above the bed). Figures 47 through 52 compare the experimental and simulated temperatures in the upstairs (target room) bedroom. As expected, the temperatures are moderated by mixing (cool ambient air mixes with hot combustion gases during transport between the burn room and the target room) and by thermal losses to the (cooler) surfaces between the two rooms.

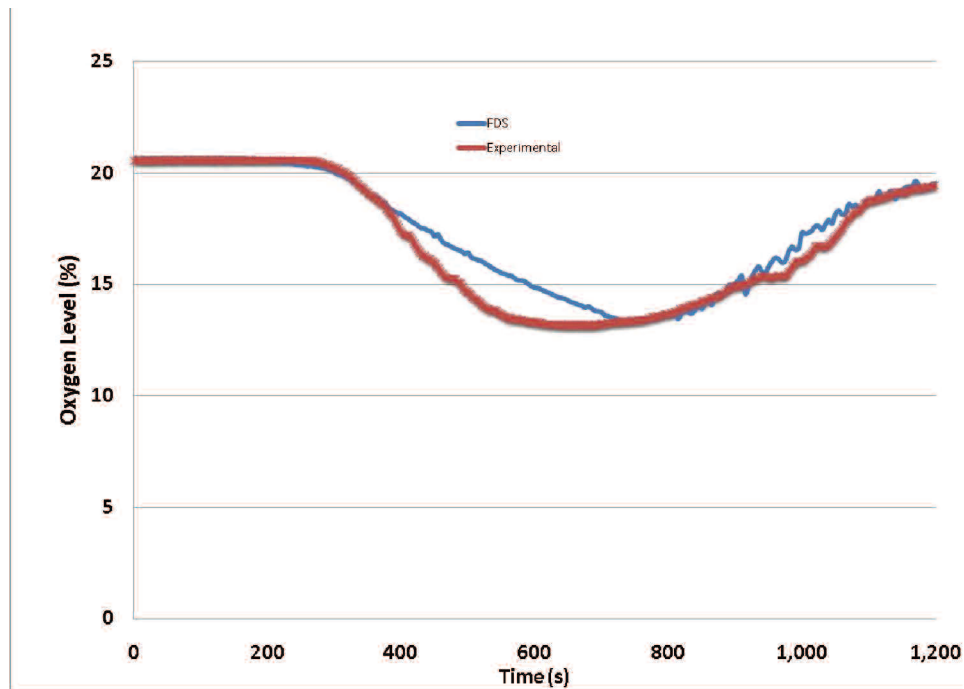


Figure 46: Measured Versus Predicted Oxygen Levels in the Upstairs Bedroom at 5 ft (1.5 m)

Once the model inputs were determined to agree with the experimental results, the input heat release rate was changed to represent three fire growth rates representative of a range of fire hazard development – slow, medium, and fast, which are described in greater detail in the following sections.

Time to Untenable Conditions: Research Questions

In the real world, fires grow at many different rates – from very slow, smoldering fires all the way to ultra-fast, liquid fuel or spray fires. In order to extend the applicability of the findings of this report beyond the one fire growth rate observed in part 3 of this report (residential room and contents fires), computer fire modeling was used to quantify the effectiveness of fire department operations in response to an idealized range of fire growth rates (characterized as slow, medium, and fast). Based on the research questions shown in Figure 53, fire modeling methods were then selected to maximize the applicability of the times to task results.

- 1) How do performance times relate to fire growth as projected by standard fire time/temperature curves?
- 2) How do these performance times vary by crew size, first due arrival time, and stagger?
- 3) How do crew size, stagger, and arrival time affect occupant tenability within the structure?

Figure 53: Research Questions for Time to Untenable Conditions

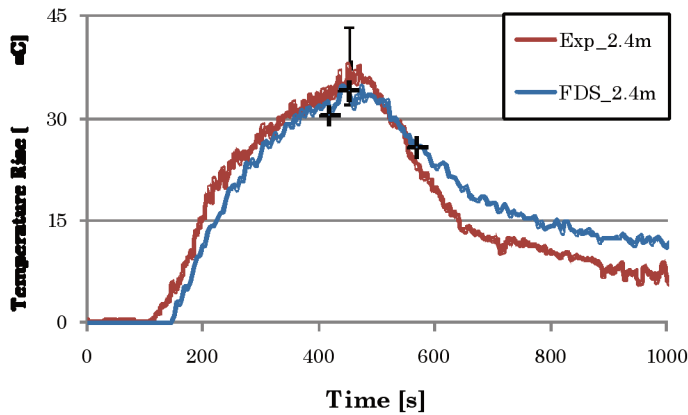


Figure 47: Measured vs. Predicted Temperature at the 2.4 m (7.8 ft) Thermocouple Location in the Bedroom

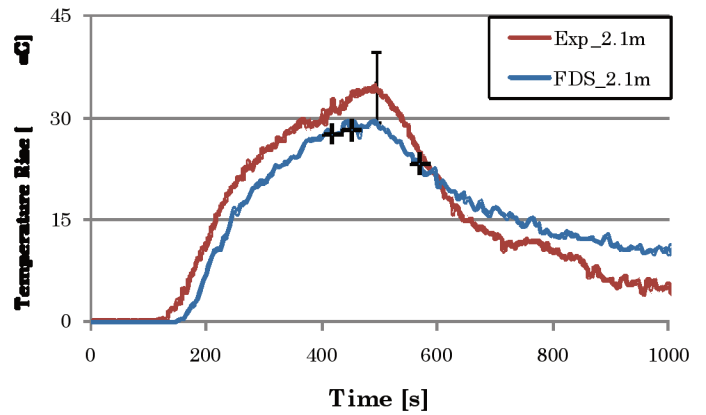


Figure 48: Measured vs. Predicted Temperature at the 2.1 m (6.8 ft) Thermocouple Location in the Bedroom

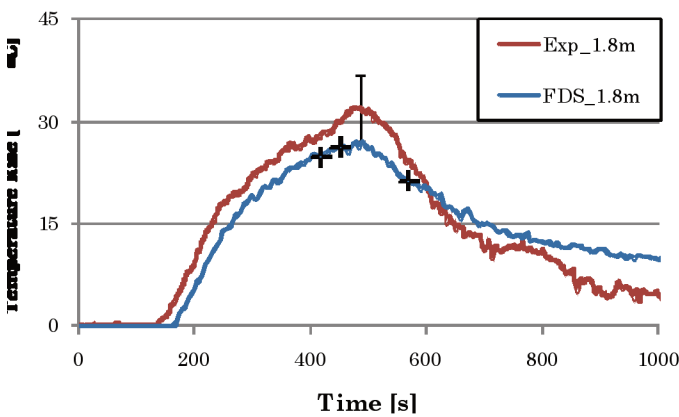


Figure 49: Measured vs. Predicted Temperature at the 1.8 m (5.9 ft) Thermocouple Location in the Bedroom

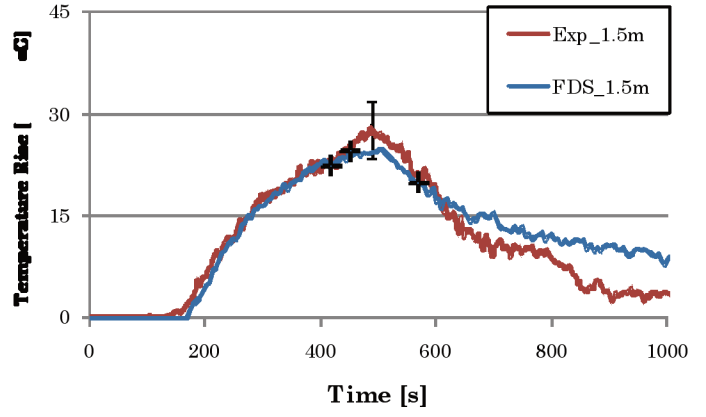


Figure 50: Measured vs. Predicted Temperature at the 1.5 m (4.9 ft) Thermocouple Location in the Bedroom

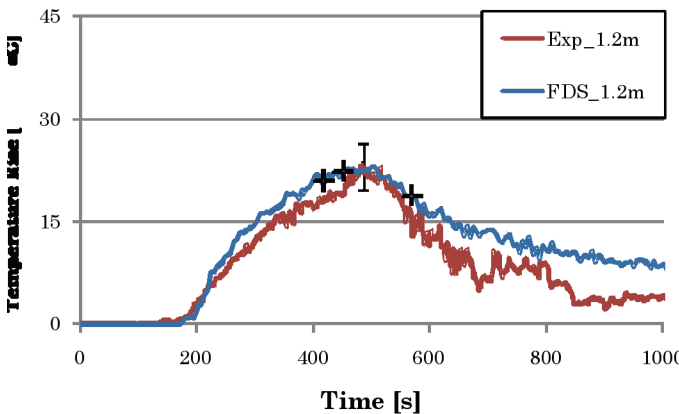


Figure 51: Measured vs. Predicted Temperature at the 1.2 m (3.9 ft) Thermocouple Location in the Bedroom

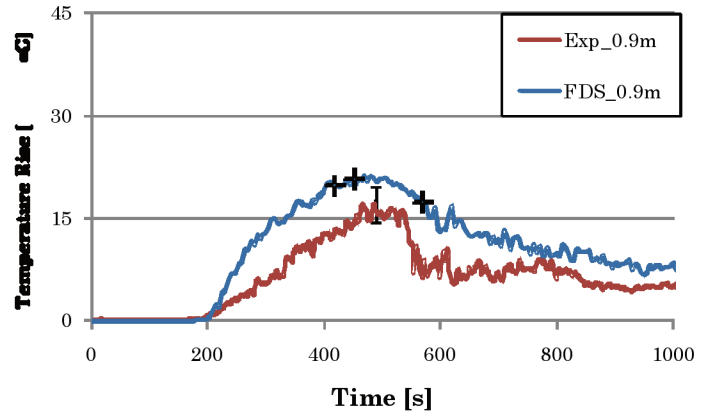


Figure 52: Measured vs. Predicted Temperature at the 0.9 m (2.9 ft) Thermocouple Location in the Bedroom

Fire Growth Rates

Three fire growth rates were used in the computer fire modeling to assess the effectiveness of different fire department deployment configurations in response to fires that were similar to, faster growing, and slower growing than the fires observed in the room-and-contents fires. The slow, medium, and fast fire growth rates are defined by the Society of Fire Protection Engineers according to the time at which they reach 1 megawatt (MW). A typical upholstered chair burning at its peak would produce a 1-MW fire, while a large sofa at its burning peak would produce roughly a 2-MW fire.

The growth rate of fires is often approximated by simple correlation of heat release rate to the square of time. If a fire is not suppressed before full-room involvement, the probability of spread beyond the room of origin increases dramatically if there is nearby fuel load to support fire spread. If a nearby fuel load is available, the 12 ft (3.7 m) by 16 ft (4.9 m) compartment used in the fire experiments would become fully involved at approximately 2 MW. Table 7 shows the time in seconds at which 1-MW and 2-MW (fully involved) fires in this compartment would be reached in the absence of suppression.

A fire department rescue operation is a race between the deteriorating interior conditions inside the structure and the rescue and suppression activities of the fire department. Each fire growth rate was used as a baseline heat release rate for the simulation. Intervention times (window and door opening times and suppression time) from the time-to-task tests were systematically input into the model to evaluate the effects on interior tenability conditions. The interior tenability conditions were calculated in a remote upstairs bedroom (above the room of fire origin on the first floor) in order to maximize the opportunity for differentiation among different crew configurations.

Fire Growth Rate	Time in Seconds Reach 1 MW	Time in Seconds to Reach to 2 MW
Slow	600	848
Medium	300	424
Fast	150	212

Table 7: Time to Reach 1 MW and 2 MW by Fire Growth Rate In the Absence of Suppression

Fractional Effective Dose (FED)

In order to convert instantaneous measurements of local gas conditions, the fractional effective dose (FED) formulation published by the International Standards Organization (ISO) in document 13571 *Life-threatening Components of Fire – Guidelines for the Estimation of Time Available for Escape Using Fire Data* (ISO 2007) were used. FED is a probabilistic estimate of the effects of toxic gases on humans exposed to fire effluent. The formulation used in the

simulations accounts for carbon monoxide (CO), carbon dioxide (CO₂), and oxygen (O₂) depletion. Other gases, including hydrogen cyanide (HCN) and hydrogen chloride (HCl), were not accounted for in this analysis and may alter FED for an actual occupant.

$$FED = \sum_{i=1}^n \frac{C_i}{(C_t)_i} \Delta t \quad \text{Eq.1}$$

Where C_i is the concentration of the ith gas and (C_t)_i is the toxic concentration of ith gas and Δt is the time increment.

There are three FED thresholds generally representative of different exposure sensitivities of the general population. An FED value of 0.3 indicates the potential for certain sensitive populations to become incapacitated as a result of exposure to toxic combustion products. Sensitive populations may include elderly, young, or individuals with compromised immune systems. Incapacitation is the point at which occupants can no longer effect their own escape. An FED value of 1.0 represents the median incapacitating exposure. In other words, 50 % of the general population will be incapacitated at that exposure level. Finally, an FED value of 3.0 represents the value where occupants who are particularly tolerant of combustion gas exposure (extremely fit persons, for example) are likely to become incapacitated.

These thresholds are statistical probabilities, not exact measurements. There is variability in the way individuals respond to toxic atmospheric conditions. FED values above 2.0 are often fatal doses for so-called typical occupants. There is no threshold so low that it can be said to be safe for every exposed occupant.¹⁷

Deployment Configuration (All times with close stagger adjusted for early and late arrival of first due engine)	Rescue Time for Deployment Configuration (Min : Sec)
2-Person Early	12:47
3-Person Early	9:03
4-Person Early	9:10
5-Person Early	8:57
2-Person Late	14:47
3-Person Late	11:03
4-Person Late	11:10

Table 6: Rescue Time for Different Deployment Configurations

¹⁷ See the following sections of ISO Document 13571:

5.2 Given the scope of this Technical Specification, FED and/or FEC values of 1,0 are associated, by definition, with sublethal effects that would render occupants of average susceptibility incapable of effecting their own escape. The variability of human responses to toxicological insults is best represented by a distribution that takes into account varying susceptibility to the insult. Some people are more sensitive than the average, while others may be more resistant (see Annex A.1.5). The traditional approach in toxicology is to employ a safety factor to take into consideration the variability among humans, serving to protect the more susceptible subpopulations. 5.2.1 As an example, within the context of reasonable fire scenarios FED and/or FEC threshold criteria of 0,3 could be used for most general occupancies in order to provide for escape by the more sensitive subpopulations. However, the user of this Technical Specification has the flexibility to choose other FED and/or FEC threshold criteria as may be appropriate for chosen fire safety objectives. More conservative FED and/or FEC threshold criteria may be employed for those occupancies that are intended for use by especially susceptible subpopulations. By whatever rationale FED and FEC threshold criteria are chosen, a single value for both FED and FEC must be used in a given calculation of the time available for escape.

Results from Modeling Methods

Table 8 shows the FED for slow-, medium-, and fast-growth rate fires correlated to rescue times based on crew size and arrival time in the study. As with the room-and-contents fire in part 3, results in Table 8 included only the close-stagger rescue time data. The effect of far-stagger rescue times on occupant tenability should be

investigated in future studies. Values above 0.3 are shown in yellow, and those above the median incapacitating exposure of 1.0 are shown in red.

Figure 54 shows that with slow-growth fires in the experimental residential structure, all crew configurations could achieve rescue time before FED reached incapacitating levels. Figure 55

illustrates the greater danger of medium-growth fires, where the FED at rescue time for two-person crews is well above the 0.3 level, and almost to that level for the other crews.

Figure 56 (page 49) vividly illustrates the extreme danger of fast-growth fires. By the time a two-person crew is able to facilitate a rescue, the FED has far exceeded the median 1.0 level. For other crew sizes, the FED has exceeded 0.3, which is a threshold level for vulnerable populations.

Crew Configuration	Rescue Time	Fire Growth Rates		
		Slow	Medium	Fast
2 Early	12:47	.12	.72	1.49
2 Late	14:47	.35	1.37	2.56
3 Early	9:03	.01	.11	.40
3 Late	11:03	.04	.36	.84
4 Early	9:10	.01	.11	.42
4 Late	11:10	.05	.38	.91
5 Early	8:57	.01	.10	.38

KEY	White	89% or more of population may be capable of effecting their own escape if they are able.
	Yellow	Potential for certain sensitive populations (such as children and the elderly) to become incapacitated.
	Red	More than 50% of the population would be incapable of effecting their own escape.

Table 8: FED as a Function of Deployment Configuration and Fire Growth Rate

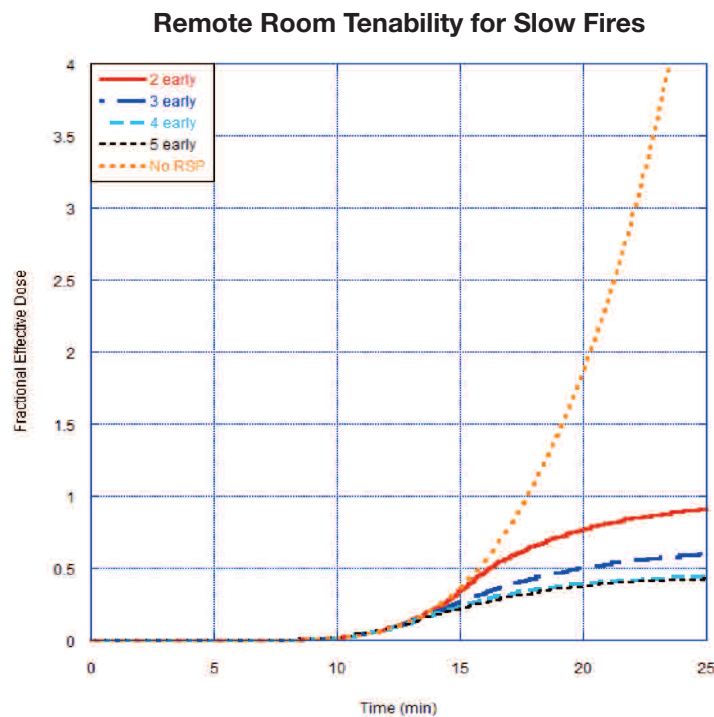


Figure 54: FED Curves for Early Arrival for All Crew Sizes at Slow-Growth Fires

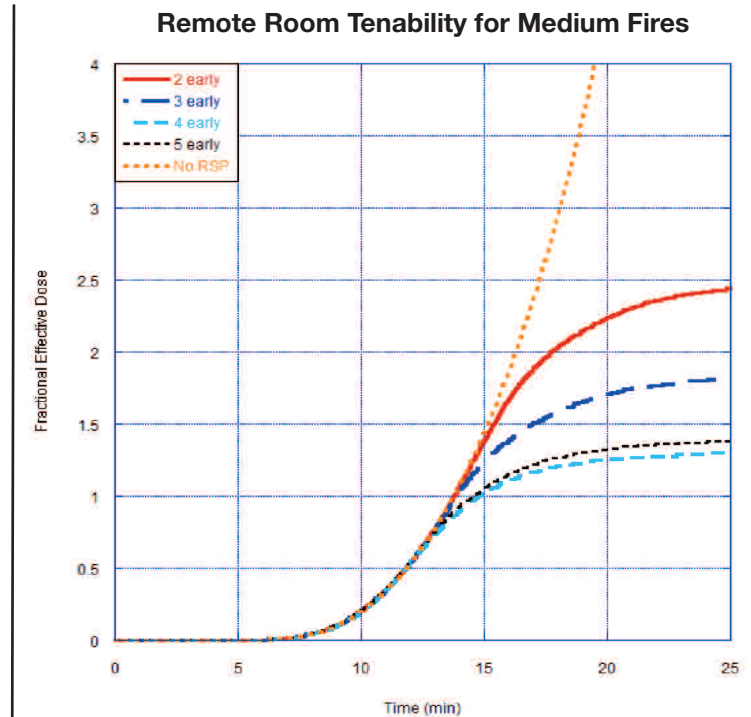


Figure 55: Average FED Curves for Early Arrival for All Crew Sizes at Medium-Growth Fires

Remote Room Tenability for Fast Fires

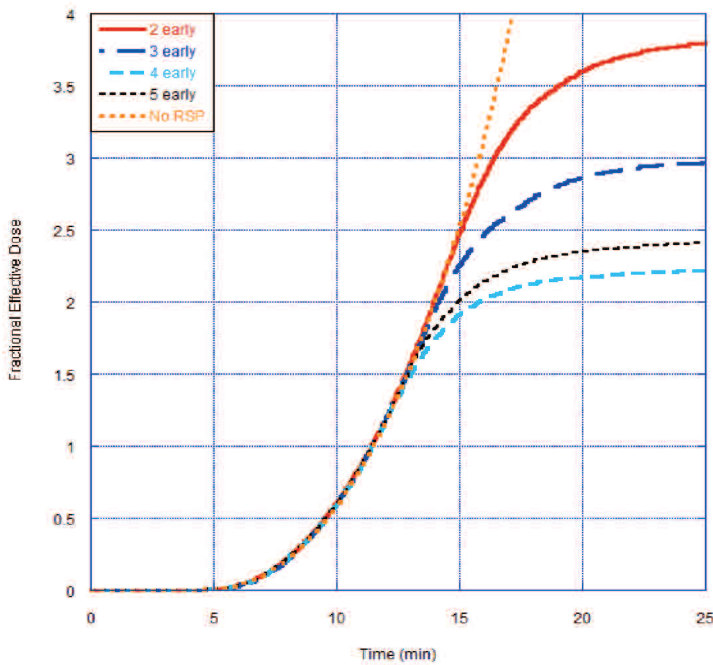


Figure 56: Average FED Curves for Early Arrival for All Crew Sizes at Fast-Growth Fires

Interior Firefighting Conditions and Deployment Configuration

The available time to control a fire can be quite small. Risks to firefighters are lower for smaller fires than larger fires because smaller fires are easier to suppress and produce less heat and fewer toxic gases. Therefore, firefighter deployment configurations that can attack fires earlier in the fire development process present lower risk to firefighters. The longer the duration of the fire development process without intervention, the greater the increase in risk for occupants and responding firefighters. Therefore, time is critical.

Stopping the escalation of the event involves firefighter intervention via critical tasks performed on the fireground. Critical tasks, as described previously, include those tasks that

directly affect the spread of fire as well as the associated structural tenability.

There are windows of opportunity to complete critical tasks. A fire in a structure with a typical residential fuel load at six minutes post-ignition is very different from the same fire at eight minutes or at ten minutes post-ignition. Some tasks that are deemed “important” (e.g., scene size-up) for a fire in early stages of growth become critical if intervention tasks are delayed. Time can take away opportunities. If too much time passes, then the window of opportunity to affect successful outcomes (e.g., rescue victim or stop fire spread) closes.

For a typical structure fire event involving a fire department response, there is an incident commander on the scene who determines both the strategy and tactics that will be employed to stop the spread of the fire, rescue occupants, ventilate the structure, and ultimately extinguish the fire. Incident commanders must deal with the fire in the present and make intelligent command decisions based on the circumstances at hand upon arrival. Additionally, arrival time and crew size are factors that contribute to the incident commander’s decisions and affect the capability of the firefighters to accomplish necessary tasks on scene in a safe, efficient, and effective manner.

Table 9 illustrates vividly the more dangerous conditions small crews face because of the extra time it takes to begin and complete critical tasks (particularly fire suppression). In the two minutes more it took for the two-person crew (early arrival) than the five-person crew (early arrival) to get water on the fire, a slow growth rate fire would have increased from 1.1 MW to 1.5 MW. This growth would have been even more extreme for a medium- or fast-growth rate fire. The difference is even more substantial for the two-person crew with late arrival as the fire almost doubled in size in the time difference between this crew and the five-person crew.

Based on fire modeling for the low hazard structure studied with a typical residential fuel load, it is likely that medium- and fast-growth rate fires will move beyond the room of origin prior to the arrival of firefighters for all crew sizes. Note that results in Table 8 included only the close-stagger rescue time data. The effect of far-stagger rescue times on occupant tenability should be investigated in future studies. Therefore, the risk level of the event upon arrival will be higher for all crews which must be considered by the incident commander when assigning firefighters to on-scene tasks.

Deployment Configuration	Time to Water on Fire (Min : Sec)	Fire Size at Time of Suppression for Slow-Growth Fires
2-Person, Late Arrival	14:26	2.1 MW
2-Person, Early Arrival	12:26	1.5 MW
3-Person, Late Arrival	13:24	1.8 MW
3-Person, Early Arrival	11:24	1.3 MW
4-Person, Late Arrival	13:11	1.7 MW
4-Person, Early Arrival	11:11	1.3 MW
5-Person, Late Arrival	12:33	1.6 MW
5-Person, Early Arrival	10:33	1.1 MW

Table 9: Fire Size at Time of Fire Suppression

Physiological Effects of Crew Size on Firefighters

Reports on firefighter fatalities consistently document overexertion/overstrain as the leading cause of line-of-duty fatalities. There is strong epidemiological evidence that heavy physical exertion can trigger sudden cardiac events (Mittleman et al. 1993; Albert et al. 2000). Therefore, information about the effect of crew size on physiological strain is very valuable.

During the planning of the fireground experiments, investigators at Skidmore College recognized the opportunity to conduct an independent study on the relationship between firefighter deployment configurations and firefighter heart rates. With the approval of the Institutional Review Board of Skidmore College, they were able to leverage the resources of the field experiments to conduct a separate analysis of the cardiac strain on fire fighters on the fireground.

For details, consult the complete report (Smith 2009). Two important conclusions from the report reinforce the importance of crew size:

- Average heart rates were higher for members of small crews, particularly two-person crews.
- Danger is increased for small crews because the stress of fire fighting keeps heart rates elevated beyond the maximum heart rate for the duration of a fire response, and so the higher heart rates were maintained for sustained time intervals.

Study Limitations

The scope of this study is limited to understanding the relative influence of deployment variables to low-hazard, residential structure fires, similar in magnitude to the hazards described in *NFPA 1710*. The applicability of the conclusions from this report to commercial structure fires, high-rise fires, outside fires, terrorism/natural disaster response, HAZMAT or other technical responses has not been assessed and should not be extrapolated from this report.

Every attempt was made to ensure the highest possible degree of realism in the experiments while complying with the requirements of *NFPA 1403*, but the dynamic environment on the fireground cannot be fully reproduced in a controlled experiment. For example, *NFPA 1403* required a daily walkthrough of the burn prop (including identifying the location of the fire) before ignition of a fire that would produce an Immediately Dangerous to Life and Health (IDLH) atmosphere, a precaution not available to responders dispatched to a live fire.

The number of responding apparatus for each fireground response was held constant (three engines and one truck, plus the battalion chief and aide) for all crew size configurations. The effect of deploying either more or fewer apparatus to the scene was not evaluated.

The fire crews who participated in the experiments typically operate using three-person and four-person staffing. Therefore, the effectiveness of the two-person and five-person operations may have been influenced by a lack of experience in operating at

those staffing levels. Standardizing assigned tasks on the fireground was intended to minimize the impact of this factor, which has an unknown influence on the results.

The design of the experiments controlled for variance in performance of the incident commander. In other words, a more-or less-effective incident commander may have a significant influence on the outcome of a residential structure fire.

Although efforts were made to minimize the effect of learning across experiments, some participants took part in more than one experiment, and others did not.

The weather conditions for the experiments were moderate to cold. Frozen equipment such as hydrants and pumps was not a factor. However, the effect of very hot weather conditions on firefighter performance was not measured.

All experiments were conducted during the daylight hours. Nighttime operations could pose additional challenges.

Fire spread beyond the room of origin was not considered in the room and contents tests or in the fire modeling. Therefore, the size of the fire and the risk to the firefighter may be somewhat underestimated for fast-growing fires or slower-response configurations.

There is more than one effective way to perform many of the required tasks on the fireground. Attempts to generalize the results from these experiments to individual departments must take into account tactics and equipment that vary from those used in the experiments.

Conclusions

More than 60 laboratory and full-scale fire experiments were conducted to determine the impact of crew size, first-due engine arrival time, and subsequent apparatus arrival times on firefighter safety and effectiveness at a low-hazard residential structure fire. This report quantifies the effects of changes to staffing and arrival times for low-hazard residential firefighting operations. While resource deployment is addressed in the context of a single structure type and risk level, it is recognized that public policy decisions regarding the cost-benefit of specific deployment decisions are a function of many factors including geography, available resources, community expectations, as well as all local hazards and risks. Though this report contributes significant knowledge to community and fire service leaders in regard to effective resource deployment for fire suppression, other factors contributing to policy decisions are not addressed.

The objective of the experiments was to determine the relative effects of crew size, first-due engine arrival time, and stagger time for subsequent apparatus on the effectiveness of the firefighting crews relative to intervention times and the likelihood of occupant rescue using a parametric design. Therefore, the experimental results for each of these factors are discussed below.

Of the 22 fireground tasks measured during the experiments, the following were determined to have especially significant impact on the success of fire fighting operations. Their differential outcomes based on variation of crew size and/or apparatus arrival times are statistically significant at the 95 % confidence level or better.

Overall Scene Time:

The four-person crews operating on a low-hazard structure fire completed all the tasks on the fireground (on average) seven minutes faster — nearly 30 % — than the two-person crews. The four-person crews completed the same number of fireground tasks (on average) 5.1 minutes faster — nearly 25 % — than the three-person crew. For the low-hazard residential structure fire, adding a fifth person to the crews did not decrease overall fireground task times. However, it should be noted that the benefit of five-person crews has been documented in other evaluations to be significant for medium- and high-hazard structures, particularly in urban settings, and should be addressed according to industry standards.¹⁸

Time to Water on Fire:

There was a nearly 10 % difference in the “water on fire time” between the two and three-person crews and an additional 6 % difference in the “water on fire time” between the three- and four-person crews (i.e., 16 % difference between the four and two-person crews). There was an additional 6 % difference in the “water on fire” time between the four- and five-person crews (i.e., 22 % difference between the five and two-person crews).

Ground Ladders and Ventilation:

The four-person crew operating on a low-hazard structure fire can complete laddering and ventilation (for life safety and rescue) 30 % faster than the two-person crew and 25 % faster than the three-person crew.

Primary Search:

The three-person crew started and completed a primary search and rescue 25 % faster than the two-person crew. In the same

structure, the four- and five-person crews started and completed a primary search 6 % faster than the three-person crews and 30 % faster than the two-person crew. A 10 % difference was equivalent to just over one minute.

Hose Stretch Time:

In comparing four- and five-person crews to two- and three-person crews collectively, the time difference to stretch a line was 76 seconds. In conducting more specific analysis comparing all crew sizes to a two-person crew the differences are more distinct. A two-person crew took 57 seconds longer than a three-person crew to stretch a line. A two-person crew took 87 seconds longer than a four-person crew to complete the same tasks. Finally, the most notable comparison was between a two-person crew and a five-person crew — more than 2 minutes (122 seconds) difference in task completion time.

Industry Standard Achieved:

The “industry standard achieved” time started from the first engine arrival at the hydrant and ended when 15 firefighters were assembled on scene.¹⁹ An effective response force was assembled by the five-person crews three minutes faster than the four-person crews. According to study deployment protocol, the two- and three-person crews were unable to assemble enough personnel to meet this standard.

Occupant Rescue:

Three different “standard” fires (slow-, medium-, and fast-growth rate) were simulated using the Fire Dynamics Simulator (FDS) model. The fires grew exponentially with time. The fire modeling simulations demonstrated that two-person, late arriving crews can face a fire that is twice the intensity of the fire faced by five-person, early arriving crews. The rescue scenario was based on a nonambulatory occupant in an upstairs bedroom with the bedroom door open.

Independent of fire size, there was a significant difference between the toxicity, expressed as fractional effective dose (FED), for occupants at the time of rescue depending on arrival times for all crew sizes. Occupants rescued by crews starting tasks two minutes earlier had lesser exposure to combustion products.

The fire modeling showed clearly that two-person crews cannot complete essential fireground tasks in time to rescue occupants without subjecting either firefighters or occupants to an increasingly hazardous atmosphere. Even for a slow-growth rate fire, the FED was approaching the level at which sensitive populations, such as children and the elderly are threatened. For a medium-growth rate fire with two-person crews, the FED was far above that threshold and approached the level affecting the median sensitivity in general population. For a fast-growth rate fire, the FED was well above the median level at which 50 % of the general population would be incapacitated. Larger crews responding to slow-growth rate fires can rescue most occupants prior to incapacitation along with early-arriving larger crews responding to medium-growth rate fires. The result for late-arriving (two minutes later than early-arriving) larger crews may result in a threat to sensitive populations for medium-growth rate fires.” The new sentence is consistent with our previous description for two-person crews where we identify a threat to sensitive populations.

Statistical averages should not, however, mask the fact that there is no FED level so low that every occupant in every situation is safe.

¹⁸ NFPA Standard 1710 - A.5.2.4.2.1 ... Other occupancies and structures in the community that present greater hazards should be addressed by additional fire fighter functions and additional responding personnel on the initial full alarm assignment.

¹⁹ NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments. Section 5.2.1 – Fire Suppression Capability and Section 5.2.2 Staffing.

Summary:

The results of these field experiments contribute significant knowledge to the fire service industry. First, the results establish a technical basis for the effectiveness of company crew size and arrival time in *NFPA 1710*. The results also provide valid measures of total effective response force assembly on scene for fireground operations, as well as the expected performance of time-to-critical-task measures for a low-hazard structure fires. Additionally, the results provide tenability measures associated with the occupant exposure rates to the range of fires considered by the fire model.

Future Research

In order to realize a significant reduction in firefighter line-of-duty death (LODD) and injury, fire service leaders must focus directly on resource allocation and the deployment of resources, both contributing factors to LODD and injury. Future research should use similar methods to evaluate firefighter resource deployment to fires in medium- and high-hazard structures, including multiple-family residences and commercial properties. Additionally, resource deployment to multiple-casualty disasters or terrorism events should be studied to provide insight into levels of risks specific to individual communities and to recommend resource deployment proportionate to such risk. Future studies should continue to investigate the effects of resource deployment on the safety of both firefighters and the civilian population to better inform public policy.

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APPENDIX A: Laboratory Experiments

The fire suppression and resource deployment experiments consisted of four distinct parts: laboratory experiments, time-to-task experiments, room and contents experiments and fire modeling. The purpose of the laboratory experiments was to assure a fire in the field experiments that would consistently meet *NFPA 1403* requirements for live fire training exercises. The laboratory experiments enabled investigators to characterize the burning behavior of the wood pallets as a function of:

- number of pallets and the subsequent peak heat release rate
- compartment effects on burning of wood pallets
- effect of window ventilation on the fire
- effect on fire growth rate of the loading configuration of excelsior (slender wood shavings typically used as packing material)

Design and Construction

Figure A-1 shows the experimental configuration for the compartment pallet burns. Two identically sized compartments (3.66 m x 4.88 m x 2.44 m) were connected by a hallway (4 m x 1 m x 2.4 m). At each end of the hallway, a single door connected the hallway to each of the compartments. In the burn compartment, a single window (3 m x 2 m) was covered with noncombustible board that was opened for some experiments and closed for others. At the end of test, it was opened to extinguish the remaining burning material and to remove any debris prior to the next test. In the second compartment, a single doorway connected the compartment to the rest of the test laboratory. It was kept open throughout the tests allowing the exhaust to flow into the main collection hood for measurement of heat release rate.

The structure was constructed of two layer of gypsum wallboard over steel studs. The floor of the structure was lined with two layers of gypsum wallboard directly over the concrete floor of the test facility. In the burn compartment, an additional lining of cement board was placed over the gypsum walls and ceiling surfaces near the fire source to minimize fire damage to the structure after multiple fire experiments. A doorway 0.91 m wide by 1.92 m tall connected the burn compartment to the hallway and an opening 1 m by 2 m connected the hallway to the target compartment. Ceiling height was 2.41 m throughout the structure, except for the slight variation in the burn room.

Fuel Source

The fuel source for all of the tests was recycled hardwood pallets constructed of several lengths of hardwood boards nominally 83

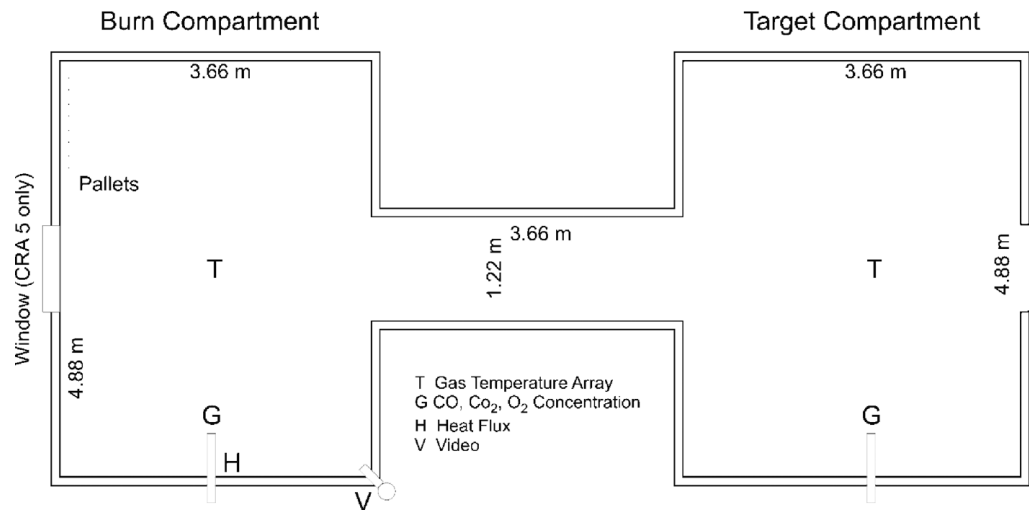


Figure A-1. Compartment Configuration and Instrumentation for Pallet Tests

mm wide by 12.7 mm thick. Lengths of the individual boards ranged from nominally 1 m to 1.3 m. The finished size of a single pallet was approximately 1 m by 1.3 m by 0.11 m. Figure A-2 shows the fuel source for one of the tests including six stacked pallets and excelsior ignition source. For an ignition source, excelsior was placed within the pallets, with the amount and location depending on the ignition scenario. Figure A-3 shows the pallets prior to a slow and a fast ignition scenario fire. Table A-1 details the total mass of pallets and excelsior for each of the free burn and compartment tests.

Experimental Conditions

The experiments were conducted in two series. In the first series, heat release measurements were made under free burn conditions beneath a 6 m by 6 m hood used to collect combustion gases and provide the heat release rate (HRR) measurement. A second series of tests was conducted with the fire in a compartmented structure to assess environmental conditions within the structure during the fires and determine the effect of the compartment enclosure on the fire growth. Table A-1 presents a summary of the tests conducted.



Figure A-2. Pallets and Excelsior Ignition Source Used as a Fuel Source

Table A-1. Tests Conducted and Ambient Conditions at Beginning of Each Test

Test	Test Type	Number of Pallets	Ignition Scenario	Total Pallet Mass (kg)	Excelsior Mass (kg)
PAL 1	Free burn	4	Fast	79.3	8.1
PAL 2	Free burn	6	Fast	118.8	15.1
PAL 3	Free burn	8	Fast	146.7	16.2
PAL 4	Free burn	4	Slow	51.0	1.65
PAL 5	Free burn	6	Slow	160.3	0.85
CRA 1	Compartment	6	Slow	114.0	0.83
CRA 2	Compartment	4	Slow	69.7	
CRA 3	Compartment	4	Fast	71.1	0.8
CRA 4	Compartment	4	Slow	73.9	0.83
CRA 5	Compartment	4	Slow	73.8	0.85

Notes: PAL stands for “pallet” and CRA (“Community Risk Assessment”) is the designator for the configuration of pallets burned in the compartment. Efforts were made to use the same amount of excelsior mass for CRA 2 (~0.8 kg), but the value was not measured.



Figure A-3. Fuel and Excelsior Source for Slow (top) and Fast (bottom) Ignition Scenarios

Measurements Conducted

Heat release rate (HRR) was measured in all tests. HRR measurements were conducted under the 3 m by 3 m calorimeter at the NIST Large Fire Research Laboratory. The HRR measurement was based on the oxygen consumption calorimetry principle first proposed by Thornton (Thornton 1917) and developed further by Huggett (Huggett 1980) and Parker (Parker 1984). This method assumes that a known amount of heat is released for each gram of oxygen consumed by a fire. The measurement of exhaust flow velocity and gas volume fractions (O₂, CO₂ and CO) were used to determine the HRR based on the formulation derived by Parker (Parker 1984) and Janssens (Janssens 1981). The combined expanded relative uncertainty of the HRR measurements was estimated at ± 14 %, based on a propagation of uncertainty analysis (Bryant 2004).

For the compartment fire tests, gas temperature measurements were made in the burn compartment and in the target compartment connected by a hallway to the burn compartment using 24 gauge bare-bead chromel-alumel (type K) thermocouples positioned in vertical array. Thermocouples were located at the center of each compartment at locations 0.03 m, 0.30 m, 0.61 m, 0.91 m, 1.22 m, 1.52 m, 1.83 m, and 2.13 m from the ceiling. The expanded uncertainty associated with a type K thermocouple is approximately ± 4.4° C. (Omega 2004)

Gas species were continuously monitored in the burn compartment at a level 0.91 m from the ceiling at a location centered on the side wall of the compartment, 0.91 m from the wall. Oxygen was measured using paramagnetic analyzers. Carbon monoxide and carbon dioxide were measured using non-dispersive infrared (NDIR) analyzers. All analyzers were calibrated with nitrogen and a known concentration of gas prior to each test for a zero and span concentration calibration. The expanded relative uncertainty of each of the span gas molar fractions is estimated to be ± 1 %.

Total heat flux was measured on the side wall of the enclosure at a location centered on the side wall, 0.61 m from the ceiling level. The heat flux gauges were 6.4 mm diameter Schmidt-Boelter type, water cooled gauges with embedded type-K thermocouples (see Figure A-4). The manufacturer reports a ± 3 % expanded uncertainty in the response calibration (the slope in kW/m²/mV). Calibrations at the NIST facility have varied within an additional ± 3 % of manufacturer’s calibration. For this study, an uncertainty of ± 6 % is estimated.



Figure A-4: Heat Flux Gauge with Radiation Shielding

Test	Test Type	Number of Pallets	Ignition Scenario	Peak HRR (kW)	Time to Peak HRR (s)
PAL 1	Free burn	4	Fast	2144	205
PAL 2	Free burn	6	Fast	2961	320
PAL 3	Free burn	8	Fast	3551	301
PAL 4	Free burn	4	Slow	1889	385
PAL 5	Free burn	6	Slow	2410	986
CRA 1	Compartment	6	Slow	1705	1102
CRA 2	Compartment	4	Slow	1583	649
CRA 3	Compartment	4	Fast	1959	159
CRA 4	Compartment	4	Slow	1620	775
CRA 5	Compartment	4	Slow	1390	927

Results

Table A-2 shows the peak HRR and time to peak HRR for the free burn tests and for the compartment tests. Figure A-5 includes images from the free burn experiments near the time of peak HRR for each of the experiments. Figure A-6 illustrates the progression of the fire from the exit doorway looking down the hallway to the burn compartment for one of the tests. Figure A-7 to Figure A-10 present graphs of the heat release rate for all of the tests. Figure A-11 through Figure A-15 shows the gas temperature, major gas species concentrations, and heat flux in the burn compartment and target compartment in the five compartment tests.

Table A-2. Peak Heat Release Rate During Several Pallet Tests in Free-burn and in a Compartment



PAL 1



PAL 2



PAL 3



PAL 4

Figure A-5. Free-Burn Experiments Near Time of Peak Burning



Figure A-6. Example Fire Progression from Test CRA 1

Slow Ignition Scenario

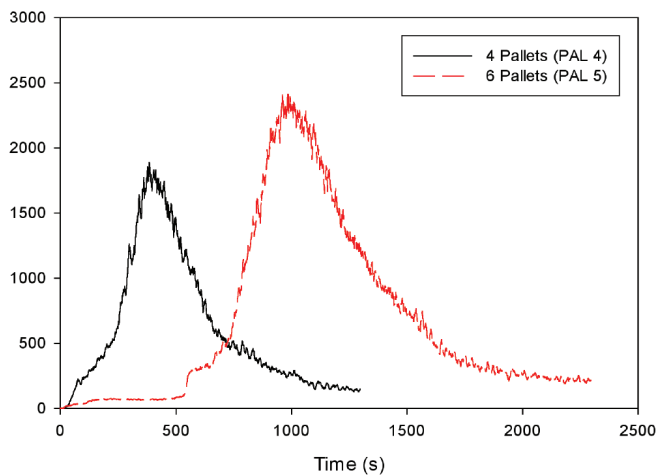


Figure A-7. HRR, Slow Ignition, Free Burn Scenario

Fast Ignition Scenario

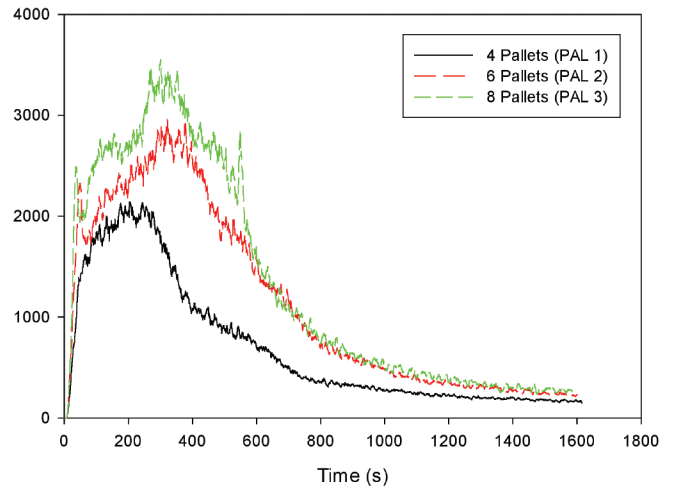


Figure A-8. HRR, Fast Ignition, Free Burn Scenario

Slow Ignition Scenario

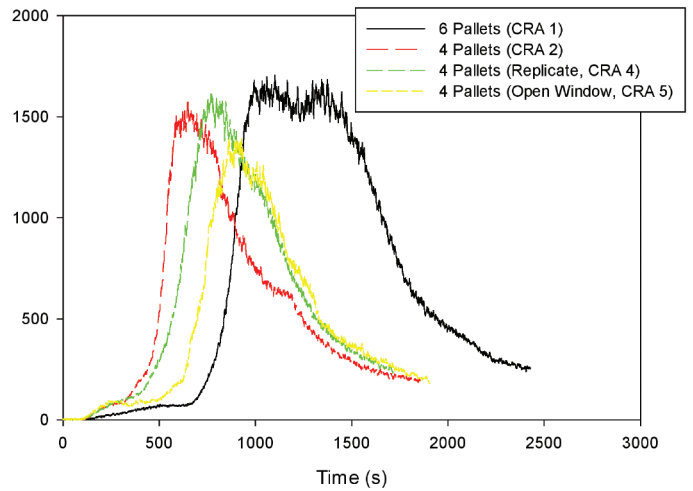


Figure A-9. HRR, Slow Ignition, Compartment Test

Fast Ignition Scenario

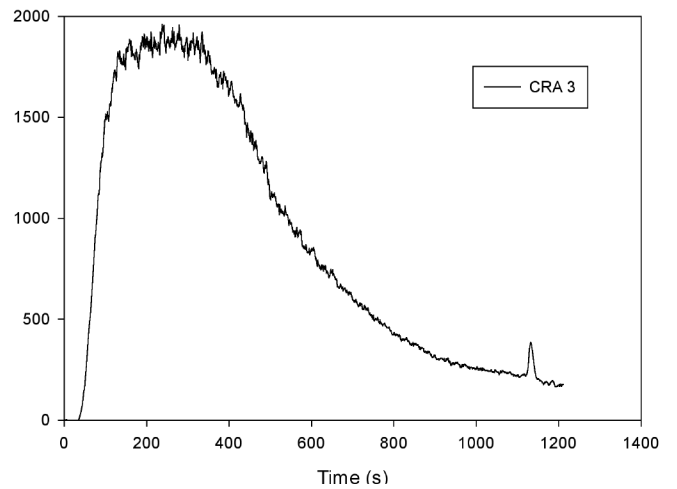
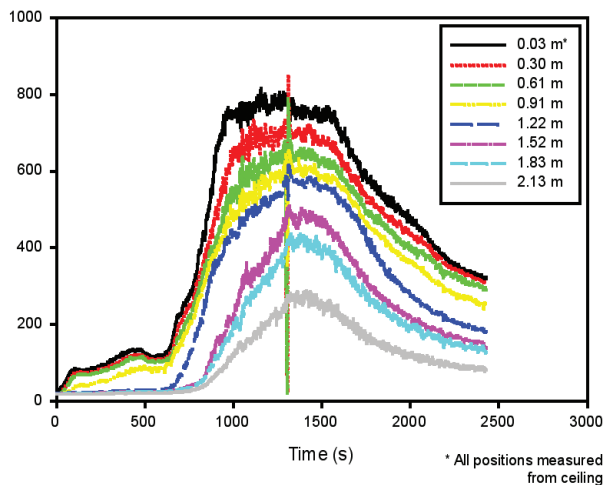
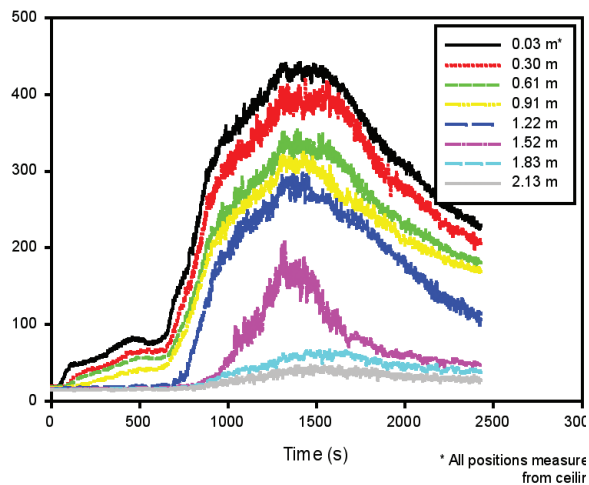


Figure A-10. HRR, Fast Ignition, Compartment Test

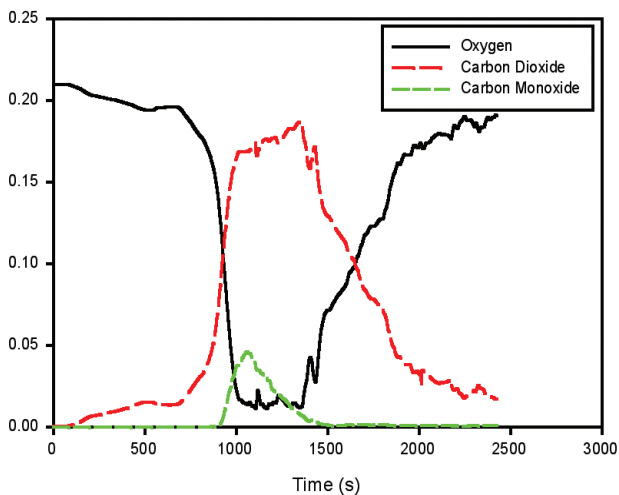
6 Pallets, Slow Ignition Scenario, Burn Room



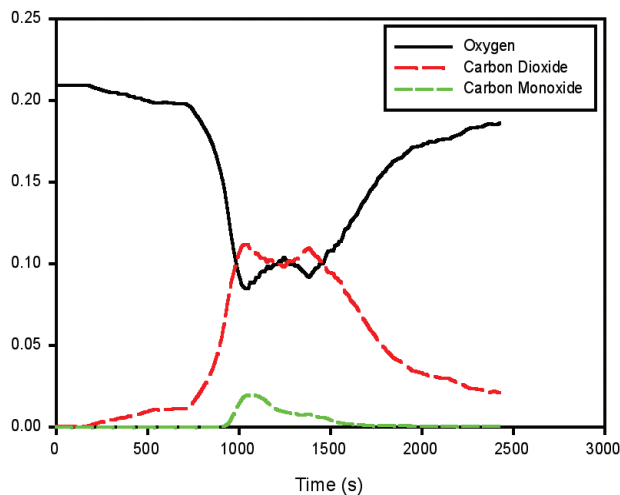
6 Pallets, Slow Ignition Scenario, Target Room



6 Pallets, Slow Ignition Scenario, Burn Room



6 Pallets, Slow Ignition Scenario, Target Room



6 Pallets, Slow Ignition Scenario, Burn Room

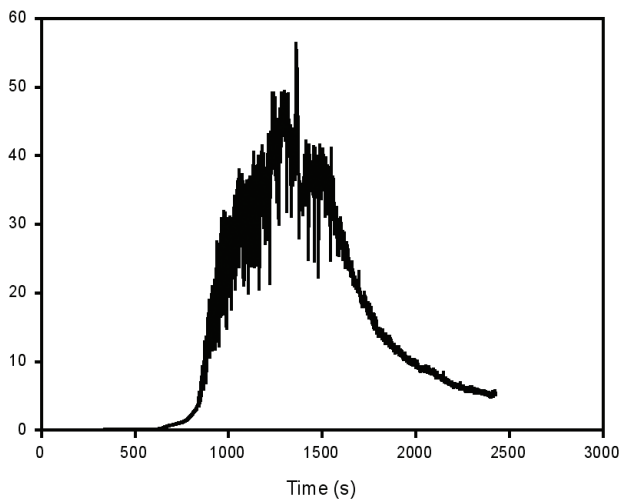
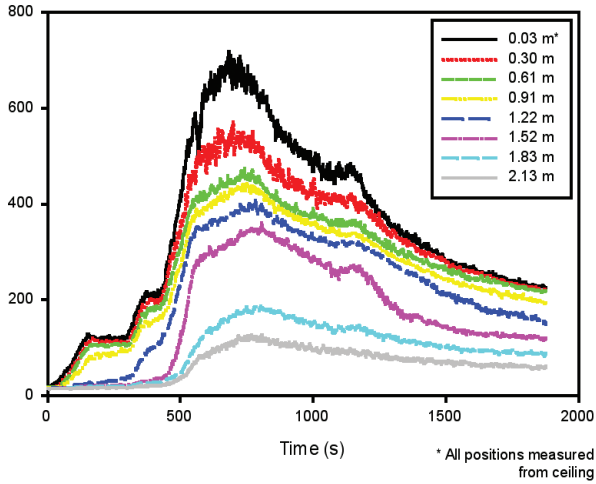
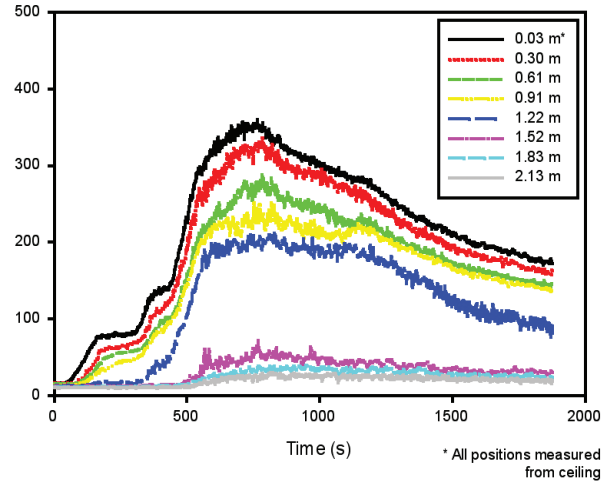


Figure A-11. Temperature, Gas Concentration, and Heat Flux During Test CRA 1, 6 Pallets, Slow Ignition Scenario

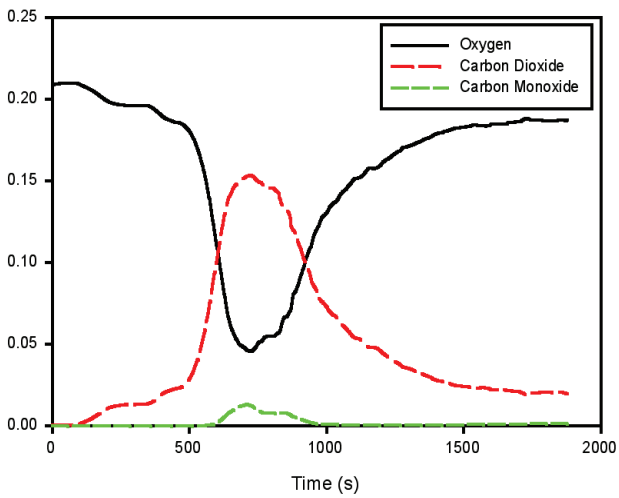
4 Pallets, Slow Ignition Scenario, Burn Room



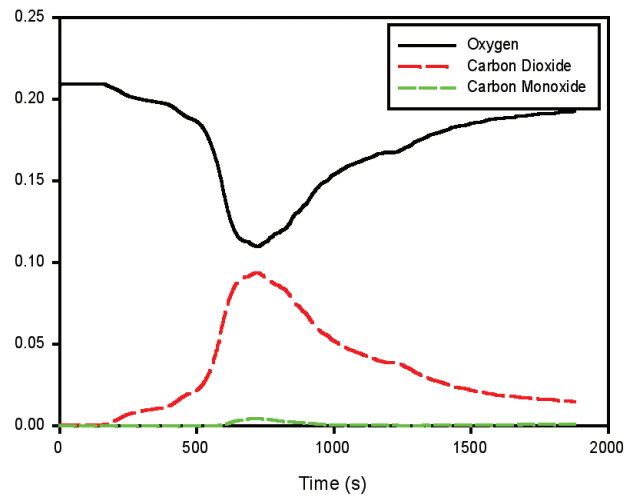
4 Pallets, Slow Ignition Scenario, Target Room



4 Pallets, Slow Ignition Scenario, Burn Room



4 Pallets, Slow Ignition Scenario, Target Room



4 Pallets, Slow Ignition Scenario, Burn Room

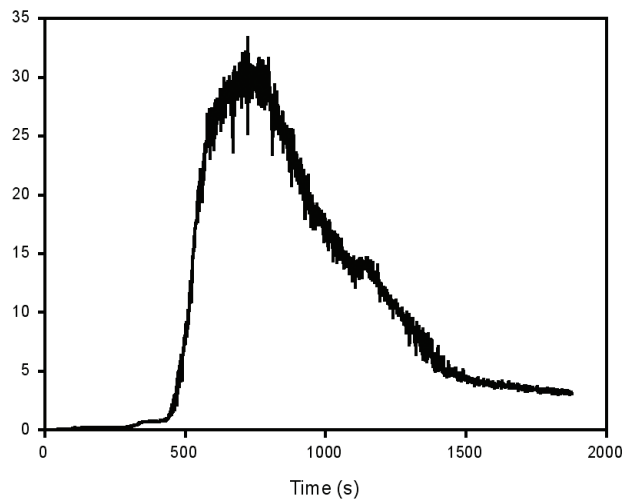
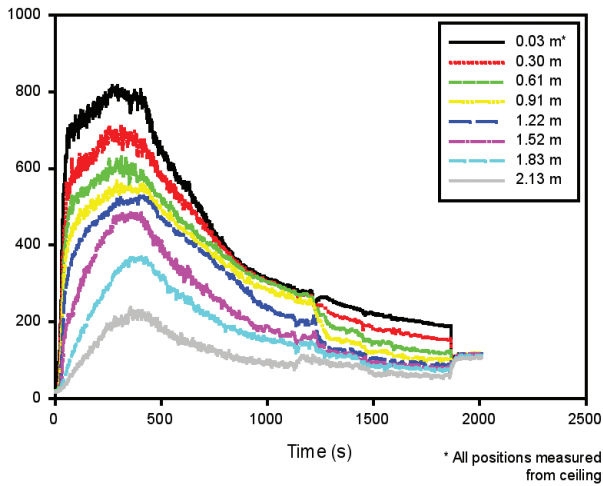
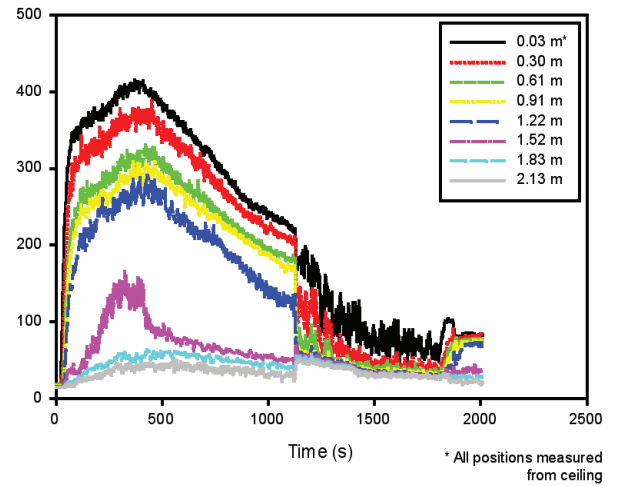


Figure A-12. Temperature, Gas Concentration, and Heat Flux During Test CRA 2, 4 Pallets, Slow Ignition Scenario

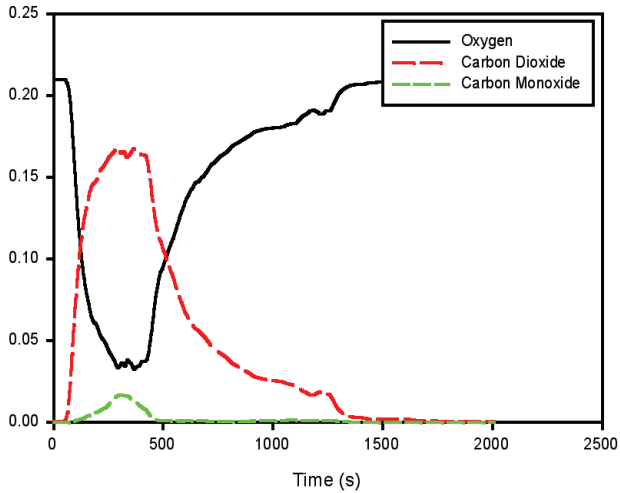
4 Pallets, Fast Ignition Scenario, Burn Room



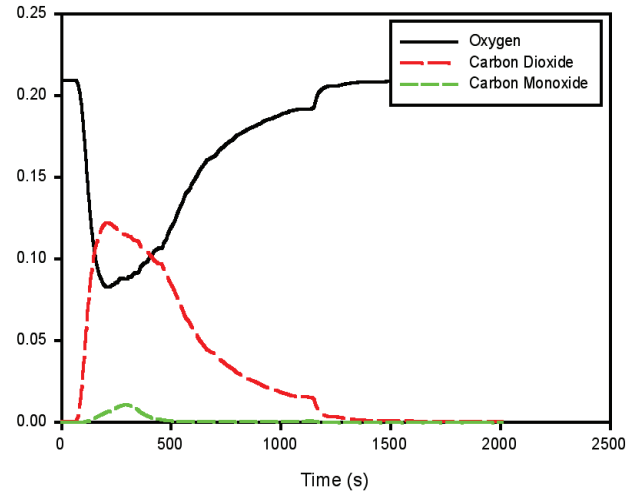
4 Pallets, Fast Ignition Scenario, Target Room



4 Pallets, Fast Ignition Scenario, Burn Room



4 Pallets, Fast Ignition Scenario, Target Room



4 Pallets, Fast Ignition Scenario, Burn Room

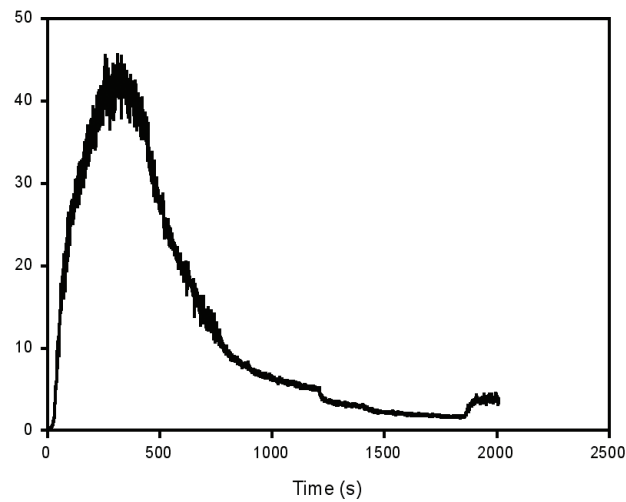
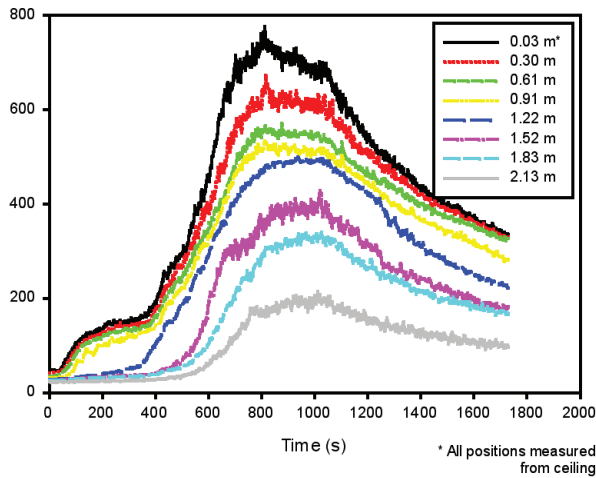
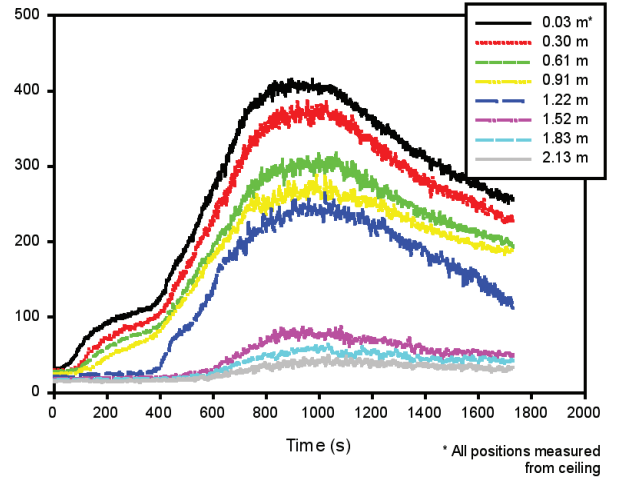


Figure A-13. Temperature, Gas Concentration, and Heat Flux During Test CRA 3, 4 Pallets, Fast Ignition Scenario

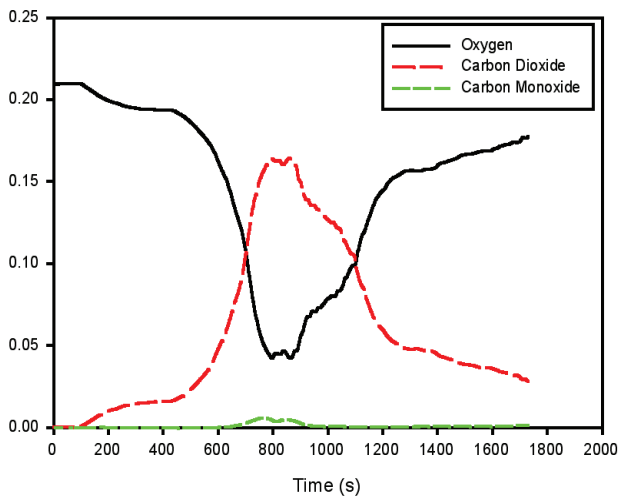
4 Pallets, Slow Ignition Scenario, Burn Room
(Replicate)



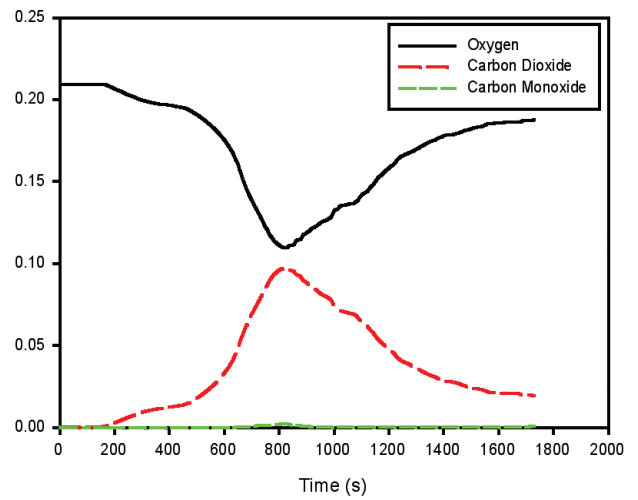
4 Pallets, Slow Ignition Scenario, Target Room
(Replicate)



4 Pallets, Slow Ignition Scenario, Burn Room
(Replicate)



4 Pallets, Slow Ignition Scenario, Target Room
(Replicate)



4 Pallets, Slow Ignition Scenario, Burn Room
(Replicate)

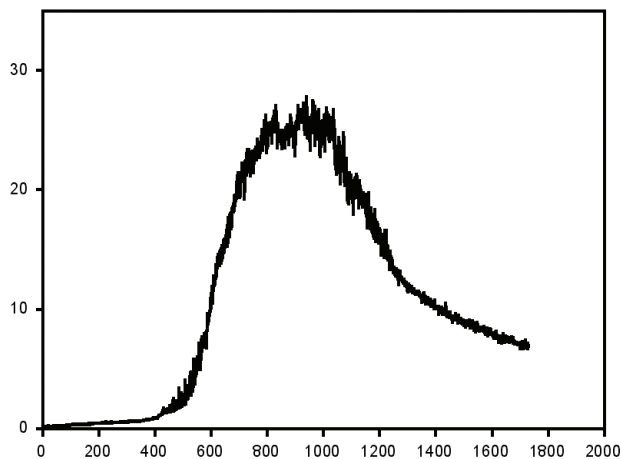
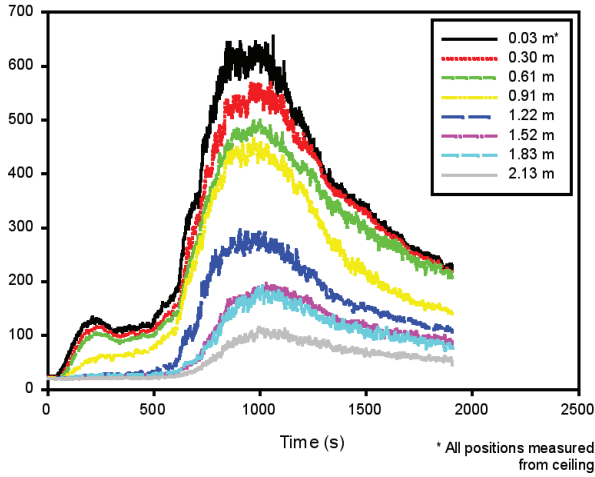
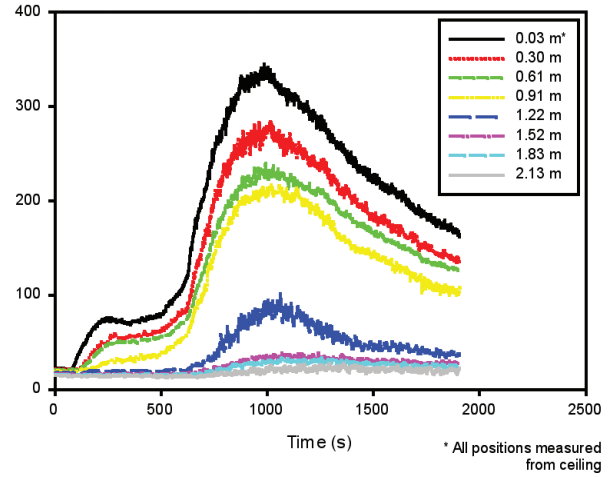


Figure A-14. Temperature, Gas Concentration, and Heat Flux During Test CRA 4, 4 Pallets, Slow Ignition Scenario (Replicate)

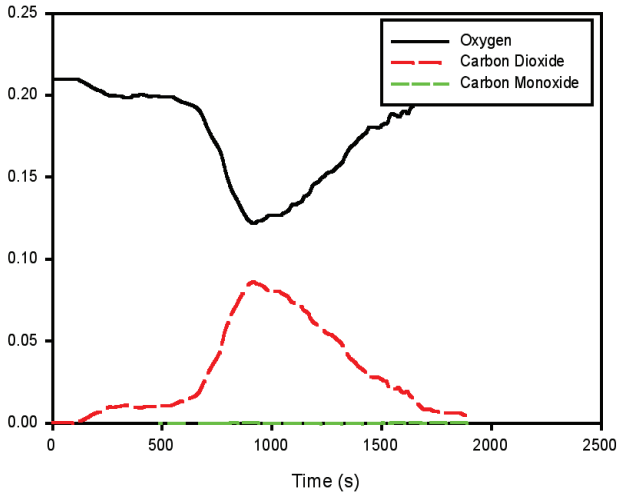
4 Pallets, Slow Ignition Scenario, Burn Room
(Open Window Venting)



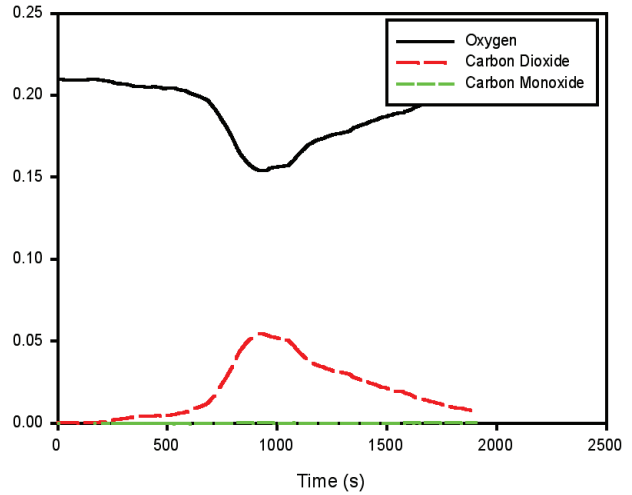
4 Pallets, Slow Ignition Scenario, Target Room
(Open Window Venting)



4 Pallets, Slow Ignition Scenario, Burn Room
(Open Window Venting)



4 Pallets, Slow Ignition Scenario, Target Room
(Open Window Venting)



4 Pallets, Slow Ignition Scenario, Burn Room
(Open Window Venting)

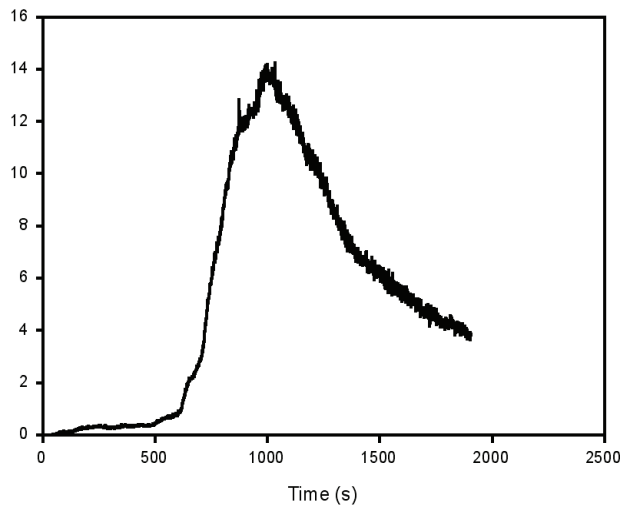


Figure A-15. Temperature, Gas Concentration, and Heat Flux During Test CRA 5, 4 Pallets, Slow Ignition Scenario
(Open Window Venting)
Page 976 of 1153

APPENDIX B: Designing Fuel Packages for Field Experiments

Based upon the results of the laboratory experiments, the project team determined that four pallets would provide both a realistic fire scenario, as well as a repeatable and well-characterized fuel source. Varying the placement and quantity of excelsior provided significant variance in the rate of fire growth. Prior to finalization of the fuel package and construction specifications, modeling was used to ensure that the combination of fuel and residential geometry would result in untenable conditions throughout the structure without subjecting the firefighters to unsafe testing conditions. Therefore, CFAST (the consolidated fire and smoke transport model (Jones 2000))

and FDS (fire dynamics simulator model (McGrattan 2006)) were used to predict the temperatures and toxic species within the structure as a function of the experimentally determined heat release rates. The results summarized below confirmed that the building geometry and fuel package produced adequate variation in tenability conditions in the residential structure and ensured that the room of origin would not reach flashover conditions (a key provision of *NFPA 1403*). Meeting these conditions provided the foundation for experiments to meet the two primary objectives of fire department response: preservation of life and property.

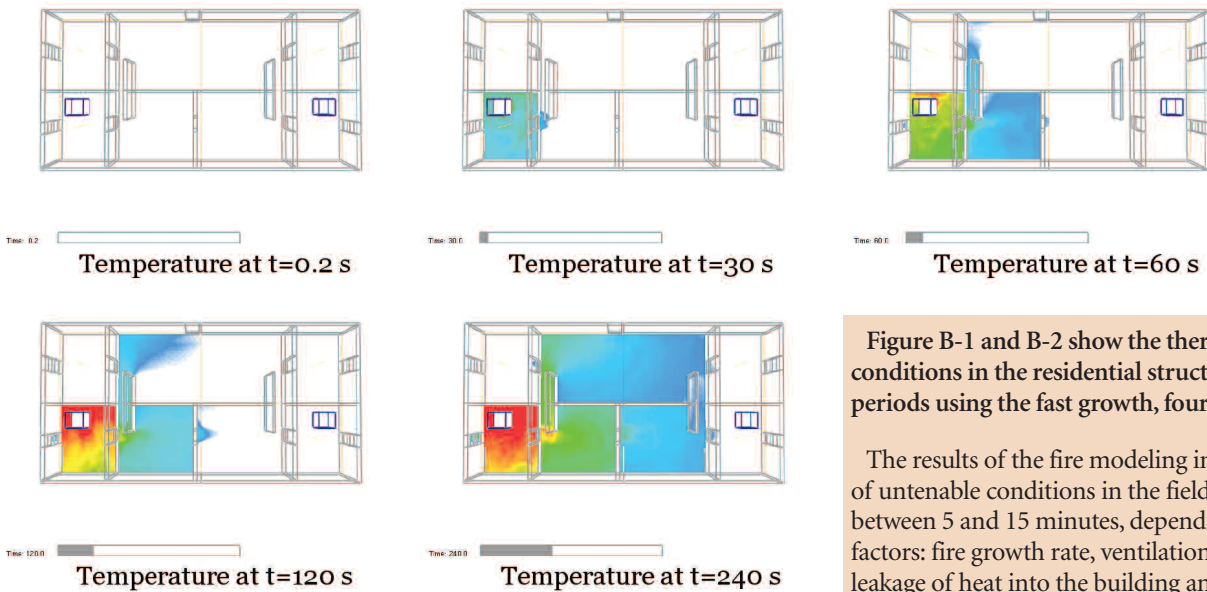


Figure B-1 and B-2 show the thermal and smoke conditions in the residential structure at different time periods using the fast growth, four pallet fuel package. The results of the fire modeling indicated development of untenable conditions in the field experiments between 5 and 15 minutes, depending upon several factors: fire growth rate, ventilation conditions, the total leakage of heat into the building and through leakage paths, and firefighter intervention. This time frame allowed for differentiation of the effectiveness of various fire department deployment models.

Figure B-1: Time-dependent temperature contours in field structure with fast growth fire

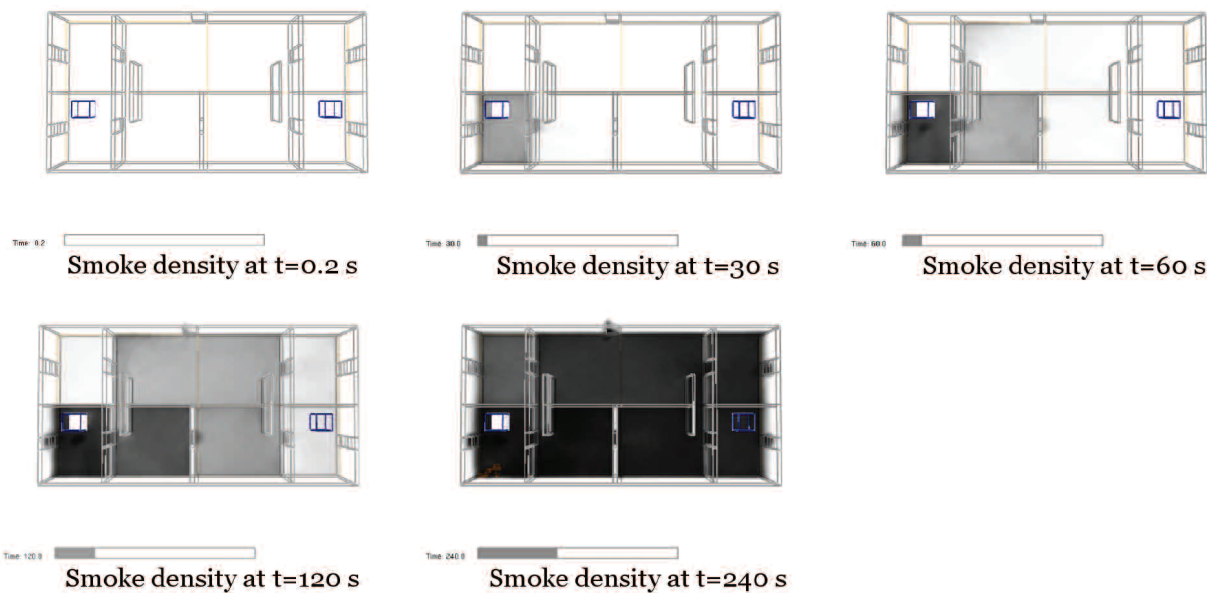


Figure B-2: Time-dependent smoke density contours in field structure with fast growth fire

APPENDIX C: Temporary Burn Prop Construction and Instrumentation

Through the generosity of the Montgomery County (MD), an open space was provided to construct a temporary burn prop at the Montgomery County Fire and Rescue Training Facility in Rockville, MD. The area had ready access to water and electrical utilities. A licensed general contractor was retained, including a structural engineer for the design of critical ceiling members, and the burn prop was constructed over a several month period in late 2008.

The burn prop consisted of two 2,000 ft.² (186 m²) floors totaling 4,000 ft.² (372 m²). An exterior view of two sides of the burn prop is shown in Figure C-1.

Additional partitions were installed by NIST staff to create a floor plan representative of a two-story, 186 m² (2,000 ft.²) single family residence. Note that the structure does not have a basement and includes no exposures. The overall dimensions are consistent with the general specifications of a typical low hazard residential structure that many fire departments respond to on a regular basis, as described in *NFPA 1710*.

Further details about typical single family home designs are not provided in the standard. Therefore, a floor plan representative of a typical single family home was created by the project team. Details and floor plan dimensions are shown in Figure C-2.



Figure C-1: View of two sides of the burn prop

The black lines indicate load-bearing reinforced concrete walls and red lines indicate the gypsum over steel stud partition walls. The ceiling height, not shown in Figure C-2, is 94 in. (2.4 m) throughout the entire structure except in the burn compartments, where the ceiling height is 93 in. (2.4 m). The purpose of the partition walls was to symmetrically divide the structure about the short axis in order to allow one side of the test structure to cool down and dry-out after a fire test with suppression while conducting experiments on the other side.

The concrete walls original to the burn prop were 8 in. (204 mm) thick steel reinforced poured concrete and the floors on the first level and second levels were 4 in. (102 mm) thick poured concrete. The support structure for the second floor and the roof consisted of corrugated metal pan welded to open web steel joists. The dimensions of the joists are shown in Figure C-3. The ceiling was constructed from 1/2 in. (13 mm) thick cement board fastened to the bottom chord of the steel joists. Partition walls were constructed from 5/8 in. (17 mm) thick gypsum panels attached to 20 gauge steel studs fastened to steel track, spaced 16 in. (407 mm) on center.

Additional construction was implemented in the burn compartments to address thermal loading and hose stream impingement concerns. Spray-on fireproofing was applied to the steel joists prior to fastening the ceiling, as shown in Figure C-4. The ceilings were constructed with three layers of 1/2 in. (13 mm) cement board, as opposed to one layer construction in the rest of the building. Each layer was fastened in a different direction so that seams of adjacent layers ran orthogonally. The difference in ceiling heights previously

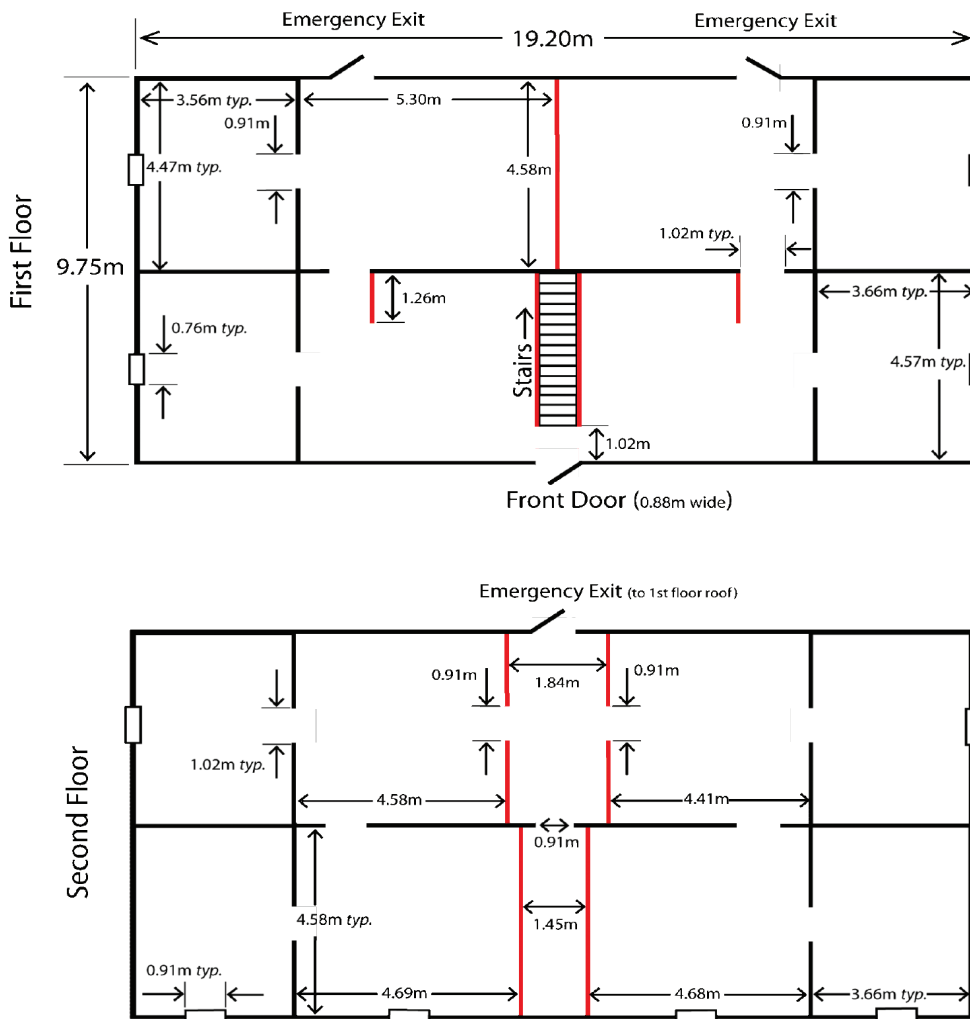


Figure C-2: Dimensions of the Burn Prop Floor Plan

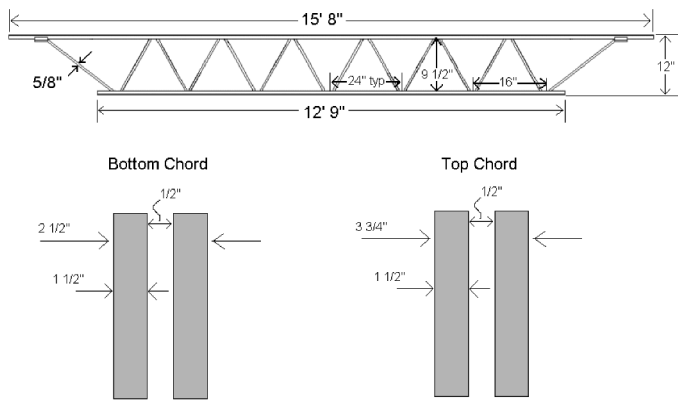


Figure C-3: Structural Steel Dimensions

mentioned is the result of the two additional sheets of cement board. The burn compartment walls were constructed from a single layer of 1/2 in. (13 mm) cement board over a single layer of 5/8 in. (16 mm) gypsum board, attached to 7/8 in. (22 mm) offset metal furring strips. Particular care was taken so that all ceiling and partition wall seams were filled with chemically-setting type joint compound to prevent leakage into the interstitial space between the ceiling and the floor above. After construction of the ceiling was complete, a dry-standpipe deluge system was installed with one head in each burn room to provide emergency suppression. During an experiment, a 2.5 in. (104 mm) ball valve fitting was attached and charged from a nearby hydrant. Figure

C-5 was taken during the process of replacing “worn out” ceiling panels and shows the additional construction implemented in the burn room as well as the deluge sprinkler head.

Windows and exterior doors were constructed to be non-combustible. Windows were fabricated from 0.25 in. (10 mm) thick steel plate and the exterior doors were of prefabricated hollow-core steel design. The windows on the first floor were 30 in. (0.76 m) width x 36 in. (0.91 m) height and 36 in. (0.91 m) width x 40 in. (1.02 m) height on the second floor. Exterior doors were 35.8 in. (0.88 m) width x 80.5 in. (2.03 m) height. There were no doors attached to the doorways inside the structure. Figure C-6 shows the construction of the burn prop windows as well as the NFPA 1403-compliant latch mechanism. Figure C-7 is a picture of the interior of the burn prop taken just outside the burn compartment, showing the construction of the ceiling, interior doorway construction, gypsum wing wall and the joint compound used to seal seams in the ceiling and walls.

Instrumentation

After construction, the instrumentation to measure the propagation of products of combustion was installed throughout the burn prop. The instrumentation plan was designed to measure gas temperature, gas concentrations, heat flux, visual obscuration, video, and time during the experiments. The data were recorded at intervals of 1 s on a computer based data acquisition system. A schematic plan view of the instrumentation arrangement is shown in Figure C-8.

Table C-1 gives the locations of all of the instruments.



Figure C-4: Fireproofing added to structural steel



Figure C-5: Additional construction of burn room walls and ceiling and deluge sprinkler head.

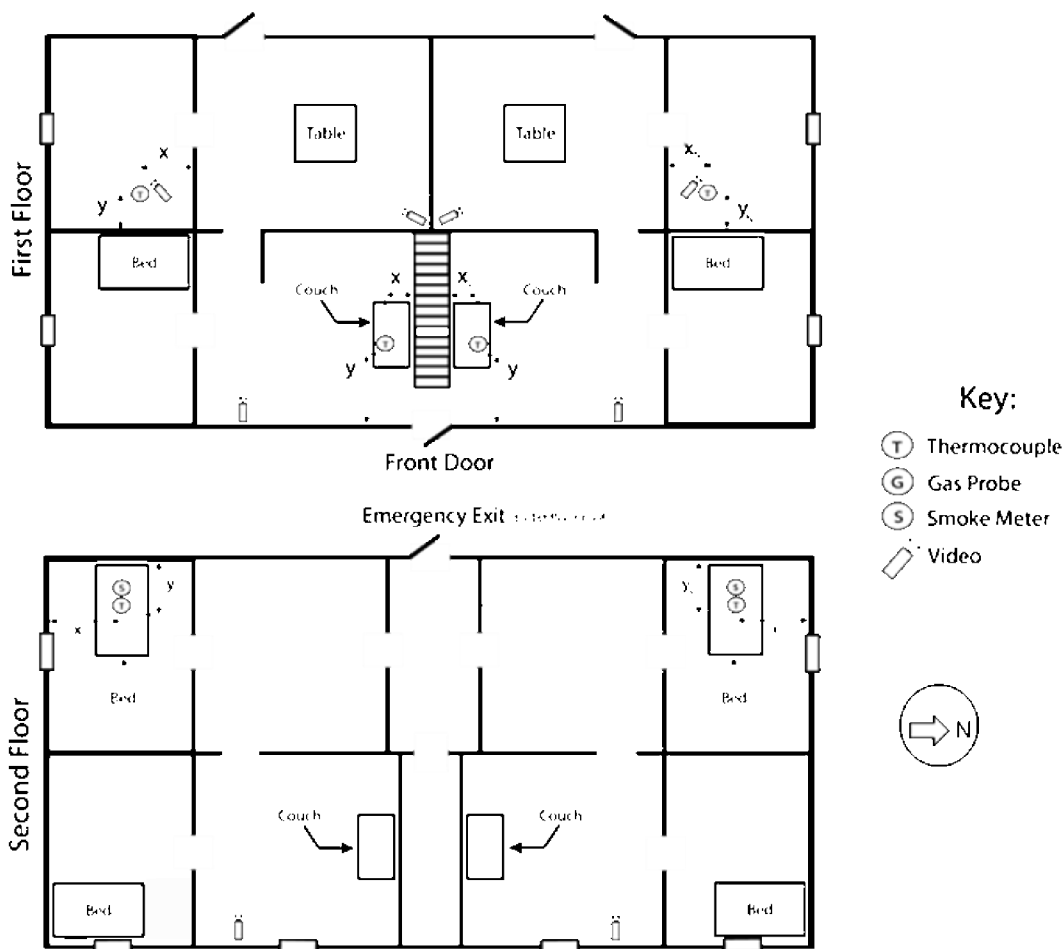


Figure C-6: Window & Latch Construction



Figure C-7: Interior View of Burn Prop

Measurements taken prior to the compartment fire experiments were length, wood moisture content, fuel mass and weather conditions (relative humidity, temperature, wind speed and direction). Gas temperatures were measured with two different constructs of type K (Chromel-Alumel) thermocouples. All thermocouples outside the burn compartments were fabricated from 30 gauge glass-wrapped thermocouple wire. Vertical arrays of three thermocouples were placed near the front door on the north side and south sides of the stairwell on the first floor. On the second floor, vertical arrays of eight thermocouples were placed near the center of each target room. Inside the burn compartments, seven 3.2 mm (0.125 in.) exposed junction thermocouples and 0.76 m (30 in.) SUPER OMEGACLAD XL® sheathed thermocouple probes were arranged in a floor-to-ceiling array. Figure C-9 shows the vertical array in the burn



compartment. Type K thermocouple probes were chosen because of their ability to withstand high temperature, moisture and physical abuse resulting from physical contact with hose streams and firefighters. To protect the extension wire and connectors from the effects of heat and water, through-holes were drilled in the burn compartment walls and the sheaths were passed through from the adjacent compartment. To prevent leakage through the holes, all void spaces were tightly packed with mineral wool. Inside the burn compartment the end of each probe was passed through an angle iron stand, and fastened to the floor and ceiling to provide additional protection from physical contact with firefighters and to ensure that the measurement location remained fixed throughout the experiments. In consideration of the risk associated with heating the open web steel joists, additional thermocouples were placed above each burn compartment to monitor the temperature of the interstitial space.

Figure C-8: Instrumentation & Furniture Prop Layout

Table C-1: Detailed locations of instruments within respective rooms

Floor	Instrument	X _S [m]	Y _S [m]	Z _S [m]	X _N [m]	Y _N [m]	Z _N [m]	X _C [m]	Y _C [m]	Z _C [m]
1	Thermocouple	0.76	0.51	0.3, 0.61, 0.91, 1.22, 1.52, 1.83, 2.13	0.76	0.51	0.3, 0.61, 0.91, 1.22, 1.52, 1.83, 2.13	Find	Find	0.91, 1.52, 2.41
	HF Gauge 1		N/A		0.91	0.91	0.17			
	HF Gauge 2				0.5	0.66	1			
2	Thermocouple	1.83	0.91	0.3, 0.61, 0.91, 1.22, 1.52, 1.83, 2.13, 2.41	1.83	0.91	0.3, 0.61, 0.91, 1.22, 1.52, 1.83, 2.13, 2.41		N/A	
	Smoke Meter	1.7	0.49	1.52	1.64	0.43	1.5			
	Gas Probe	1.83	0.91	1.7	1.83	0.91	1.52			

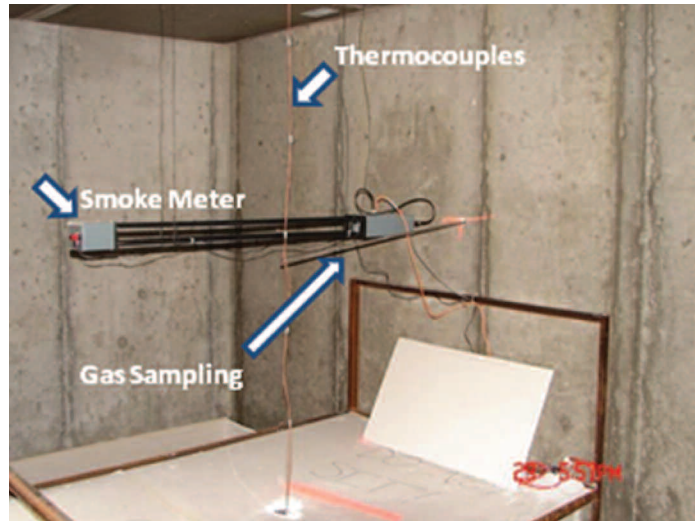


Figure C-9: Burn Room Thermocouple Array **Figure C-10: Target Room Instrument Cluster**

Gas concentrations were sampled at the same location in each target room. Both gas probes were plumbed to the same analyzer and isolated using a switch valve; gas was only sampled at one location during any given test. The gas sampling points were located in the center of the West wall (C Side) of both rooms, 1.5 m (5 ft.) above the floor. The sampling tubes were connected to a diaphragm pump which pulled the gas samples through stainless steel probes into a sample conditioning system designed to eliminate moisture in the gas sample. The dry gas sample was then piped to the gas analyzer setup. In all of the experiments, oxygen was measured using a paramagnetic analyzer and carbon monoxide and carbon dioxide were measured using a non-dispersive infrared (NDIR) analyzer. One floor-to-ceiling thermocouple array was also co-located with each sample port inlet.

Schmidt-Boelter heat flux gauges were placed in the North burn room. One gauge was located 1.0 m (3.3 ft.) above the floor and was oriented towards the fire origin (waste basket). This heat flux gauge was placed to characterize the radiative heat flux at the face piece level that would be experienced by a firefighter inside the room. A second flux gauge was placed on the floor in order to characterize the radiative heat flux from the upper layer and to make an estimate of how close the room was to flashing over with respect to time from ignition (using the common criteria of flashover occurring at $\sim 20\text{kW/m}^2$ at the floor level). The heat flux gauges were co-located with the thermocouple probe array.

All length measurements were made using a steel measuring tape. Wood moisture content measurements were taken using a non-insulated-pin type wood moisture meter. Fuel mass was measured prior to each experiment using a platform-style heavy duty industrial scale. Mass was not measured after each experiment because of the absorption of fire suppression water. Publicly accessible Davis Vantage Pro2 weather instrumentation (available via <http://www.wunderground.com>) located approximately two miles from the experimentation site was used to collect weather data in five minute intervals for the each day that the experiments were conducted. Figure C-10 is a photograph of the West wall of the North target room, showing the thermocouple array, the smoke obscuration meter, and a gas sampling probe used during the phase two experiments. The layout is identical to that in the South target room.

Non-combustible “prop” furniture was fabricated from angle iron stock and gypsum wallboard. The purpose of the furniture was twofold. The furniture was placed inside the burn prop to simulate realistic obstacles which obscure the search paths and hose stream advancement. The second use for the furniture was so that measurement instrumentation could be strategically placed within the frame of the furniture. This served to protect instrumentation from physical damage as a result of contact with firefighters and their tools. Figure C-11 shows an example of a table placed outside the burn room.

All instruments were wired to a centralized data collection room, shown in Figure C-12, which was attached as a separate space on one side of the building. This ensured physical separation for the data collection personnel from the effects of the fire, while minimizing the wire and tube lengths to the data logging equipment. Note that the roof of the instrument room was designed to serve as an additional means of escape for personnel from the second floor of the burn prop through a metal door. A railing was installed in order to minimize the fall risk in the event that the emergency exit was required.



Figure C-11: Non-combustible “Prop” Table



Outside



Inside

Figure C-12: Instrumentation Room

Table C-2: Dimensions and Mass of Furniture for Room and Contents Tests

Furniture	Width [m]	Depth [m]	Height [m]	Mass [kg]	Material
Couch	1.8	0.8	0.9	58.1	See D-3
Dresser	1.8	0.5	0.6	72.3	Laminated Particle Board
Nightstand	0.5	0.6	0.61	22.7	Laminated Particle Board
Chair	0.5	0.7	0.6	9.2	Wood, Fabric, and Polyurethane Foam
	Back cushion = 0.1m, Bottom cushion = 0.07m				
Blanket	1.8	-	2.4	1.3	100 % Cotton
Body Pillow	0.5	-	1.4	1.3	100 % cotton cover, polyester fill
Trash Can	0.4	0.3	0.4	1.3	Polypropylene
Towel	0.8	-	1.4	0.4	100 % Cotton
Wallboard	1.2	0.003	2.4	9.0	MDF

Table C-3: Materials in Couch

Body:	Resinated dyed fiber (unknown material) 3 %
	PU foam pad 46%
	Waste fiber batting (unknown material) 26 %
	Polyester fiber batting 25 %
Cushions:	PU foam pad 86 %
	Polyester fiber batting 14 %

APPENDIX D: Data Collection and Company Protocols for Time-to-Task Tests

Time-to-Task Data Collection Chart

Date _____ Start Time _____ End Time (all task complete) _____

Timer Name _____

Task	Start Time	Completion Time	Duration
Stop at Hydrant-- Wrap Hose			
Position Engine 1			
Conduct Size-up <ul style="list-style-type: none"> - 360 lap - Transmit report - establish command 			
Engage Pump			
Position attack line (stop time – at front door)			
Establish 2-in-2-out			
Charge Hydrant – supply attack Engine			
Establish RIT			
Gain/Force Entry			
Advance Line (stop time –water on fire)			
Deploy Back up line (stop time at front door)			
Advance Back up line/protect stairwell (start time at front door – Stop at stairwell)			
Conduct Primary Search			
Ground Ladders in Place			
Horizontal Ventilation (ground)			
Horizontal Ventilation (2 nd story)			
Control Utilities (interior)			
Control Utilities (exterior)			
Conduct Secondary Search			
Check for Fire Extension (walls)			
Check for Fire Extension (ceiling)			
Mechanical Ventilation			

Company Protocols: Crew Size of 2

(10 total personnel on scene)

PLUS 4 RIC – 1403 = total 14 needed

Tasks/Company	Engine 1/2	Truck 1/2	Engine 2/2	Battalion Chief/ Aide	Engine 3/2
Arrive on Scene - Arrive/ stop at hydrant - Position engine _____ - Layout report - On-scene report - Conduct size-up – 360° lap – incident action plan – offensive – detail incident (situation report) - Transmit size-up to responding units - Transfer command to chief	Driver Officer -	-Arrive - 360° lap		- Arrives - Assumes Command - Evaluates Resources - Establishes Command post - Evaluates exposure problems - Directs hose positioning - Coordinates Units - Transmits Progress reports - Changes strategy - Orders, records, and transmits results of primary and secondary searches - Declares fire under control	
Establish Supply line - Hydrant-Drop line (wrap) - Position engine - Pump engaged - 4” straight lay ----- - Supply attack engine	Driver/O Driver/O Driver/O	Position Truck	-Dry Lay – 2nd engine takes hydrant - Charged hydrant – Supply attack engine Driver		
Position attack line - Flake - Charge - Bleed ----- - Advance	Officer – (Not interior—just front door) Officer	Officer			
Establish - 2 in – 2 out (Initial RIT)		O/D			
Establish RIT (Dedicated)		O/D (performs all RIT duties)			

Tasks/Company	Engine 1/2	Truck 1/2	Engine 2/2	Battalion Chief/ Aide	Engine 3/2
Gain/ Force Entry		O/D			
Advance Line - scan search fire room - suppression	Officer (if officer commits then he must pass command)		Officer		
Deploy Back-up Line and protect stairwell					O/D
Complete Primary Search (in combo with Fire Attack)					O/D
Search Fire Floor					
Search other Floors					
Ventilation (vent for fire or vent for life) - Horizontal - Ventilation		Driver/Officer			
Ground Laddering – 2nd story windows, front and side, for firefighter means of egress and for vertical ventilation – 24’/28’ and roof ladder in case of vertical vent.		Driver /Officer			
Control Utilities (Interior and exterior)					Driver/Officer
Conduct Secondary Search - Search Fire Floors - Search other Floors Check for Fire Extension	Officer		Officer		
Open ceiling walls near fire on fire floor Check floor above for fire extension - wall breach - ceiling breach	Officer		Officer		O/D
Mechanical Ventilation		Driver/Officer			

Company Protocols: Crew Size of 3

(14 total personnel on scene)

PLUS 4 RIC – 1403 = total 18 needed

Tasks/Company	Engine 1/3	Truck 1/3	Engine 2/3	Battalion Chief/ Aide	Engine 3/2
Arrive on Scene - Arrive/ stop at hydrant - Position engine _____ - Layout report - On-scene report - Conduct size-up – 360° lap – incident action plan – offensive – detail incident (situation report) - Transmit size-up to responding units - Transfer command to chief	Driver Officer -	-Arrive - 360 degree lap		- Arrives - Assumes Command - Evaluates Resources - Establishes Command post - Evaluates exposure problems - Directs hose positioning - Coordinates Units - Transmits Progress reports - Changes strategy - Orders, records, and transmits results of primary and secondary searches - Declares fire under control	
Establish Supply line - Hydrant-Drop line (wrap) - Position engine - Pump engaged - 4” straight lay - ----- - Supply attack engine	Driver Driver Driver	Position Truck	Dry Lay – 2nd engine takes hydrant Charged hydrant – Supply attack engine Driver		
Position attack line - Flake - Charge - Bleed - Advance	D/RB				
Establish - 2 in – 2 out (Initial RIT)		O/RB			
Establish RIT (Dedicated)			O/RB— advance by foot to get to point of entry – performs all RIT duties		

Tasks/Company	Engine 1/3	Truck 1/3	Engine 2/3	Battalion Chief/ Aide	Engine 3/3
Gain/ Force Entry		O/RB			
Advance Line - scan search fire room - suppression	O/RB (if officer commits then he must pass command)				
Deploy Back-up Line and protect stairwell					O/RB
Complete Primary Search (in combo with Fire Attack)		O/ RB			
Search Fire Floor		-			
Search other Floors					
Ventilation (vent for fire or vent for life) - Horizontal - Ventilation		Driver			Driver
Ground Laddering – 2nd story windows, front and side, for firefighter means of egress and for vertical ventilation – 24’/28’ and roof ladder in case of vertical vent.		Driver			Driver
Control Utilities (Interior and exterior)		Driver (exterior) O/RB (Interior)			Driver (exterior)
Conduct Secondary Search - Search Fire Floors - Search other Floors					O/RB
Check for Fire Extension Open ceiling walls near fire on fire floor Check floor above for fire extension - wall breach - ceiling breach	O/RB				
Mechanical Ventilation		Driver			Driver

Company Protocols: Crew Size of 4

Total on scene = 18

PLUS 4 RIC – 1403 = total 22 needed

Tasks/Company	Engine 1/4	Truck 1/4	Engine 2/4	Battalion Chief/ Aide	Engine 3/4
Arrive on Scene - Arrive/ stop at hydrant - Position engine ----- - Layout report - On-scene report - Conduct size-up – 360° lap – incident action plan – offensive – detail incident (situation report) - Transmit size-up to responding units - Transfer command to chief	Driver Officer -	-Arrive - 360 degree lap		- Arrives - Assumes Command - Evaluates Resources - Establishes Command post - Evaluates exposure problems - Directs hose positioning - Coordinates Units - Transmits Progress reports - Changes strategy - Orders, records, and transmits results of primary and secondary searches - Declares fire under control	
Establish Supply line - Hydrant-Drop line (wrap) - Position engine - Pump engaged - 4” straight lay ----- - Supply attack engine (1 3/4”)	Driver Driver Driver	Position Truck	-Dry Lay – 2nd engine takes hydrant Charged hydrant – Supply attack engine Driver		
Position attack line - Flake - Charge - Bleed - Advance	RB/Nozzle LB/Flake Both advance line for fire attack				
Establish - 2 in – 2 out (Initial RIT)		D/LB			
Establish RIT (Dedicated)			O/LB/RB— advance by foot to get to point of entry – performs all RIT duties		

Tasks/Company	Engine 1/4	Truck 1/4	Battalion Chief/ Aide	Engine 3/4
Gain/ Force Entry		O/RB		
Advance Line - scan search fire room - suppression	RB/LB Officer – not on line (if officer commits then he must pass command)			
Deploy Back-up Line and protect stairwell				O/RB
Complete Primary Search (in combo with Fire Attack)		Officer and RB		
Search Fire Floor		-		
Search other Floors				
Ventilation - Horizontal - Ventilation		Driver and LB		
Ground Laddering – 2nd story windows, front and side, for firefighter means of egress and for vertical ventilation – 24’/28’ and roof ladder in case of vertical vent.		Driver /LB		
Control Utilities (Interior and exterior)		Driver/LB (control exterior)		
Conduct Secondary Search - Search Fire Floors - Search other Floors		O/RB (control interior)		D/LB
Check for Fire Extension Open ceiling walls near fire on fire floor Check floor above for fire extension - wall breach - ceiling breach	O/RB	O/RB		
Mechanical Ventilation		D/LB		

Company Protocols: Crew Size of 5

D/O/LB/RB/CB Total on scene = 22

PLUS 4 RIC – 1403 = total 26 needed

Tasks/Company	Engine 1/5	Truck 1/5	Engine 2/5	Battalion Chief/ Aide	Engine 3/4
Arrive on Scene - Arrive/ stop at hydrant - Position engine _____ - Layout report - On-scene report - Locate Fire - Conduct size-up – 360° lap – incident action plan – offensive – detail incident (situation report) - Transmit size-up to responding units - Transfer command to chief	Driver Officer -	-Arrive - 360 degree Size up.		- Arrives - Assumes Command - Evaluates Resources - Establishes Command post - Evaluates exposure problems - Directs hose positioning - Coordinates Units - Transmits Progress reports - Changes strategy - Orders, records, and transmits results of primary and secondary searches - Declares fire under control	
Establish Supply line - Hydrant-Drop line (wrap) - Position engine - Pump engaged - 4” straight lay ----- - Supply attack engine (1 3/4”)	Driver Driver Driver	Position Truck	-Dry Lay – 2nd engine takes hydrant Charged hydrant – Supply attack engine Driver		
Position attack line - Flake - Charge - Bleed - Advance	RB/Nozzle LB/Flake CB/ Control ----- Advance line for fire attack ----- The Officer responsibility is to supervise hose stretch /monitor safety and continually survey the scene				
Establish - 2 in – 2 out (Initial RIT)		D/LB			

Tasks/Company	Engine 1/5	Truck 1/5	Engine 2/5	Battalion Chief/ Aide	Engine 3/5
Establish RIT (Dedicated)			O/LB/RB— advance by foot to get to point of entry – performs all RIT duties		
Gain/ Force Entry		O/RB/CB			
Advance Line - scan search fire room - suppression	RB/LB/CB Officer – not on line (if officer commits then he must pass command)				
Insures first line flowing water— Deploy Back-up Line and protect stairwell (1 ¾")					O/RB/CB
Complete Primary Search (in combo with Fire Attack) Search Fire Floor – Search other floors-		Officer and RB/CB			
Ventilation (vent for fire or vent for life) - Horizontal - Vertical		Driver and LB			
Ground Laddering – 2nd story windows, front and side, for firefighter means of egress and for vertical ventilation – 24'/28' and roof ladder in case of vertical vent.		Driver /LB			
Control Utilities after search, force entry, venting and fire extinguished (Interior and exterior)		Driver/LB (control exterior) O/RB/CB (control interior)			
Conduct Secondary Search -Fire Floor -Primary and secondary search of entire floor above		D/LB			D/LB O/RB/CB
Check for Fire Extension Open ceiling walls near fire on fire floor Check floor above for fire extension wall breach ceiling breach-	O/RB				O/RB/CB

Appendix E: Statistical Analysis of Time to Task Test Data

Identifying Statistically Significant Differences in Crew Size and Stagger on a Number of Task Timings Using Regression Analyses of Times (Start, End and Duration) on Crew Size and Stagger

Task-Based Measure of Time	Crew Size			Stagger	Crew Size		Stagger
	3 vs. 2	4 vs. 3	5 vs. 4		5/4 vs. 3/2	Stagger	
Total time	X*	X				X	
Conduct size up (start)			X			X	
Conduct size up (end)						X	
Conduct size up (duration)							
Position attack line (start)	X					X	
Position attack line (duration)		X				X	
Establish 2 in 2 out (end)		X		X		X	X
Establish RIT (end)	na	na	na	na	na	na	na
Gain forced entry (start)		X				X	
Advance line (start)	X	X				X	
Advance line (end)	X		X			X	
Deploy backup line (start)						X	X
Deploy backup line (end)				X			X
Advance backup line (start)				X			X
Advance backup line (end)				X			X
Conduct primary search (start)	X	X				X	
Ground ladders in place (end)		X		X		X	o
Ground ladders in place (duration)				X		X	X
Horizontal ventilation Story 2 window 3 (Start)		X				X	
Horizontal ventilation Story 2 window 3 (End)		X				X	
Horizontal ventilation Story 2 window 2 (Start)		X				X	
Horizontal ventilation Story 2 window 2 (End)		X				X	
Horizontal ventilation Story 2 window 1 (Start)		X				X	
Horizontal ventilation Story 2 window 1 (End)		X				X	
Horizontal ventilation Story 1 window 2 (Start)	o	X				X	
Horizontal ventilation Story 1 window 2 (End)		X				X	
Control utilities (interior) (Start)	X	X				X	
Conduct Secondary Search (Start)	X					X	
Check for Fire Ext (walls) (Start)	X	X				X	
Check for Fire Ext (ceiling) (Start)		X				X	
Stretch time**	X				o		X

* An 'X' denotes statistical significance at the 0.05 level; a 'o' denotes significance at the 0.10 level.

Appendix F: All Regression Coefficients

Regression Models of Time to Task (in Seconds) as a Function of Crew Size and Stagger
(Standard Errors are in Parentheses underneath coefficients)

Measure of Task Time	Coefficients					
	Time measured	Crew size of 3	Crew size of 4	Crew size of 5	Close Stagger	Constant
Total time		-100.5 (50.29)	-408.33 (50.29)	-402.17 (50.29)	-40.83 (35.56)	1374.42 (39.77)
Conduct size up	Start	2.5 (5.97)	-5.167 (5.97)	-18.17 (5.97)	-1.25 (4.22)	335 (4.72)
Conduct size up	Complete	-5.167 (13.60)	-13.17 (13.60)	-38.33 (13.60)	-12 (9.62)	416 (10.75)
Conduct size up	Duration	-7.667 (12.10)	-8 (12.10)	-20.17 (12.10)	-10.75 (8.56)	81.04 (9.57)
Position attack line	Start	-63.5 (14.09)	-63.5 (14.09)	-69.67 (14.09)	-11.17 (9.96)	408.1 (11.14)
Position attack line	Duration	-16 (13.79)	-63.67 (13.79)	-61.67 (13.79)	5.167 (9.75)	160.6 (10.90)
Establish 2in - 2 out	Complete	-6.7E-15 (9.73)	-90 (9.73)	-90 (9.73)	-30 (6.88)	355 (7.69)
Establish RIT	Complete	70 0.00	70 0.00	70 0.00	-60 0.00	435 0.00
Gain forced entry	Start	-23.5 (19.66)	-54 (19.66)	-80.83 (19.66)	-20.83 (13.90)	528.6 (15.54)
Advance line	Start	-54 (18.83)	-97.83 (18.83)	-123.5 (18.83)	-17.5 (13.31)	586.3 (14.88)
Advance line	Complete	-61 (20.35)	-95.5 (20.35)	-134.7 (20.35)	-19.08 (14.39)	625.5 (16.08)
Deploy backup line	Start	-26 (17.11)	-42.67 (17.11)	-53.5 (17.11)	-96.75 (12.10)	641.5 (13.53)
Deploy backup line	Complete	-15.83 (33.49)	-56.17 (33.49)	-17.5 (33.49)	-53.75 (23.68)	728.9 (26.48)
Advance backup line	Start	-33 (29.65)	-66.83 (29.65)	-34.83 (29.65)	-63 (20.97)	779.7 (23.44)
advancebackupline2	Complete	-34.5 (29.73)	-68.17 (29.73)	-36.17 (29.73)	-63.75 (21.02)	784.4 (23.50)
conductprimarysearch1	Start	-147 (25.08)	-215.8 (25.08)	-211.5 (25.08)	0.1667 (17.74)	736.1 (19.83)
Ground ladders in place	Complete	-38 (48.38)	-196.5 (48.38)	-317.8 (48.38)	-69.83 (34.21)	1168 (38.24)
Ground ladders in place	Duration	-33.83 (48.12)	-83.67 (48.12)	-185.7 (48.12)	-72.08 (34.03)	617 (38.04)
Horizontal ventilation, second story, window 3	Start	-53.67 (30.75)	-217.8 (30.75)	-211 (30.75)	-26.59 (21.75)	759.1 (24.31)
Horizontal ventilation, second story, window 3	Complete	-64.83 (49.74)	-316 (49.74)	-353 (49.74)	-33.58 (35.17)	1088 (39.32)
Horizontal ventilation, second story, window 2	Start	-51.67 (37.20)	-265.8 (37.20)	-261.2 (37.20)	-18.83 (26.30)	885.1 (29.41)

All Regression Coefficients (CONTINUED)

Regression Models of Time to Task (in Seconds) as a Function of Crew Size and Stagger
(Standard Errors are in Parentheses underneath coefficients)

Horizontal ventilation, second story, window 2	Complete	-53.5	-259.8	-262.3	-13.33	931.3
		(39.97)	(39.97)	(39.97)	(28.26)	(31.60)
Horizontal ventilation, second story, window 1	Start	-70	-316.3	-348.8	-31.08	1038
		(48.37)	(48.37)	(48.37)	(34.20)	(38.24)
Horizontal ventilation, second story, window 1	Complete	-51.83	-219	-214.8	-24	805.7
		(33.71)	(33.71)	(33.71)	(23.83)	(26.65)
Horizontal ventilation, first story, window 2	Start	-87.17	-386.3	-428.5	-44.67	1200
		(45.13)	(45.13)	(45.13)	(31.91)	(35.68)
Horizontal ventilation, first story, window 2	Complete	-88.5	-391.5	-423.3	-44.17	1224
		(47.02)	(47.02)	(47.02)	(33.25)	(37.17)
Control utilities interior	Start	-136.5	-287.8	-300	-6.333	946.3
		(45.57)	(45.57)	(45.57)	(32.22)	(36.02)
Control utilities exterior	Start	6.667	-281.8	-312.8	-38.17	1063
		(70.21)	(70.21)	(70.21)	(49.65)	(55.51)
Conduct secondary search	Start	-92.5	-143	-152.7	-28.25	846
		(38.97)	(38.97)	(38.97)	(27.56)	(30.81)
Check for fire extension walls	Start	-453.8	-535.3	-608.7	-38.25	1155
		(38.28)	(38.28)	(38.28)	(27.07)	(30.26)
Check for fire extension ceiling	Start	-206.3	-349.7	-292.7	-2.833	1086
		(48.29)	(48.29)	(48.29)	(34.14)	(38.17)

Regression Models of Time to Task (in Seconds) as a Function of Combined Crew Size and Stagger (Standard Errors appear in Parentheses)

		Coefficients		
Measure of Task Time*	Time measured	Crew size of	Close	Constant
		4/5 vs. 3/2	Stagger	
Total time		-355 (37.23)	-40.83 (37.23)	1324.00 (32.24)
Conduct size up	Start	-12.92 (4.50)	-1.25 (4.50)	336.2 (3.90)
Conduct size up	Complete	-23.17 (9.97)	-12 (9.97)	413.4 (8.64)
Conduct size up	Duration	-10.25 (8.44)	-10.75 (8.44)	77.21 (7.31)
Position attack line	Start	-34.83 (13.66)	-11.17 (13.66)	376.3 (11.83)
Position attack line	Duration	-54.67 (9.60)	5.167 (9.60)	152.6 (8.31)
Establish 2in - 2 out	Complete	-90 (6.55)	-30 (6.55)	355 (5.67)
Establish RIT	Complete	35 (10.80)	-60 (10.80)	470 (9.35)
Gain forced entry	Start	-55.67 (14.32)	-20.83 (14.32)	516.8 (12.40)
Advance line	Start	-83.67 (15.67)	-17.5 (15.67)	559.3 (13.57)
Advance line	Complete	-84.58 (17.67)	-19.08 (17.67)	595 (15.31)
Deploy backup line	Start	-35.08 (12.30)	-96.75 (12.30)	628.5 (10.65)
Deploy backup line	Complete	-28.92 (23.43)	-53.75 (23.43)	721 (20.29)
Advance backup line	Start	-34.33 (21.17)	-63 (21.17)	763.2 (18.33)
advancebackupline2	Complete	-34.92 (21.27)	-63.75 (21.27)	767.1 (18.42)
conductprimarysearch1	Start	-140.2 (28.28)	0.1667 (28.28)	662.6 (24.49)
Ground ladders in place	Complete	-238.2 (37.99)	-69.83 (37.99)	1149 (32.90)
Ground ladders in place	Duration	-117.7 (36.37)	-72.08 (36.37)	600.1 (31.49)
Horizontal ventilation, second story, window 3	Start	-187.6 (22.31)	-26.59 (22.31)	732.3 (19.32)
Horizontal ventilation, second story, window 3	Complete	-302.1 (35.38)	-33.58 (35.38)	1056 (30.64)

Regression Models of Time to Task (in Seconds) as a Function of Combined Crew Size and Stagger (CONTINUED) (Standard Errors appear in Parentheses)

Horizontal ventilation, second story, window 2	Start	-237.7 (26.27)	-18.83 (26.27)	859.3 (22.75)		
Horizontal ventilation, second story, window 2	Complete	-234.3 (28.12)	-13.33 (28.12)	904.6 (24.36)		
Horizontal ventilation, second story, window 1	Start	-297.6 (34.64)	-31.08 (34.64)	1003 (30.00)		
Horizontal ventilation, second story, window 1	Complete	-191 (24.05)	-24 (24.05)	779.8 (20.83)		
Horizontal ventilation, first story, window 2	Start	-363.8 (33.83)	-44.67 (33.83)	1156 (29.30)		
Horizontal ventilation, first story, window 2	Complete	-363.2 (34.80)	-44.17 (34.80)	1180 (30.14)		
Control utilities interior	Start	-225.7 (37.23)	-6.333 (37.23)	878.1 (32.25)		
Control utilities exterior	Start	-300.7 (47.48)	-38.17 (47.48)	1066 (41.12)		
Conduct secondary search	Start	-101.6 (29.88)	-28.25 (29.88)	799.7 (25.88)		
Check for fire extension walls	Start	-345.1 (75.46)	-38.25 (75.46)	927.9 (65.35)		
Check for fire extension ceiling	Start	-218 (46.32)	-2.833 (46.32)	983.1 (40.12)		
Stretch time = advance line minus position engine	Duration	-75.7 (16.68)	-17.2 (16.68)	273.3 (14.44)		
* Standard errors are in parentheses below coefficient value						
		Crew size of 3	Crew size of 4	Crew size of 5	Close Stagger	Constant
Stretch time = advance line minus position engine	Duration	-57.3 (19.39)	-86.7 (19.39)	-122.0 (19.39)	-17.2 (13.71)	301.9 (15.33)

APPENDIX G: Measurement Uncertainty

The measurements of length, temperature, mass, moisture content, smoke obscuration, and time taken in these experiments have unique components of uncertainty that must be evaluated in order to determine the fidelity of the data. These components of uncertainty can be grouped into two categories: Type A and Type B. Type A uncertainties are those evaluated by statistical methods, such as calculating the standard deviation of the mean of a set of measurements. Type B uncertainties are based on scientific judgment using all available and relevant information. Using relevant information, the upper and lower limits of the expected value are estimated so that the probability that the measurement falls within these limits is essentially 100 %. After all the component uncertainties of a measurement have been identified and evaluated it is necessary to use them to compute the combined standard uncertainty using the law of propagation of uncertainty (the “root sum of squares”). Although this expresses the uncertainty of a given measurement, it is more useful in a fire model validation exercise to define an interval for which the measurement will fall within a certain level of statistical confidence. This is known as the expanded uncertainty. The current international practice is to multiply the combined standard uncertainty by a factor of two ($k=2$), giving a confidence of 95 %.

Length measurements of room dimensions, openings and instrument locations were taken using a steel measuring tape with a resolution of 0.02 in (0.5 mm). However, measurement error due to uneven and unlevel surfaces results in an estimated uncertainty of ± 0.5 % for length measurements taken on the scale of room dimensions. The estimated total expanded uncertainty for length measurements is ± 1.0 %.

The standard uncertainty of the thermocouple wire itself is 1.1°C or 0.4 % of the measured value, whichever is greater (Omega 2004). The estimated total expanded uncertainty associated with type K thermocouples is approximately ± 15 %. Previous work done at NIST has shown that the uncertainty of the environment surrounding thermocouples in a full-scale fire experiment has a significantly greater uncertainty (Blevins 1999) than the uncertainty inherent with thermocouple design. Furthermore, while a vertical thermocouple array gives a good approximation of the temperature gradient with respect to height, temperatures cannot be expected to be uniform across a plane at any height because of the dynamic environment in a compartment fire. Inaccuracies of thermocouple measurements in a fire environment can be caused by:

- Radiative heating or cooling of the thermocouple bead
- Soot deposition on the thermocouple bead which change its mass, emissivity, and thermal conductivity
- Heat conduction along thermocouple wires
- Flow velocity over the thermocouple bead

To reduce these effects, particularly radiative heating and cooling, thermocouples with smaller diameter beads were chosen. This is particularly important for thermocouples below the interface because the radiative transfer between the surrounding room surfaces will be significantly less uniform than if the thermocouple were in the hot gas layer. It is suggested in [Pitts] that it may be possible to correct for radiative transfer given enough sufficient

knowledge about thermocouple properties and the environment. However, measurements of local velocity and the radiative environment were not taken. Additionally, the probes were located away from the burn compartment walls in order to avoid the effects of walls and corners.

The gas measurement instruments and sampling system used in this series of experiments have been demonstrated to have an expanded ($k = 2$) relative uncertainty of ± 1 % when compared with span gas volume fractions (Matheson). Given the limited set of sampling points in these experiments, an estimated uncertainty of ± 10 % is being applied to the results.

The potential for soot deposition on the face of the water-cooled total heat flux gauges contributes significant uncertainty to the heat flux measurements. Calibration of heat flux gauges was completed at lower fluxes and then extrapolated to higher values and this resulted in a higher uncertainty in the flux measurement. Combining all of component uncertainties for total heat flux resulted in a total expanded uncertainty of -24 % to +13 % for the flux measurements.

Prior to experimentation, ten of the wooden pallets used in the fuel packages were randomly selected for measurement. Two measurements were taken, moisture content and mass. Moisture content was measured using a pin-type moisture meter with a moisture measurement range of 6 % to 40% and an accuracy of <0.5 % of the measured value between 6 % and 12 % moisture content. Mass measurements were made with an industrial bench scale having a range of 0kg to 100 kg, a resolution of 0.1 kg and an uncertainty of ± 0.1 kg.

All timing staff were equipped with the same model of digital stopwatch with a resolution of 0.01 seconds and an uncertainty of ± 3 seconds per 24 hours; the uncertainty of the timing mechanism in the stopwatches is small enough over the duration of an experiment that it can be neglected. There are three components of uncertainty when using people to time fire fighting tasks. First, timers may have a bias depending on whether they record the time in anticipation of, or reaction to an event. A second component exists because multiple timers were used to record all tasks. The third component is the mode of the stimulus to which the staff is reacting: audible (firefighters announcing task updates over the radio) or visual (timing staff sees a task start or stop).

Milestone events in these experiments were recorded both audibly and visually. A test series described in the *NIST Recommended Practice Guide for Stopwatch and Timer Calibrations* found the reaction times for the two modes of stimulus to be approximately the same, so this component can be neglected. Because of the lack of knowledge regarding the mean bias of the timers, a rectangular distribution was assumed and the worst case reaction time bias of 120 ms was used, giving a standard deviation of 69 ms. The standard deviation of the reaction time was assumed to be the worst case of 230 ms. The estimated total expanded uncertainty of task times measured in these experiments is 240 ms.

An additional component of uncertainty exists for the time measurement of the application of water on the fire. In order to measure this time, timing staff were required to listen for radio confirmation that suppressing water had been applied by the interior attack crew. This process required a member of the interior crew to find and manipulate their microphone, wait for the radio to access a repeater, and transmit the message. Because of the lack of

knowledge about the distributions of time it takes for each part of this process, all parts are lumped into a single estimate of uncertainty and a rectangular distribution is assumed. This is most reasonably estimated to be 2.5 seconds with a standard deviation of ± 2.89 seconds and an expanded uncertainty of ± 5.78 seconds.

Weather measurement uncertainty was referenced to the published user's manual for the instrumentation used. The weather instrumentation has calibration certificates that are traceable to NIST standards. A summary of experimental measurement uncertainty is given in Table G-1.

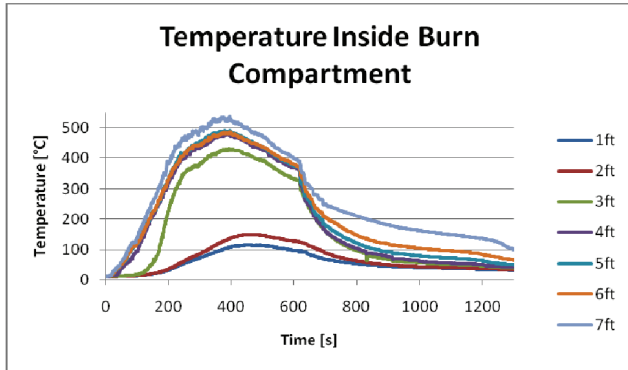
Table G-1: Summary of Measurement Uncertainty

Measurement	Component Standard Uncertainty	Combined Standard Uncertainty	Total Expanded Uncertainty
Length Measurements			
Instrumentation Locations	$\pm 1 \%$	$\pm 3 \%$	$\pm 6 \%$
Building Dimensions	$\pm 1 \%$		
Repeatability ¹	$\pm 2 \%$		
Random ¹	$\pm 2 \%$		
Gas Temperature – Lower Layer			
Calibration	$\pm 1 \%$	$\pm 8 \%$	$\pm 15 \%$
Radiative Cooling	- 5 % to + 0 %		
Radiative Heating	0 % to + 5 %		
Repeatability ¹	$\pm 5 \%$		
Random ¹	$\pm 3 \%$		
Wood Moisture Content			
	$\pm 0.5 \%$	$\pm 0.5 \%$	$\pm 1 \%$
Wood Pallet Mass			
	$\pm 0.2 \%$	$\pm 0.1 \%$	$\pm 0.1 \%$
Weather			
Relative Humidity	$\pm 3 \%$		
Barometric Pressure	$\pm 0.03''$ Hg		
Wind Speed	$\pm 5 \%$		
Wind Direction	$\pm 5 \%$		
Outside Temperature	$\pm 0.5^\circ\text{C}$		
Time			
Timer Bias	$\pm 0.069\text{s}$	$\pm 2.90\text{s}$	
Reaction Time	$\pm 0.230\text{s}$		$\pm 5.80 \text{ s}$
Radio Operation	$\pm 2.890\text{s}$		
Notes: 1. Random and repeatability evaluated as Type A, other components as Type B.			

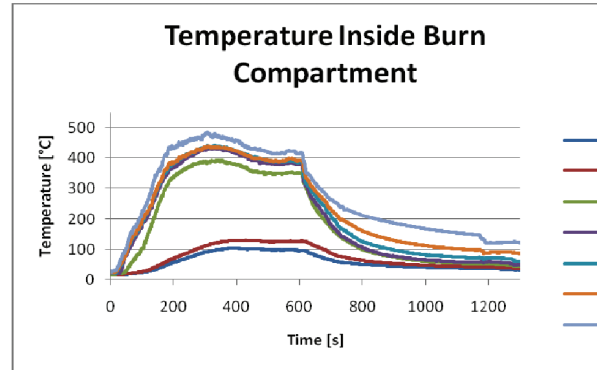
APPENDIX H: Charts of Gas and Temperature Data

Examples of Gas and Temperature Data for Time-to-Task Tests

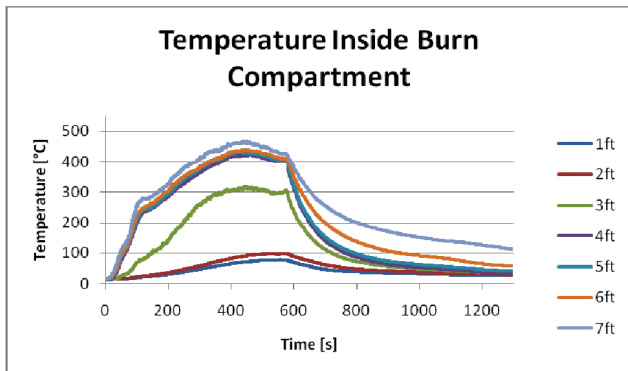
Burn Room Data



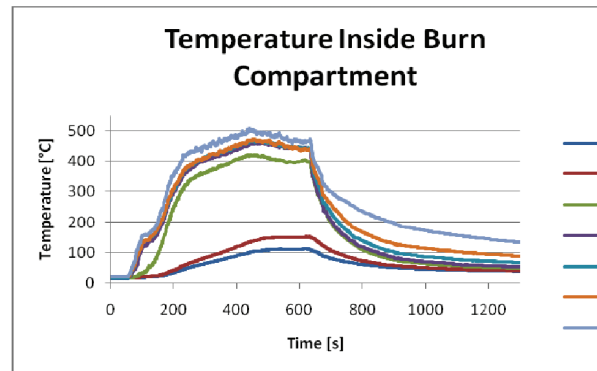
2 Person, Close Stagger



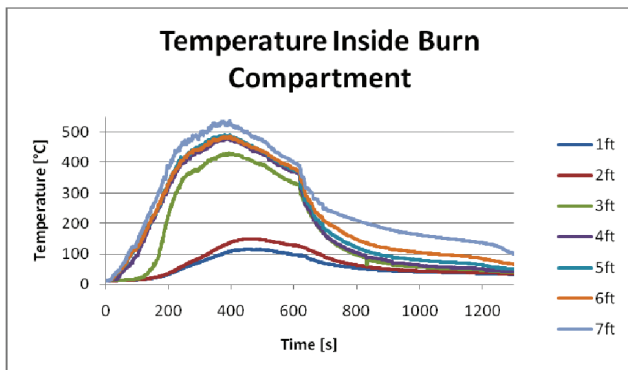
2 Person, Far Stagger



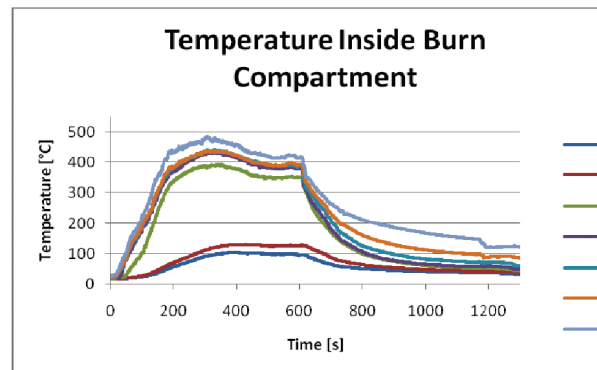
3 Person, Close Stagger



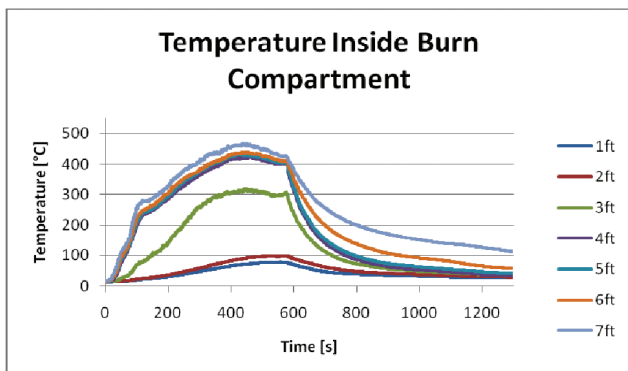
3 Person, Far Stagger



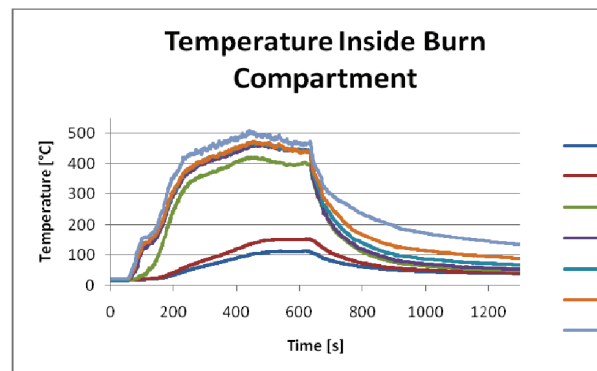
2 Person, Close Stagger



2 Person, Far Stagger

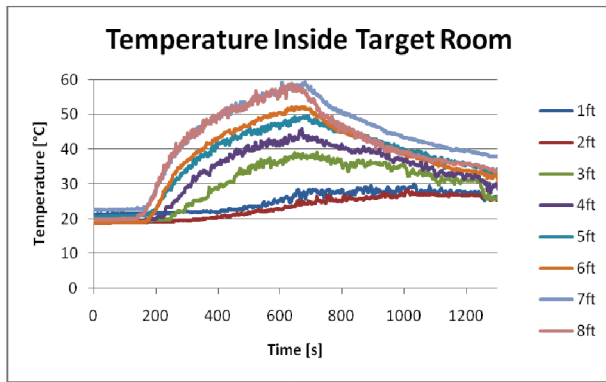


3 Person, Close Stagger

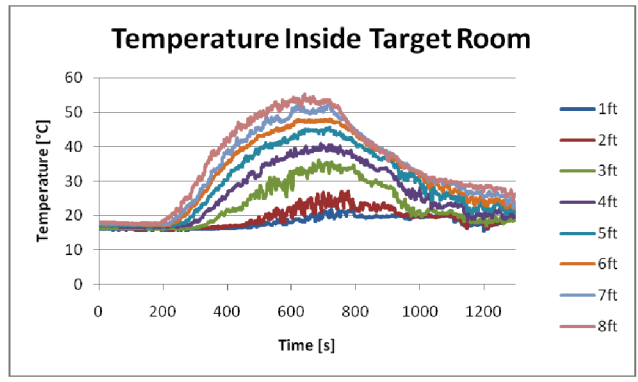


3 Person, Far Stagger

Target Room Data

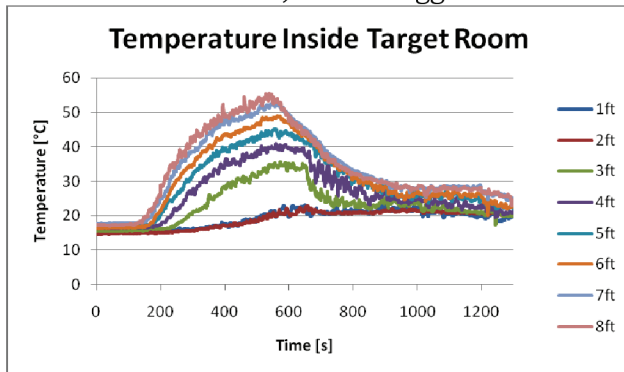


2 Person, Close Stagger

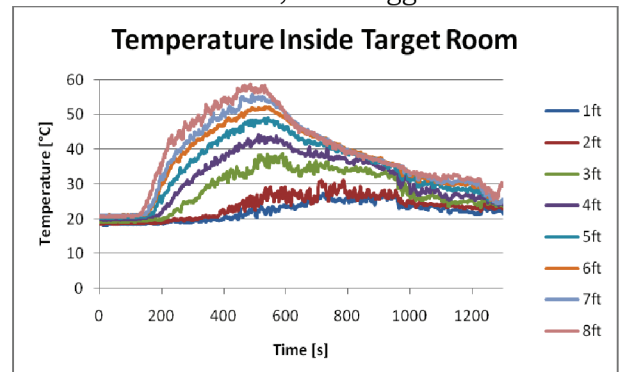


Person, Far Stagger

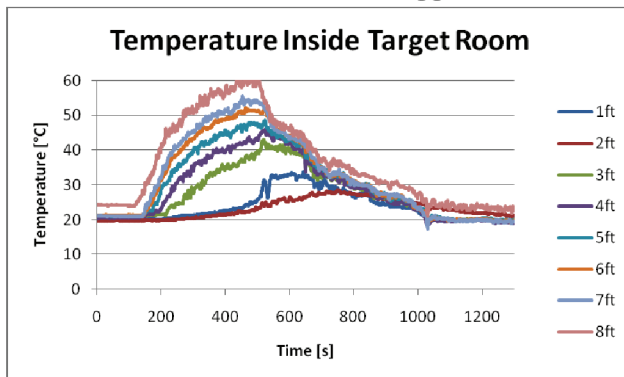
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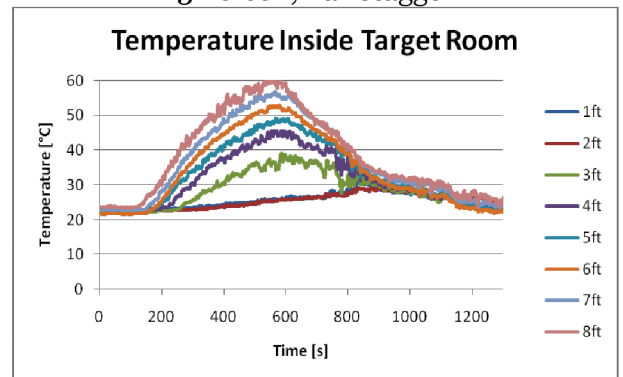
3 Person, Close Stagger



3 Person, Far Stagger

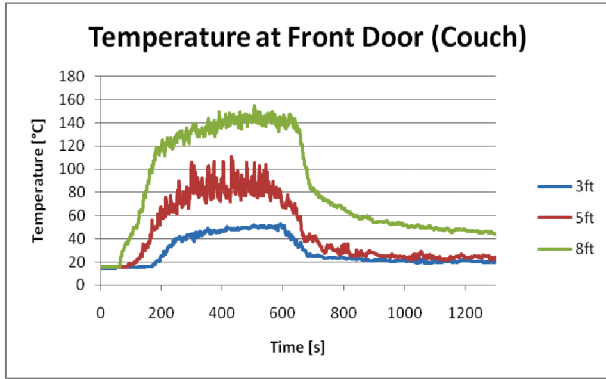


5 Person, Close Stagger

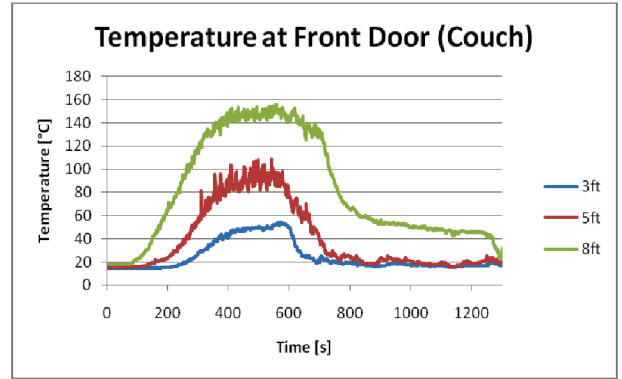


5 Person, Far Stagger

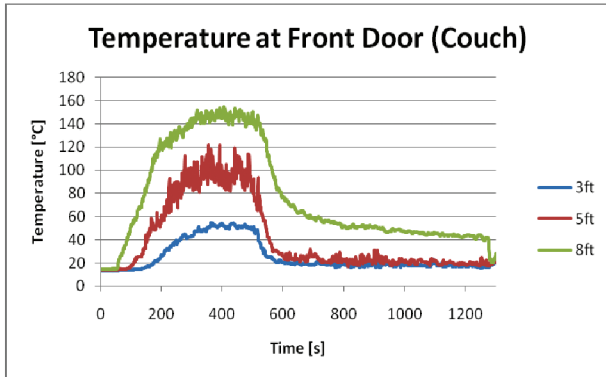
Temperature Near Front Door (Couch)



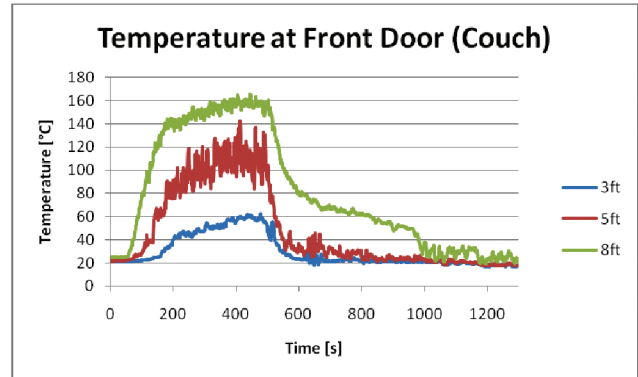
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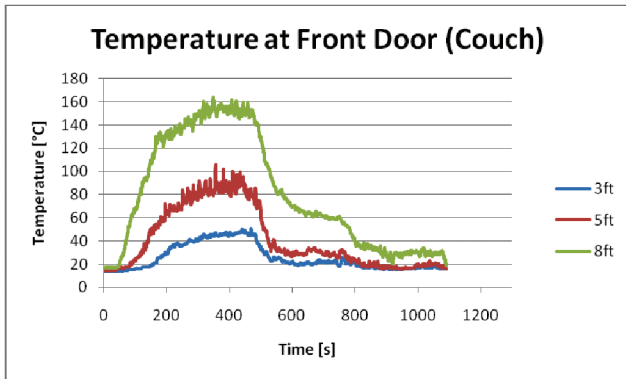
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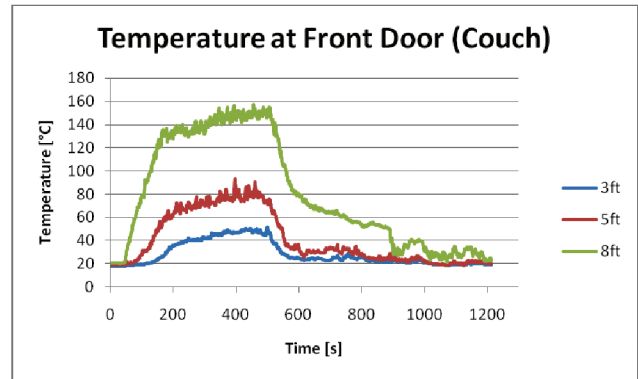
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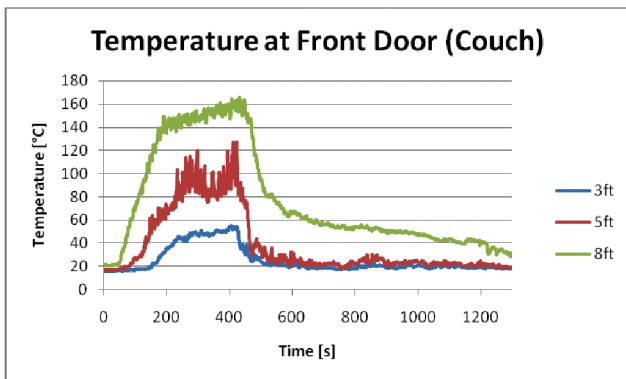
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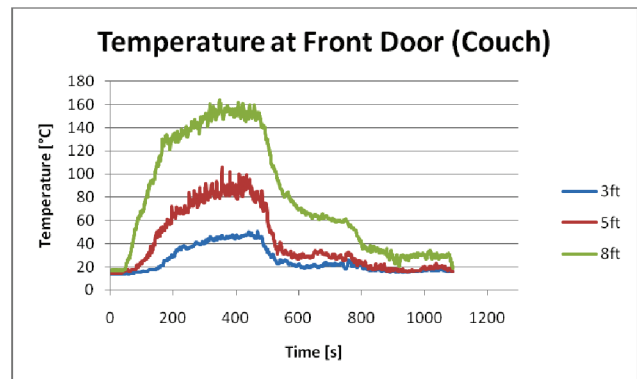
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4 Person, Far Stagger



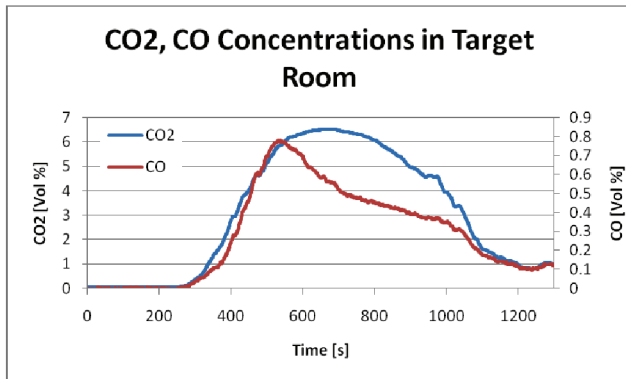
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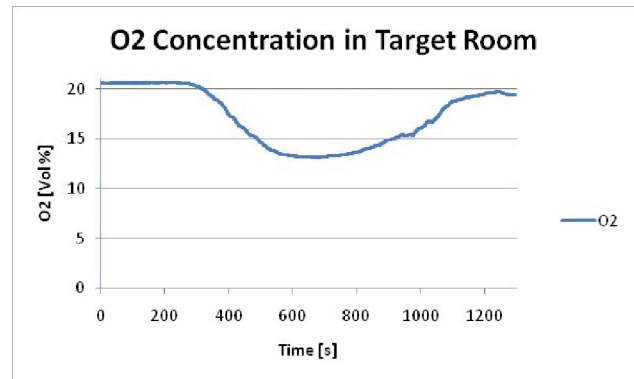
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Gas and Temperature Data for Room and Contents Tests

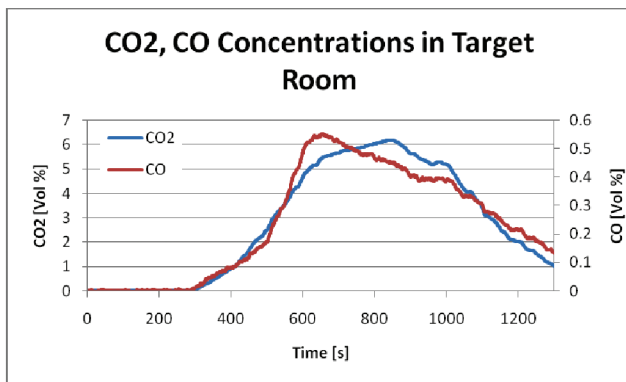
Examples of Gas Data in Target Room



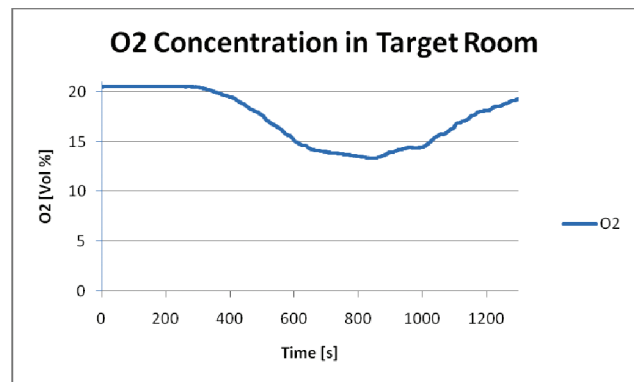
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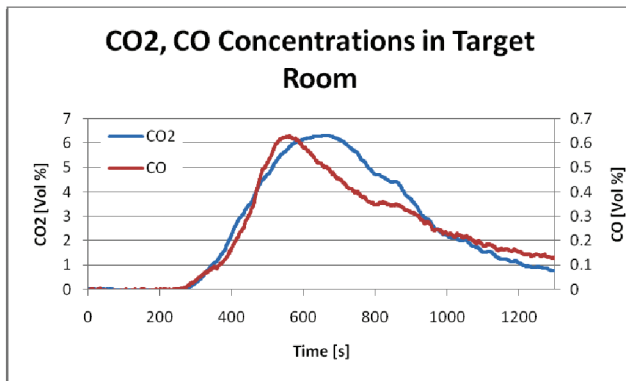
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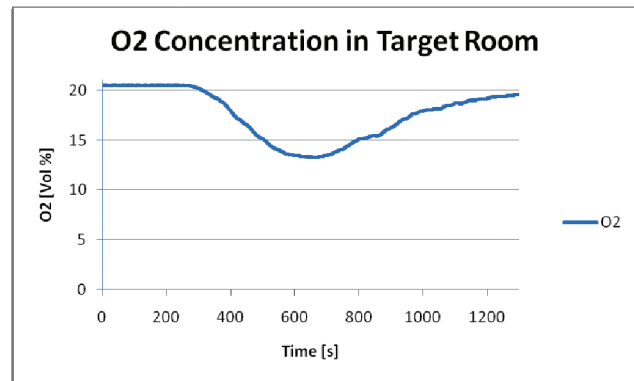
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2-Person, Late Arrival



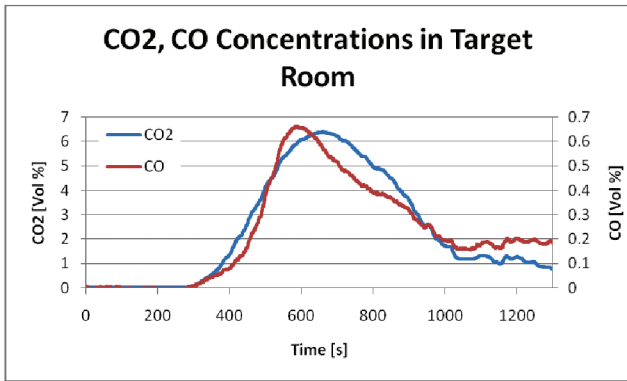
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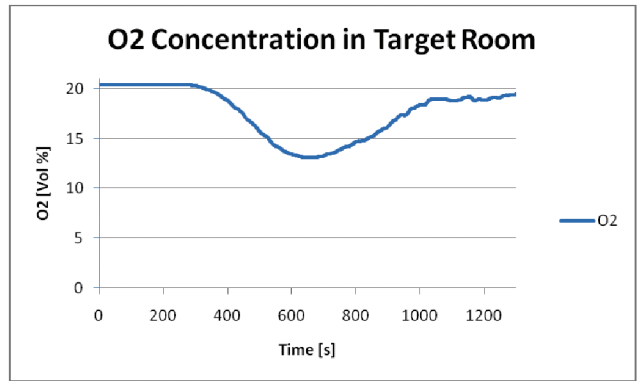
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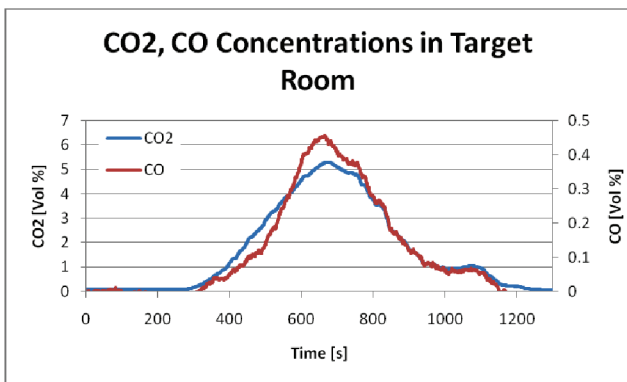
Examples of Gas Data in Target Room



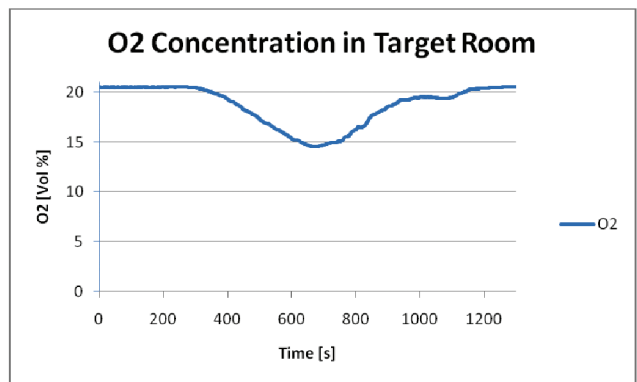
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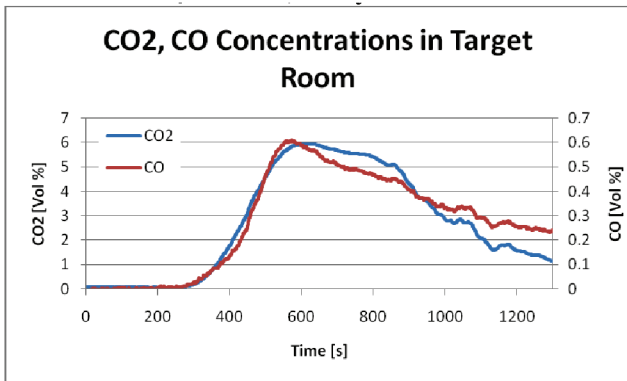
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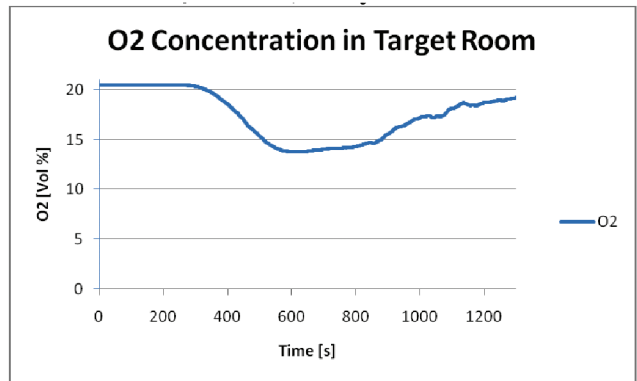
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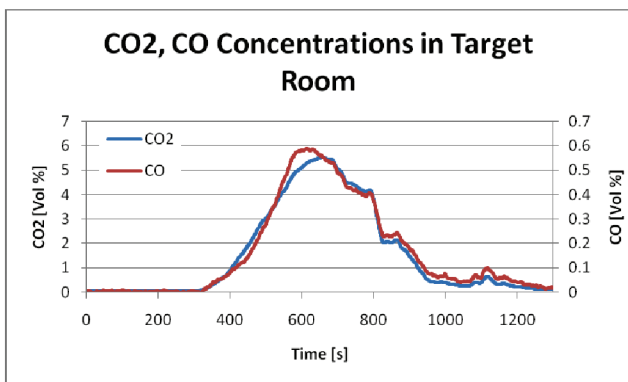
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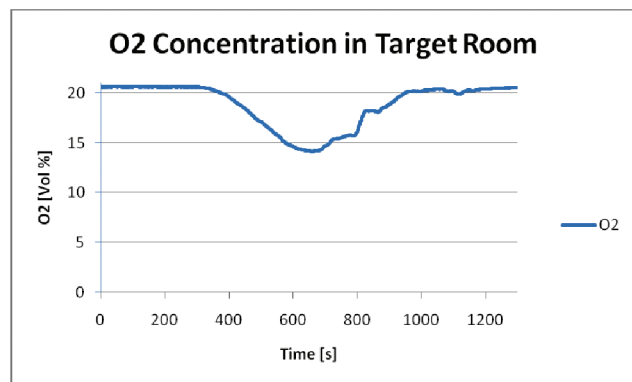
4-Person, Late Arrival



4-Person, Late Arrival

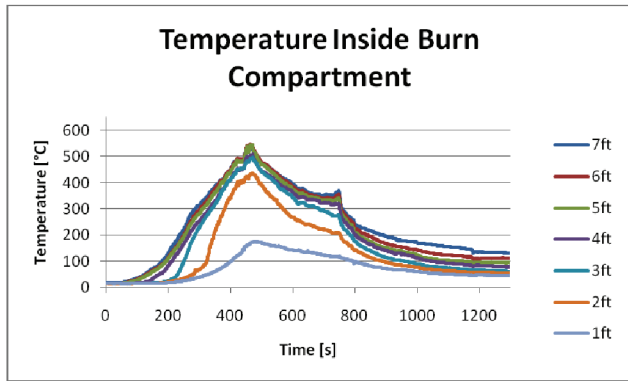


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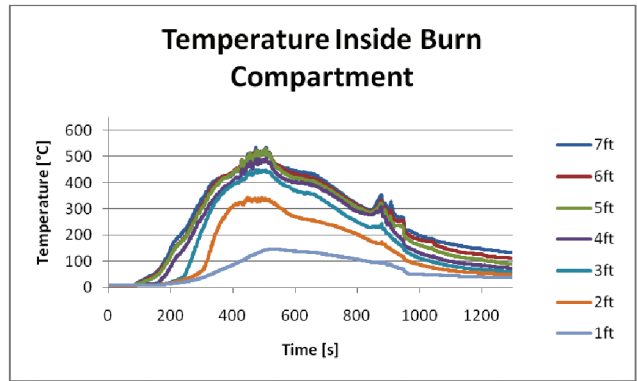


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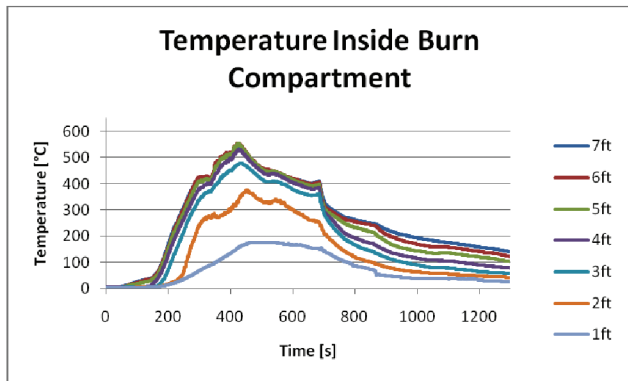
Temperatures in Burn Room



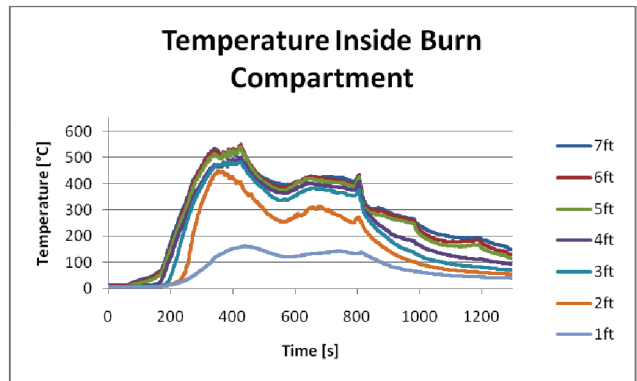
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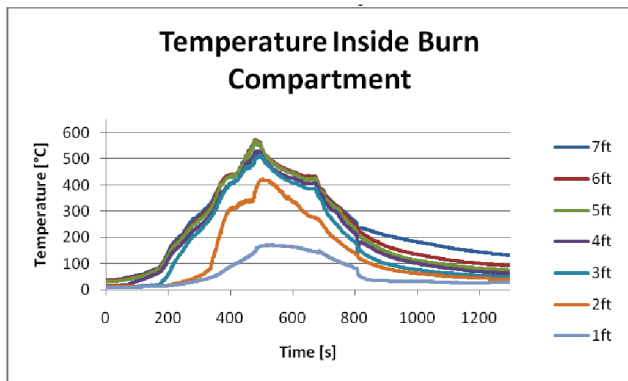
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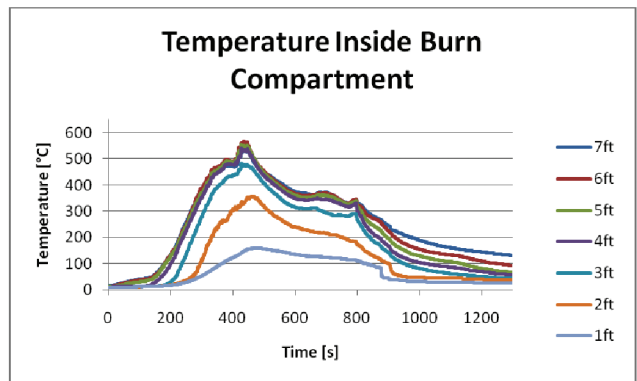
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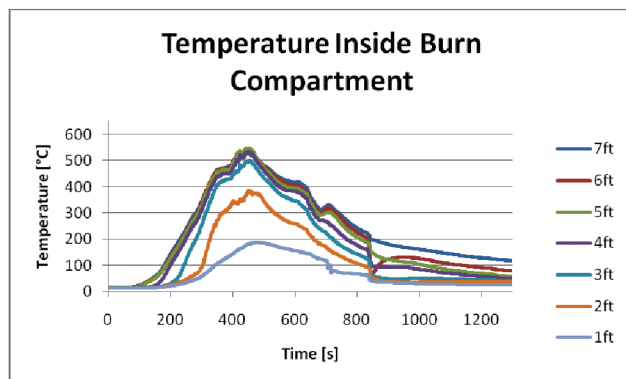
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4-Person, Early Arrival

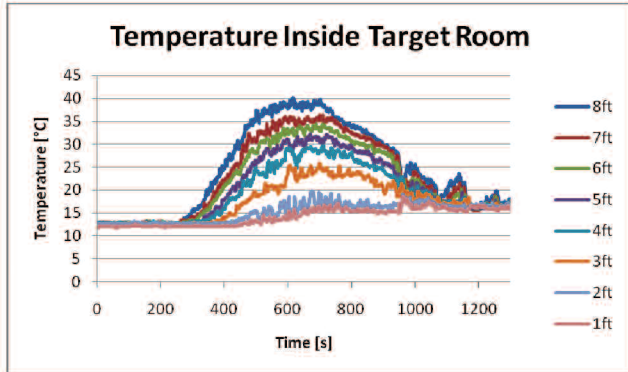


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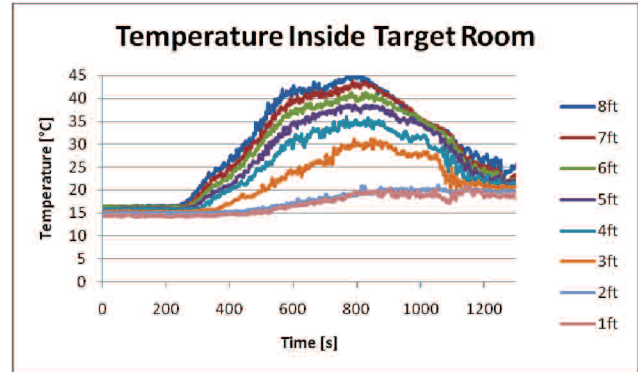


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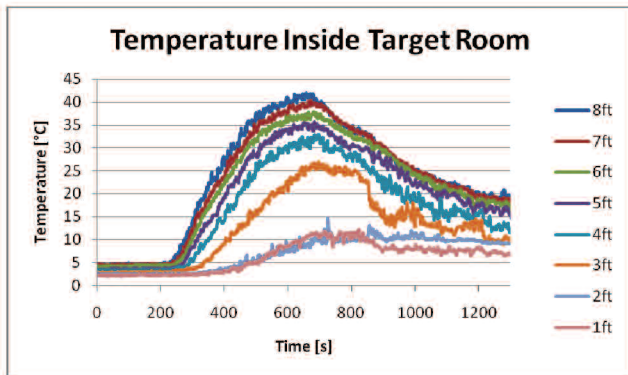
Temperatures in Target Room



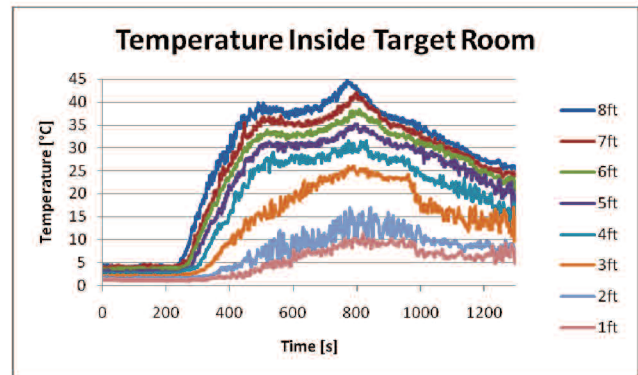
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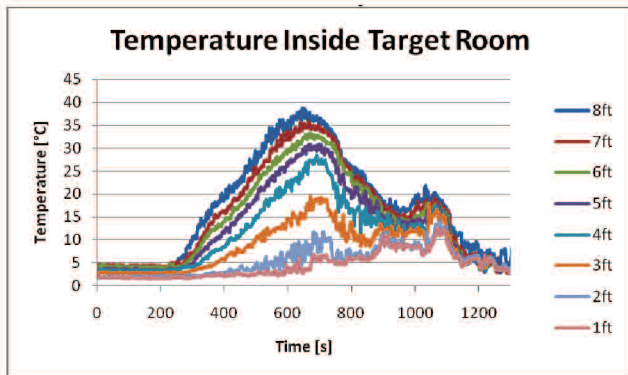
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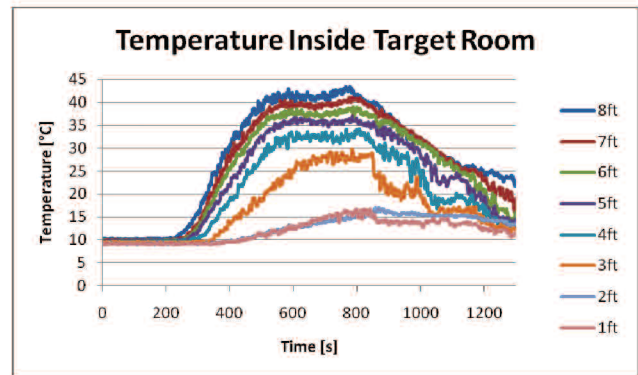
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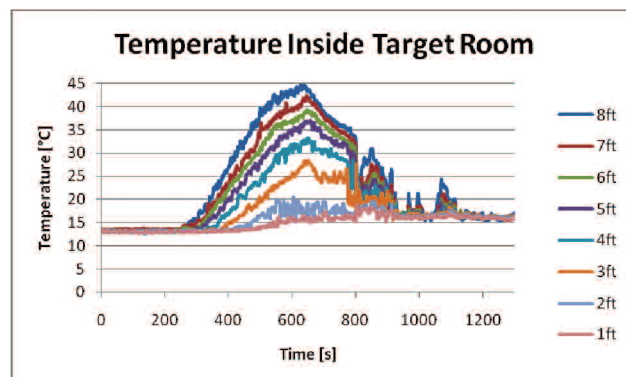
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4-Person, Early Arrival

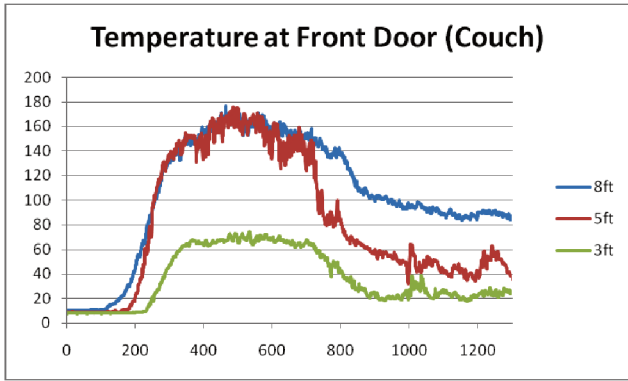


4-Person, Late Arrival

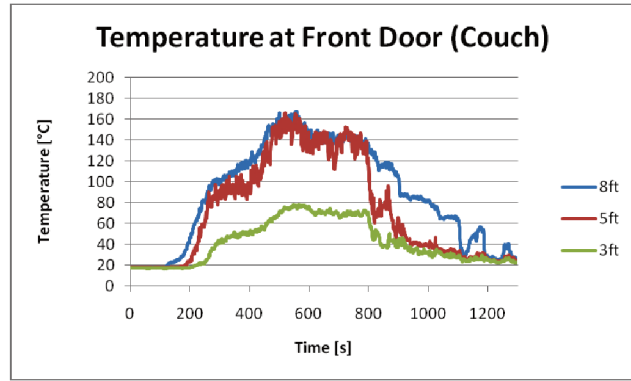


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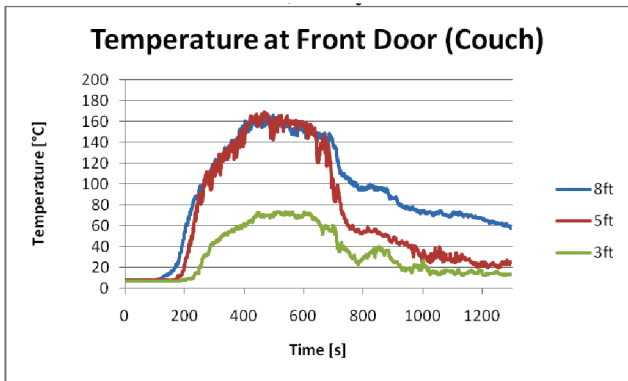
Temperatures Near Front Door (Couch)



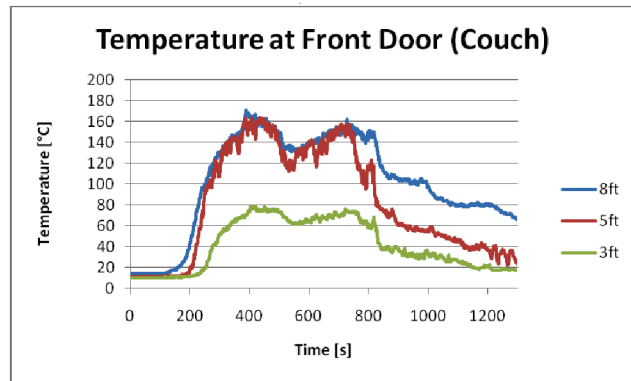
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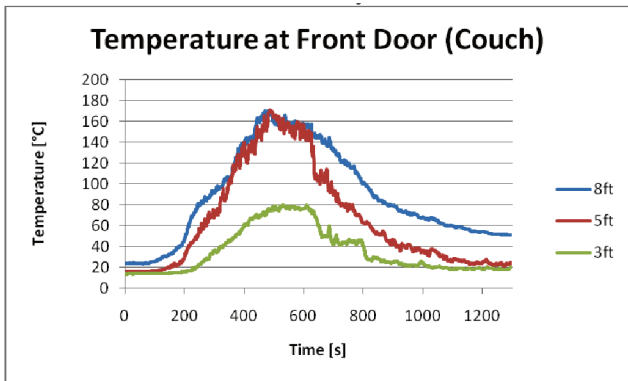
2-Person, Late Arrival



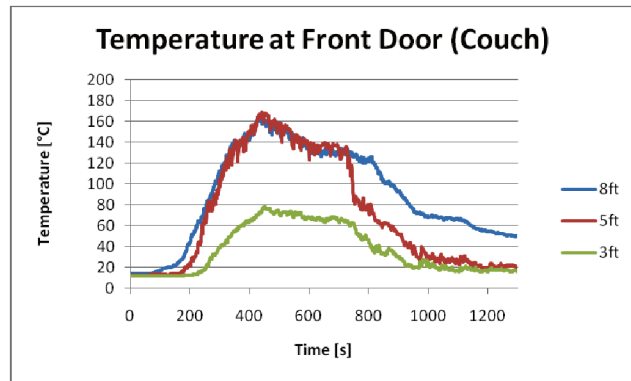
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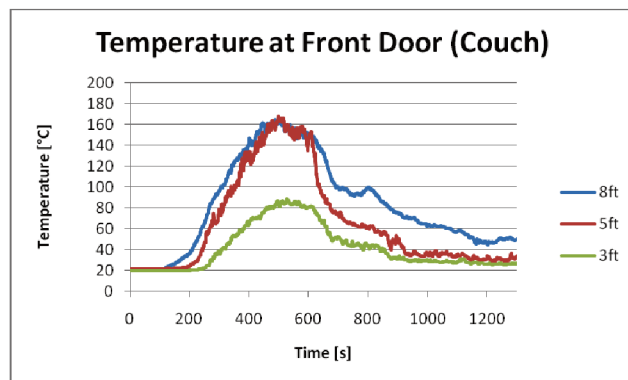
3-Person, Late Arrival



4-Person, Early Arrival



4-Person, Late Arrival



5-Person, Early Arrival



Report on EMS Field Experiments



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September 2010

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Chief Richard Bowers



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Abstract

The fire service has become the first line medical responder for all types of medical emergencies in the majority of the United States. Fire departments typically deliver first-on-scene, out-of-hospital care services, regardless of whether or not they provide transport. The design of fire department-based Emergency Medical Services (EMS) systems varies across communities. Some departments deploy only Basic Life Support (BLS) units and personnel, some deploy a mix of BLS and Advanced Life Support (ALS) units and personnel, and a few departments operate solely at an ALS level. Additionally, the number of total personnel dispatched on an EMS call also differs. This number is dependent on factors such as the type of system resources, the nature of the EMS incident, and the number of simultaneous and concurrent incidents.

For the first time, this study investigates the effects of varying crew configurations for first responders, the apparatus assignment of ALS personnel, and the number of ALS personnel on scene on the task completion times for ALS level incidents. This study is also unique because of the array of stakeholders and the caliber of technical experts involved. Throughout the experiments, all industry standards and safety protocols were followed and robust

research methods were used. The results and conclusions will directly inform the NFPA 1710¹ and NFPA 1720 Technical Committees, who are responsible for developing industry operational and deployment standards.

This report presents the results of more than 102 field experiments designed to quantify the effects of various fire department-based EMS deployment configurations for three different scenarios—1) patient access and removal from the incident scene, 2) a victim of systemic trauma due to a long distance fall and 3) a patient with chest pain leading to a cardiac arrest. In addition to systematically controlling for arrival times of units, first responder crew size was varied to consider two-, three-, and four-person staffing. ALS personnel configuration for both the first responder unit and ambulance transport unit were also varied for purposes of the experiments. In each deployment, personnel performed a series of defined tasks consistent with the scenario being evaluated. Report results quantify the effectiveness of crew size, ALS configuration, and the number of ALS personnel on the start, duration, and completion time of all tasks delineated in the three scenarios. Conclusions are drawn from statistically significant results.

Executive Summary

Increasing demands on the fire service, including the rising number of EMS responses, point to the need for scientifically-based studies on the effect of first responder crew size, Advanced Life Support configuration, and the number of Advanced Life Support (ALS) personnel on scene on the safety of responders, as well as the operational efficiency and effectiveness of fire departments responding to emergency medical incidents. To address this need, a research partnership of the Commission on Fire Accreditation International (CFAI), International Association of Fire Chiefs (IAFC), International Association of Fire Fighters (IAFF), National Institute of Standards and Technology (NIST), and Worcester Polytechnic Institute (WPI) was formed to conduct a multiphase study of firefighter safety and the deployment of resources. A portion of that study, as reported here, includes an assessment of time-to-tasks for EMS incidents.

Beginning in FY 2005, funding was provided through the Department of Homeland Security (DHS)/ Federal Emergency Management Agency (FEMA) Grant Program Directorate for Assistance to Firefighters Grant Program-Fire Prevention and Safety Grants. In addition to the EMS field experiments described in this report, the multiple phases of the overall research effort include development of a conceptual model for community risk assessment and deployment of resources, implementation of a generalizable department incident survey, and delivery of a software tool to quantify the effects of deployment decisions on resultant firefighter and civilian injuries and on property losses.

The first phase of the project was an extensive survey of more than 400 career and combination (both career and volunteer) fire departments in the United States with the objective of optimizing a fire service leader's capability to deploy resources to prevent or mitigate adverse events that occur in risk- and hazard-filled environments. The results of this survey are not documented in this report, which is limited to the EMS experimental phase. The survey results will constitute significant input into the development of a future software tool to quantify the effects of community risks and associated deployment decisions on resultant firefighter and civilian illnesses and injuries.

The National Fire Protection Association estimates that 10,380 EMS workers were exposed to infectious diseases in 2008 (Karter, 2009). Another study noted that almost 10 % of Emergency Medical Technicians (EMTs) and Paramedics miss work at any given time due to job-related illness or injury (Studnek et al, 2007). Another study noted that injury rates for EMS workers are higher than rates reported by the Department of Labor (DOL) for any other industry in 2000 (Maguire et al, 2005) and another study noted that EMS providers have a high risk for occupational injury, with approximately 25 % of workers reporting at least one work-related injury in the previous six months. Many of these injuries were the result of falls or lifting patients (Heick, 2009). Funding and additional research are critical to further defining the high risks to firefighters during EMS responses and developing interventions to mitigate this serious problem.

In order to address the primary research questions using realistic scenarios, the research was divided into three distinct, yet interconnected parts.

- Part 1 — Time-to-task experiments related to gaining access to a patient and removing the patient from the incident scene.
- Part 2 — Time-to-task experiments related to the care of a victim with multi-system trauma.
- Part 3 — Time-to-task experiments related to the care of a victim with chest pain and witnessed cardiac arrest.

These parts included the most basic elements of an overall EMS response, which are — access the patient, conduct patient assessment, deliver on scene patient care, package the patient, and remove the patient from the scene to a transport-capable vehicle.

Scope

The EMS portion of the Firefighter Safety and Deployment of Resources Study was designed solely to assess the personnel number and configuration aspect of an EMS incident for responder safety, effectiveness, and efficiency. This study does not address the efficacy of any patient care intervention. This study does however quantify first responder crew size, i.e., the number and placement of ALS trained personnel resources on the time-to-task measures for EMS interventions. Upon recommendation of technical experts, the investigators selected trauma and cardiac scenarios to be used in the experiments as these events are resource intensive and will likely reveal relevant differences in regard to the research questions. The applicability of the conclusions from this report to a large-scale hazardous or multiple-casualty event has not been assessed and should not be extrapolated from this report.

EMS protocols pertaining to the treatment and transport of patients vary by departments. For the purpose of this study, apparatus arrival times and on scene tasks were standardized by technical experts. Individual performance times were recorded for each task. Response data from more than 300 United States Fire Departments show that when dispatched simultaneously, a first responder arrives prior to an ambulance in approximately 80 % of EMS responses, (IAFC/IAFF, 2005). Therefore, arrival times of the first responder engine and the ambulance were staggered. Additionally, in real-world situations, as in this study, many of the tasks can be performed simultaneously based on the number and training level of responding personnel. Attempts to generalize the results from these experiments to individual departments must take into account response and patient care protocols and equipment that may vary from those used in the experiments.

Primary Findings

The objective of the experiments was to determine how first responder crew size, ALS provider placement, and the number of ALS providers is associated with the effectiveness of EMS providers. EMS crew effectiveness was measured by task intervention times in three scenarios including patient access and removal, trauma, and cardiac arrest. The results were evaluated from the perspective of firefighter and paramedic safety and scene efficiency rather than as a series of distinct tasks. More than 100 full-scale EMS experiments were conducted for this study.

Hundreds of firefighters and paramedics are injured annually on EMS responses. Most injuries occur during tasks that require *lifting or abnormal movement* by rescuers. Such tasks include lifting heavy objects (including human bodies both conscious and unconscious), manipulating injured body parts and carrying heavy equipment. Several tasks included in the experiments fall into this category, including splinting extremities, spinal immobilization (back boarding) and patient packaging. Similar to the lifting or heavy workload tasks, larger crews were able to complete the labor intensive tasks using multiple crew members on a single task to assure safe procedures were used reducing the likelihood of injury or exposure.

A number of tasks are also *labor intensive*. These tasks can be completed more efficiently when handled by multiple responders. Several tasks in the experiments are in this category. These include checking vital signs, splinting extremities, intubation with spinal restriction, establishing I.V. access, spinal immobilization, and patient packaging. During the experiments larger crews completed these tasks more efficiently by distributing the work load among more people thereby reducing the likelihood of injury.

Finally, there are opportunities on an EMS scene to reduce scene time by completing tasks simultaneously rather than sequentially thus increasing operational efficiency. For the experiments, crews were required to complete all tasks in each scenario regardless of their crew size or configuration. Therefore, patterns in task start times and overall scene times reveal operational efficiencies. When enough hands are available at the scene to complete tasks simultaneously, this leads to overall time reductions relative to smaller crews that are forced to complete tasks sequentially.

Patient Access and Removal

With regard to accessing the patient, crews with three or four first responders reached the patient around half a minute faster than smaller crews with two first responders. With regard to completing patient removal, larger first responder crews in conjunction with a two-person ambulance were more time efficient. The removal tasks require heavy lifting and are labor intensive. The tasks also involve descending stairs while carrying a patient, carrying all equipment down stairs, and getting patient and equipment out multiple doors, onto a stretcher and into an ambulance.

The patient removal results show substantial differences associated with crew size. Crews with three- or four-person first responders complete removal between 1.2 – 1.5 minutes faster than smaller crews with two first responders. All crews with first responders complete removal substantially faster (by 2.6 - 4.1 minutes) than the ambulance-only crew.

These results suggest that time efficiency in access and removal can be achieved by deploying three- or four-person crews on the

first responding engine (relative to a first responder crew of two). To the extent that each second counts in an EMS response, these staffing features deserve consideration. Though these results establish a technical basis for the effectiveness of first responder crews and specific ALS crew configurations, other factors contributing to policy decisions are not addressed.

Trauma

Overall, field experiments reveal that four-person first responder crews completed a trauma response faster than smaller crews. Towards the latter part of the task response sequence, four-person crews start tasks significantly sooner than smaller crews of two or three persons.

Additionally, crews with one ALS provider on the engine and one on the ambulance completed all tasks faster and started later tasks sooner than crews with two ALS providers on the ambulance. This suggests that getting ALS personnel to the site sooner matters.

A review of the patterns of significant results for task start times reinforced these findings and suggests that (in general) small non-significant reductions in task timings accrue through the task sequence to produce significantly shorter start times for the last third of the trauma tasks.

Finally, when assessing crews for their ability to increase on-scene operational efficiency by completing tasks simultaneously, crews with an ALS provider on the engine and one ALS provider on the ambulance completed all required tasks 2.3 minutes (2 minutes 15 seconds) faster than crews with a BLS engine and two ALS providers on the ambulance. Additionally, first responders with four-person first responder crews completed all required tasks 1.7 minutes (1 minute 45 seconds) faster than three-person crews and 3.4 minutes (3 minutes and 25 seconds) faster than two-person crews.

Cardiac

The overall results for cardiac echo those of trauma. Regardless of ALS configuration, crews responding with four first responders completed all cardiac tasks (from at-patient to packaging) more quickly than smaller first responder crew sizes. Moreover, in the critical period following cardiac arrest, crews responding with four first responders also completed all tasks more quickly than smaller crew sizes. As noted in the trauma scenario, crew size matters in the cardiac response.

Considering ALS placement, crews responding with one ALS provider on both the engine and ambulance completed all scene tasks (from at-patient to packaging) more quickly than a crew with a BLS engine and two ALS providers on the ambulance. This suggests that ALS placement can make a difference in response efficiency. One curious finding was that crews responding with a BLS engine and an ambulance with two ALS providers completed the tasks that follow cardiac arrest 50 seconds *sooner* than crews with an ALS provider on both the engine and ambulance. As noted, this counter-intuitive difference in the results may be attributable to the delay of the patient arrest time based on the arrival of the 12-Lead ECG monitor with the two-person ALS Ambulance crew. The 12-Lead ECG task *end time* was the arrest *start time*. In this scenario, there were instantaneously two ALS providers present at the arrest rather than the one ALS provider placing the 12-Lead ECG device in the ALS engine /ALS Ambulance crew.

A review of the patterns of significant findings across task start times showed mixed results. An ALS on an engine showed an advantage (sooner task starting times) over an ALS on an ambulance for a few tasks located earlier in the cardiac response sequence (specifically, ALS Vitals 12-Lead through IV access). A first responder with four-person crew also showed shorter start times for a few early tasks in the cardiac response sequence (initial airway, breathing and circulation (ABCs), and the ALS Vitals 12-Lead and expose chest sequence). More importantly, a sequential time advantage appears for the last three tasks of the sequence (analyze shock #2 through package patient).

Finally, when assessing crews for their ability to increase on-scene operational efficiency by completing tasks simultaneously, crews with an ALS provider on the engine and one ALS provider on the ambulance completed all required tasks 45 seconds faster than crews with a BLS engine and two ALS providers on the ambulance. Regardless of ALS configuration, crews responding with four first responders completed all cardiac tasks from the 'at patient time' to completion of packaging 70 seconds faster than first responder crews with three persons, and 2 minutes and 40 seconds faster than first responder crews with two persons. Additionally, *after the patient arrested*, an assessment of time to complete remaining tasks revealed that first responders with four-person crews completed all required tasks 50 seconds faster than three-person crews and 1.4 minutes (1 minute 25 seconds) faster than two-person crews.

Summary

While resource deployment is addressed in the context of three basic scenarios, it is recognized that public policy decisions regarding the cost-benefit of specific deployment decisions are a function of many factors including geography, resource availability, community expectations as well as population demographics that drive EMS call volume. While this report contributes significant knowledge to community and fire service leaders in regard to effective resource deployment for local EMS systems, other factors contributing to policy decisions are not addressed. The results, however, do establish a technical basis for the effectiveness of first responder crews and ALS configuration with at least one ALS level provider on first responder crews. The results also provide valid measures of total crew size efficiency in completing on-scene tasks some of which involve heavy lifting and tasks that require multiple responders to complete.

These experimental findings suggest that ALS provider placement and crew size can have an impact on some task start times in trauma and cardiac scenarios, especially in the latter tasks leading to patient packaging. To the extent that creating time efficiency is important for patient outcomes, including an ALS trained provider on an engine and using engine crew sizes of four are worth considering. The same holds for responder safety – for access and removal and other tasks in the response sequence, the availability of additional hands can serve to reduce the risks of lifting injuries or injuries that result from fatigue (e.g., avoid having small crews repeatedly having to ascend and descend stairs).

Background

In recent years, the provision of emergency medical services has progressed from an amenity to a citizen-required service. Today more than 90 % of career and combination fire departments deliver emergency medical care services, making fire departments the largest group of providers of prehospital EMS in North America. Fire department operations are geared to rapid response, whether it is for EMS, rescue, or fire suppression. In many jurisdictions, EMS responses equate to over 75 % of a fire departments call volume. EMS deployment decisions are therefore a critical driving factor for any department considering both short and long term resource deployment decisions.

The National Fire Protection Association estimates that 10,380 EMS workers were exposed to infectious diseases in 2008 (Karter, 2009). Another study noted that almost 10 % of EMTs and Paramedics miss work at any given time due to job-related illness or injury (Studnek et al, 2007). Another study noted that injury rates for EMS workers are higher than rates reported by the Department of Labor (DOL) for any other industry in 2000 (Maguire et al, 2005) and another study noted that EMS providers have a high risk for occupational injury, with approximately 25 % of workers reporting at least one work-related injury in the

previous 6 months. Many of these injuries were the result of falls or lifting patients (Heick, 2009). Funding and additional research are critical to further quantifying the high risks to firefighters during EMS responses and developing interventions to mitigate this serious problem.

Much discussion and past research has focused on ambulance transport services, largely ignoring the impact of critical interventions that can be provided prior to ambulance transport unit arrival. Ambulances are important for the transport of patients needing more definitive medical care (Pratt, 2007). However, based on the number and the geographic distribution of apparatus stationed for “all hazards” response, a more rapid response is typically provided by fire department baseline units carrying medical supplies and EMS trained personnel (IAFC/IAFF, 2005). As fire departments continue to enhance their roles in EMS, it becomes important to examine how different deployment configurations and initiation of specific medical interventions may change the long-term outcome for the patient. Consequently, community planners and decision-makers need tools to optimally align resources with their service commitment for adequate emergency medical care for citizens.

Problem

Despite the role played by the fire service in the provision of emergency medical services, there are no scientifically based tools available to community and fire service leaders to assess the effects of EMS crew size and deployment on firefighter safety. More and more individuals, including the indigent, the working uninsured, and the underinsured, rely on prehospital medical care, which continuously increases the need for EMS resources in fire departments. The continued lack of comprehensive community health services and comprehensive health care reform means addressing this issue is a critical step in the evolution of the fire service and public safety.

Presently, community and fire service leaders have a qualitative understanding of the effect of certain resource allocations. For example, an increase in the number of fire houses, medically equipped apparatus, and EMS trained personnel would lead to a decrease in the time citizens spend waiting for EMS resources to

arrive. Consequently a decrease in the number of fire houses, medically equipped apparatus, and EMS trained personnel would likely lead to an increase in the time before critical medical interventions can be provided. However, decision-makers lack a sound basis for quantifying the overall impact of enhanced emergency medical resources and the number of EMS-trained personnel on the timely provision of life-saving procedures.

Studies on adequate deployment of resources are needed to enable fire departments, cities, counties, and fire districts to design an acceptable level of resource deployment based upon community risks and service provision commitment. These studies will assist with strategic planning and municipal and state budget processes. Additionally, as resource studies refine data collection methods and measures, both subsequent research and improvements to resource deployment models will have a sound scientific basis.

Literature Review

Within the past four decades, the range and structure of services provided by firefighters have broadened and changed dynamically as an ever-increasing amount of department resources are used to respond to emergency medical calls. Expanded activities and increased expectations bring advantages, as well as challenges for both communities and fire departments in terms of providing optimal protection during emergency situations, while quantitatively assessing objective systems performance.

Studies documenting engine and ladder response times and crew performance in diverse live and simulated fire hazard environments, show a relationship between apparatus staffing levels and a range of important performance variables and outcome measurements such as response time, time-to-task completion, fire growth status at the time of attack, and occupant toxicity levels (Averill et al, 2010). Recent analyses of EMS crew staffing configuration have suggested that both the number of personnel dispatched per unit and the level of emergency medical certification of that crew may influence similar standards of measurement in the realm of medical response by multi-role firefighters. (Brown et al, 1996)

The rapid evolution of emergency service delivery and the growth of fire-based EMS systems correspond with an increase in literature that has detailed both the need for careful outcomes evaluation and continued innovation in terms of establishing performance variables that accurately assess the effectiveness of prehospital care provided by emergency medical technicians (EMTs). Investigators from government, professional organizations, and academia have described the progress made in the field of prehospital care and the challenges that EMT's and multi-role firefighters face in an expanding body of literature (Moore, 2002).

Publications to date have continually reached towards ascertaining the performance measures, operational protocols, and dispatch configurations that optimize outcomes across diverse communities. Many of the currently established EMS benchmarks and obstacles identified in recent literature hold particular importance for multi-role firefighters. Far-reaching studies of EMS response have demonstrated how response time, scene time, transport time, crew size, equipment, and the level of crew staffing and certification levels have influenced patient survival (Cummins et al, 1991). While studies have continued to demonstrate the impact of these factors with increasingly sophisticated methods, the need to improve understanding of EMS delivery persists. Existing standards of care need to be reevaluated so current systems can adjust and progress in response to ongoing research findings.

Historically, total response time has been measured from the time a responding unit leaves a fire station until the time the unit arrives at the incident. However, anecdotal evidence suggests that total response time should include the time to locate and access the patient (time to patient side). Previous studies have shown a substantial time difference between the time the first responder arrives on-scene and the time of patient access. One study noted

that the patient access time interval represented 24 % of the total EMS response time interval among calls originating less than three floors above or three floors below ground and 32 % of those located three or more stories above ground. (Morrison et al, 2005)

Early literature on out-of-hospital cardiac arrest (OHCA) sought to uncover the effects of patient characteristics and location of initial collapse on survival to hospital discharge, with researchers then beginning to quantify the importance of response time. A paper by researchers from the EMS Division of King County, Washington and University of Washington Departments of Medicine and Biostatistics found significantly higher survival rates for patients who arrested outside the home, noting that of those 781 patients, most were more frequently younger, male, and more likely to be witnessed at the time of collapse and had received bystander cardiopulmonary resuscitation (CPR). (Litwin et al, 1987)

A growing number of defibrillation effectiveness studies began to demonstrate that response time, EMT training and practice, and population density influenced the effectiveness of this type of EMS delivery. (Olson, 1989; Kellerman, 1992; Hallstrom, 2004; DeMaio, 2005) For an urban environment exceeding three million, at least one study noted that over a period of one year, survival rates were lower in urban environments than those reported for smaller cities, but reaffirmed that the single factor most likely contributing to poor overall survival was a relatively long interval between collapse and defibrillation. In their conclusions, the authors recommended the use of standardized terms and methodology and stressed that "detailed analysis of each component of the emergency medical services systems will aid in making improvements to maximize survival of out-of-hospital cardiac arrest." (Becker, 1991)

Researchers studying patient outcomes following traumatic brain injury (TBI) were employing the specific anatomic, physiologic, and age characteristics of patients to formulate methods that would evaluate the effectiveness of trauma care. The "Trauma and Injury Severity Scores" (TRISS) method was one such system that generated scores for patients based upon systolic blood pressure, capillary refill, respiratory rate, and respiratory expansion. These scores provided a means of accurate analysis for EMS performance for cases of TBI, just as situational characteristics for OHCA, such as location of collapse, collapsing rhythm, and time to initial call were being used to gauge the effectiveness of emergency medical interventions for patients in distinct crisis scenarios. For instance, the correlation between age and predicted mortality for patients with comparable Trauma and Injury Severity Scores in an early study of the TRISS method suggested that a significantly narrower margin of effectiveness exists for seriously injured patients age 55 years or older. (Boyd, 1987)

Fire departments have long grappled with the most appropriate dispatch and notification configurations for EMS systems in different communities. Analyses have focused on comparisons of "one-tier" versus "two-tier" notification systems. "One-tier" systems require ALS units to respond to and transport all calls. In

² "Multi-role" is a term given to firefighters cross-trained in a number of related emergency services fields, such as EMS, hazardous materials response, and technical rescue.

a “two-tier” system, ALS units are allowed to delegate varying degrees of responsibility for response and transport to BLS units. Two studies appearing in the *Annals of Emergency Medicine* in the same year examined the response capacity and performance measures for a broad sample of urban EMS systems with regard to dispatching protocols and notification systems. (Sweeney, 1998; Chu, 1998) Reviewing previously published studies on 39 emergency medical services programs from 29 different locations from 1967 to 1988, researchers focusing specifically on cardiac arrest and resuscitation outcomes noted survival rates to be higher for two-tiered systems where both a paramedic and either an EMT or EMT-D were dispatched to calls, as compared to survival rates for one-tier systems where dispatches were exclusive for an EMT, EMT-D, or paramedic. This analysis also showed rates of survival to hospital discharge to be slightly higher for patients with a collapse rhythm of ventricular fibrillation, which suggested that the earlier CPR initiation possible in two-tier configurations was a primary means to the higher survival rates in these systems (Eisenberg et al., 1990).

In an article that plotted responses to an EMS system configuration survey against Code 3 (“lights and sirens”) response times to emergency calls, investigators identified three different types of “two-tier” configurations. In the first two-tier system, ALS units responded to all calls but once on-scene could turn a patient over to a BLS unit for transport. In the second two-tier model, ALS units did not respond to all calls and BLS units could be sent for noncritical calls. In the final two-tier configuration, a non-transport ALS unit was dispatched with a transporting BLS unit with ALS personnel joining BLS personnel for transport on all ALS calls. After reviewing survey responses from EMS systems in 25 mid-sized cities with populations of 400,000 to 900,000, researchers suggested that a two-tier response system that permitted dispatch of BLS units for noncritical calls would allow a given number of ALS units to serve a much larger population while still maintaining rapid Code 3 response times (Braun et al, 1990).

The emergence of the “chain of survival” concept in the prehospital treatment of cardiac arrest merged the effectiveness of specific EMS interventions for individual patient characteristics and the level of qualification of staffing on emergency apparatus as standards of measurement within a system-wide scheme of performance evaluation. In a statement explaining the chain of survival and detailing its components, researchers argued that time to recognition of OHCA, EMS system activation, initiation of CPR, defibrillation, intubation, and intravenous administration of medications were successive, distinct factors that directly influenced outcomes of sudden cardiac arrest and should

therefore be used inclusively as measurements of overall performance for EMS systems. The authors presented a thorough review of past literature and noted that while a small number of urban EMS systems approached the then-current practical limit for survivability from sudden cardiac arrest, most EMS systems in the U.S. and other countries had defects in their chain, as demonstrated by a near universal preponderance of poor resuscitation rates. This paper was notable for describing the research supporting each “link” in the chain or performance measurement of EMS system effectiveness and recommending specific actions to improve each area, thereby strengthening the chain of survival. Moreover, researchers suggested that communities implementing two-tier, double response systems might show optimal improvements in survival rates, as reports on EMT-D systems showed small response times but restricted intervention methods while ALS-only systems recorded longer response times with more advanced treatment options (Cummins et al, 1991).

Time-to-task measurements that have more recently been formulated into the “chain of survival” model for sudden cardiac arrest have been widely accepted as measurements of fire crews’ performance. The continuous patient care and vigilant monitoring of vitals advocated in most EMS models are duties that multi-role firefighters are distinctly well-equipped to perform, especially in emergency situations requiring both fire suppression and emergency medical response. Critical thinking, strategic teamwork, and ongoing, immediate priority assessments during emergency situations are all skills taught and regularly instilled by training and routine evaluation for multi-role firefighters.

In light of the existing literature, there remain unanswered questions about the relationship between resource deployment levels, in terms of first responder crew size and EMS training levels, and the associated task performance during EMS incidents. For the first time, this study investigates the effects of varying crew configurations for first responders, the apparatus assignment of ALS personnel, and the number of ALS personnel on scene on the task completion for ALS level incidents. This study is also unique because of the array of stakeholders and technical advisors involved. All industry standards and safety protocols were followed, and robust research methods were used. The results and conclusions will directly inform the NFPA 1710 Technical Committee, who is responsible for developing industry standards associated with the deployment of fire suppression operations, emergency medical operations, and special operations to the public by career fire departments.

Purpose and Scope of the Study

This project systematically studies deployment of fire department-based EMS resources and the subsequent effect on the ability to provide an efficient and effective response. It will enable fire departments and city/county managers to make sound decisions regarding optimal resource allocation to meet service commitments using the results of scientifically based research. Specifically, the EMS field experiments provide quantitative data on the effects on varying crew size configurations, ALS personnel placement, and the number of ALS personnel available on ALS level incidents.

The first phase of the multiphase project was an extensive survey of more than 400 career and combination fire departments in the United States with the objective of optimizing a fire service leader's capability to deploy resources to prevent or mitigate adverse events that occur in risk- and hazard-filled environments. The results of this survey are not documented in this report, which is limited to the experimental phase of the project, but they will constitute significant input into future applications of the data presented in this document.

In order to address the primary research questions using realistic scenarios, the research was divided into three distinct, yet interconnected parts.

- Part 1- Time-to-task experiments related to gaining access to a patient and removing the patient from the incident scene.
- Part 2- Time-to-task experiments related to the care of a victim with multi-system trauma.
- Part 3- Time-to-task experiments related to the care of a victim with chest pain and witnessed cardiac arrest.

These parts included the most basic elements of an overall EMS response and included time for personnel to access the patient, conduct patient assessment, deliver on-scene patient care, package the patient, and remove the patient from the scene to a transport-capable vehicle.

The EMS portion of the Firefighter Safety and Deployment of Resources Study was designed to assess the labor aspect of an EMS incident necessary to ensure safe, effective, and efficient operations. While studies have shown a relationship between response time and efficiency of patient care intervention, this project has no direct measures. This study does however quantify the effects of first responder crew size and ALS trained personnel resources on time-to-task for EMS interventions. The applicability of the conclusions from this report to a large-scale hazardous or multiple-casualty event has not been assessed and should not be extrapolated from this report.

EMS protocols pertaining to the treatment and transport of patients vary by departments. For the purpose of this study, tasks were standardized by technical experts and individual times were recorded for each task. In real-world situations, as in this study, many of these can be performed simultaneously based on the number and training level of responding personnel. Attempts to generalize the results from these experiments to individual departments must take into account protocols and equipment that vary from those used in the experiments.

A Brief Overview of the EMS Response

Considering the setting and the circumstances of emergency medical care delivery, the prehospital 9-1-1 emergency care patient should be considered a distinct type of patient in the continuum of health care. These patients not only have medical needs, but they may also need simultaneous physical rescue, protection from the elements and the creation of a safe physical environment, as well as management of non-medical surrounding sociologic concerns (Pratt et al., 2007). Interdependent and coordinated activities of all personnel are required to meet the priority objectives.

NFPA 1710: *Standard on Fire Department Operations, Emergency Medical Operations, and Special Operations to the public by Career Fire Departments* specifies that the number of on-duty EMS providers must be sufficient relative to the level of EMS provided by the fire department, and be based on the minimum levels needed to provide patient care and member safety.³ NFPA Standard 1710 also recommends that personnel deployed to ALS emergency responses include a minimum of two members trained at the emergency medical technician-basic level and two members trained at the emergency medical technician-paramedic level, arriving at the scene within the established time frame of two hundred and forty seconds (four minutes) or less for BLS units and four hundred and eighty seconds (eight minutes) or less for ALS units provided that a first-responder with Automated External Defibrillator (AED) or BLS unit arrived in two hundred forty seconds (four minutes) or less travel time, or at the minimum levels established by the authority having jurisdiction.⁴

During each EMS experiment, a first responder unit and an ambulance transport unit was dispatched to the scene. Crew size for the first responder unit and ALS configuration for both the first responder unit and ambulance transport unit were varied for purposes of the experiments. There were three specific scenarios to which personnel responded.

- Patient access and removal from incident site
- Systemic trauma/fall victim
- Chest pain/cardiac arrest

Important time intervals typically not measured by EMS systems are “time to patient access” and the “time to patient removal” intervals. These intervals include the time it takes personnel with equipment to locate and access the patient and the time it takes personnel to remove the patient and equipment from the incident scene to the ambulance for transport. These intervals are critically important to calculating overall scene time, particularly in scenarios where the patient is not immediately accessible (high-rise buildings, commercial complexes, schools, etc.).

The Star of Life

The elements comprising an EMS incident are symbolized by the Star of Life.⁵ The six branches of the star are symbols of the six main tasks executed by rescuers throughout an emergency medical event.



Figure 1: The Star of Life

The six branches of the star include the elements listed below.

- **Detection:** Citizens must first recognize that an emergency exists and know how to contact the emergency response system in their community. This can be done using several different methods such as dialing 9-1-1, dialing a seven digit local emergency number, using amateur radios, or call boxes.
- **Reporting:** Upon accessing a call center, callers are asked for specific information so that the proper resources can be sent. In an ideal system, certified Emergency Medical Dispatchers (EMDs) ask a pre-defined set of questions. In this phase, dispatchers also become a link between the scene and the responding units and can provide additional information as it becomes available.
- **Response:** This branch identifies the response of emergency crews to the scene. The response may include an engine with firefighters trained as EMT's followed by an ambulance carrying additional firefighter/EMT's or it may be a fire engine first responder crew followed by an ambulance carrying single role EMS personnel.
- **On scene care:** Definitive care is provided on the scene by the emergency response personnel. Standing orders and radio or cellular contact with an emergency physician has broadened the range of on scene care that can be provided by EMS responders. A long algorithm of procedures and drugs may be used before the patient is removed from the scene.
- **Care in Transit:** Emergency personnel transport the patient to the closest appropriate medical care facility for definitive care. During transport, patient care/treatment is continued.
- **Transfer to Definitive care:** Emergency crews transfer the patient to the appropriate specialized care facility. Transfer includes providing a detailed written report of the patient assessment and care provided on-scene and in-transit.

³ NFPA 1710, Section 5.3.3.2.1: On duty EMS units shall be staffed with the minimum personnel necessary for emergency medical care relative to the level of EMS provided by the fire department.

⁴ NFPA 1710, Section 5.3.3.3.4: Personnel deployed to ALS emergency responses shall include a minimum of two members trained at the emergency medical technician-paramedic level and two members trained at the emergency medical technician-basic level arriving on scene within the established travel time.

⁵ Designed by Leo R. Schwartz, Chief of the EMS Branch, National Highway Traffic Safety Administration (NHTSA) in 1977.

EMS Response to Time Critical Events

In a statement explaining the chain of survival and detailing its components, researchers argued that time to recognition of OHCA, EMS system activation, initiation of CPR, defibrillation, intubation, and intravenous administration of medications were successive, distinct factors that directly influenced outcomes of sudden cardiac arrest and should therefore be used inclusively as measurements of overall performance for EMS systems. This paper was notable for describing the research supporting each “link” in the chain or performance measurement of EMS system effectiveness and recommending specific actions to improve each area, thereby strengthening the chain of survival (Cummins et al., 1991).

A typical EMS event, regardless of the nature of the incident, follows a basic script. The first arriving unit performs a scene size-up and initial life safety assessment. The crew then gathers the appropriate equipment from the unit based upon patient injury, illness and location, and accesses and treats the patient.

In an analysis of data from more than 300 U.S. Fire Departments, first responder units arrived prior to ambulances in approximately 80 % of responses (IAFC/IAFF 2005). This response capability is likely attributed to the strategic locations of fire stations housing the engines and the fact that engines are often more densely located than ambulance transport units. In some cases, as is the case with motor vehicles accidents with entrapment and some structural collapse incidents, initial responding personnel may need to perform patient treatment and stabilization while performing patient rescue. For these types of incidents, it is necessary to have additional personnel on scene to assist with patient care and removal from the incident scene.

However, even without these major impediments, additional crew members assist with patient care and movement. In the experiments,

crew members were used to assist with patient treatment, packaging, removing the patient from the incident location to the ambulance transport unit, repositioning the ambulance transport unit, and other tasks that streamlined the on-scene activity.

The Relation of Time-to-Task Completion and Risk

Delayed response, combined with inadequate personnel resources exacerbates the likelihood of negative patient outcomes. While rapid response is critical to patient survival, the personnel who respond must also be highly competent in patient assessment and stabilizing treatment delivery.

Figure 2 illustrates a hypothetical sequence of events for response to a cardiac arrest (heart attack). A rapid response to an EMS incident is effective only if the personnel arriving on the scene can initiate appropriate emergency medical interventions. This requires adequate numbers of personnel, as well as appropriate equipment and prior training. Early advanced cardiac life support (ACLS) provided by paramedics at the scene is another critical link in the management of cardiac arrest. According to industry standards EMS systems should have sufficient staffing to provide a minimum of two rescuers trained in ACLS to respond to the emergency. However, because of the difficulties in treating cardiac arrest in the field, additional responders should be present (AHA, 2005).

The delivery of prehospital care is complex requiring both interpersonal and clinical skills. Firefighter/Paramedics must be able to communicate with patients, bystanders, on scene safety personnel, and hospital personnel. A lack of cooperation in any of these interactions could have a detrimental effect on the patient.

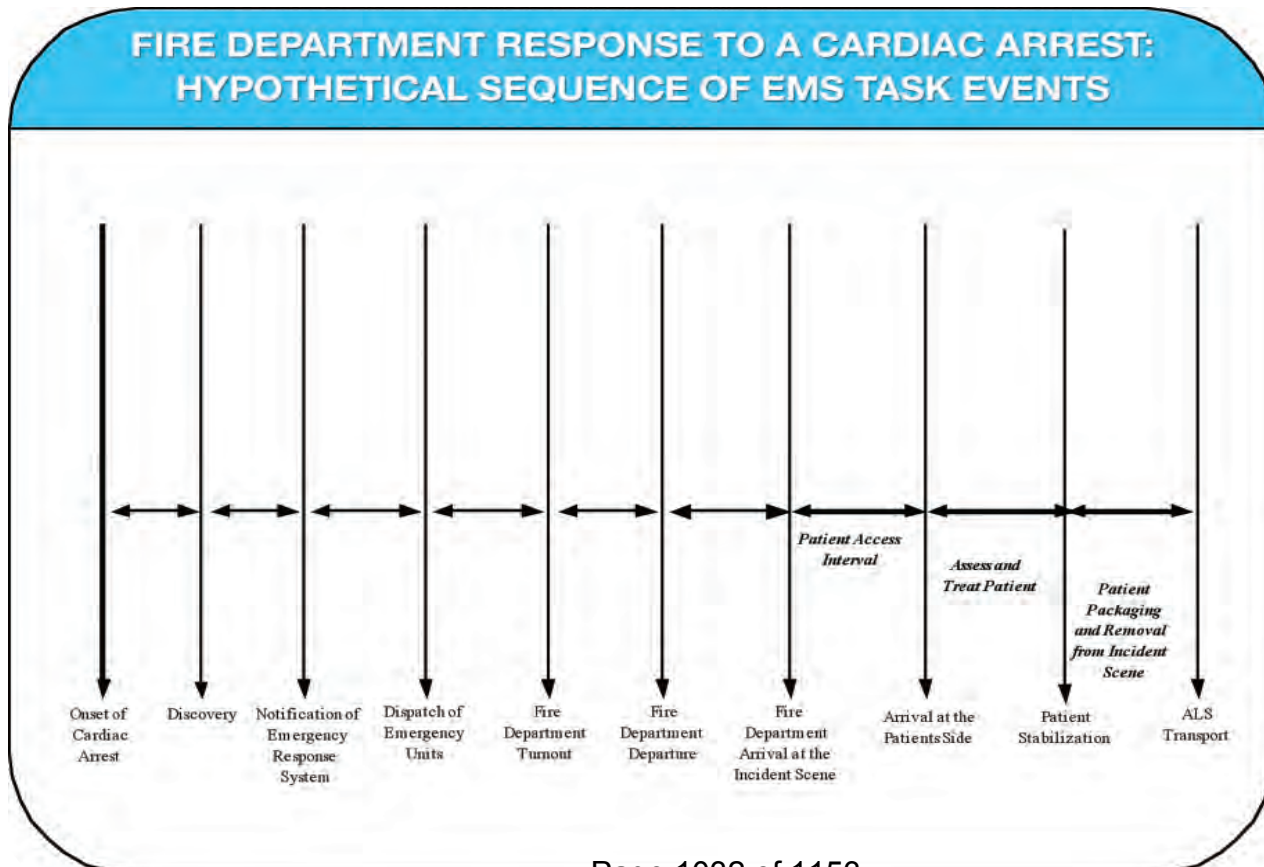


Figure 2: Hypothetical Timeline of a Fire Department Response to an EMS Incident

Standards of Response Cover

Developing a standard of response cover (SORC) related to service commitments to the community is a complex task. A SORC includes the policies and procedures that determine the distribution, concentration, and reliability of fixed and mobile resources for response to emergency medical incidents (CFAI, 2009). Fire departments that provide EMS must evaluate existing (or proposed) resources against identified risk levels in the community and against the tasks necessary to provide safe, efficient and effective emergency medical services. EMS risks that must be considered include population demographics such as socioeconomic status, age, ethnicity and health insurance status, as well as population density, community type (urban, suburban, or rural), access to healthcare, and traffic patterns and congestion. In addition to community risks, leaders must also evaluate geographic distribution and depth or concentration of resources deployed based on time parameters established by community expectation, state or local statute or industry standards.

Recognition and reporting of an emergency medical incident begins a chain of events that occur before firefighters arrive at the scene. These events include call receipt and processing, dispatch of resources, donning protective gear, and travel to the scene. NFPA 1710 defines the overall time from dispatch to the scene arrival as total response time. The standard divides total response time into a number of discrete segments, shown in Figure 2.

Arrival of emergency crews on scene is then followed by a sequence of tasks. Depending on the availability of resources available, tasks may be completed simultaneously or sequentially. Knowing the time it takes to accomplish each task with an allotted number of personnel and equipment can be useful in planning resource deployment. Ideally crews should arrive and intervene in sufficient time to prevent patient brain death, excessive blood loss, and minimize pain and suffering with the goal and expectation of transporting and delivering a viable patient to an appropriate medical facility.

Decision-making regarding staffing levels and geographic distribution of resources must also consider times when there are simultaneous events requiring multiple resource deployment into multiple areas of the jurisdiction. There should be sufficient redundancy or overlap in the system to allow for simultaneous incidents and high volume of near-simultaneous responses without compromising the safety of the patient, the public, or firefighters.

Policy makers have long lacked studies that quantify changes in EMS scene performance based on crew sizes and configuration. These experiments were designed to observe the impact of first responder crew size and ALS configuration on the time it takes to execute essential EMS tasks. It is expected that the results of this study will be used to inform the threshold performance objectives to the NFPA 1710 and 1720 Technical Committees.

Experiment Planning and Methodology

The EMS field experiments consisted of three distinct parts:

- Part 1- Time-to-task experiments related to gaining access to a patient and removing the patient from the incident scene.
- Part 2- Time-to-task experiments related to the care of a victim with multi-system trauma.
- Part 3- Time-to-task experiments related to the care of a victim with chest pain and witnessed cardiac arrest.

Following is a detailed description of the overall methods used

throughout the experiments. Specific information pertaining to each part is presented separately.

The following research questions guided the experimental design of the EMS field experiments documented in this report:

- 1. What is the effect of first responder crew size on EMS task times?
- 2. What is the effect of ALS personnel placement on EMS task times?
- 3. What is the effect of the number of ALS trained personnel on EMS task times?

Department Participation

The experiments were conducted in Montgomery County, MD at the Montgomery County Public Safety Training Academy and in Fairfax County, VA at the EMS Simulation Center. Experiments took place during the months of April and May 2009. All experiments took place in daylight between 0800 hours and 1500 hours.

Montgomery County (MD) and Fairfax County (VA) firefighters and paramedics participated in the field experiments. Each day, both departments committed one ALS engine, one ALS ambulance and the associated crews. Firefighters and paramedics were identified and oriented to the experiments. Participants varied with regard to age and experience. The allocation of resources made it possible to conduct back-to-back experiments by rotating firefighters between field work and rehabilitation areas.

Crew Orientation

Daily orientations were conducted. Orientations included a description of the overall study objectives, as well as the actual experiments in which they would be involved. Crews were also oriented to the site layouts and specific scenarios to be conducted.

Cue Cards

Task procedures were standardized for each experiment/scenario. Technical experts worked with the study investigators to break down crew tasks based on crew size. Task flow charts were then created and customized for the various crew sizes. The carefully designed task flow ensured that the same overall workload was maintained in each experiment, but was redistributed based on the number of personnel available for work.

All tasks were included in each scenario and cue cards were developed for each individual participant in each scenario. For example, a four-person first responder crew would have a cue card for each person on the crew including the driver, officer, and two firefighter/EMTs or paramedics. Cards were color coded by crew size to ensure proper use in each scenario.

Tasks

Tasks were completed specific to each scenario (patient access and removal from incident scene, trauma, and cardiac). Meticulous procedures gathered data to measure key areas of focus such as individual start times, task completion times, and overall scenario performance times. Each task in each scenario was assigned a standardized start and end marker, such as retrieving the key from the Knox Box⁶ or patient secured with straps to stretcher/cot. All tasks, with the events for measuring start and stop times, are shown in Table 3 through Table 5.

⁶ A Knox Box, known officially as the KNOX-BOX Rapid Entry System is a small, wall-mounted safe that holds building keys for firefighters and EMTs to retrieve in emergencies. Local fire companies can hold master keys to all such boxes in their jurisdictions, so that they can quickly enter a building without having to force entry or find individual keys held in deposit at the station.

On-Scene EMS Tasks

The on-scene tasks focused on the activities firefighters perform after they arrive on the scene of an emergency medical incident. A number of nationally recognized EMS experts were consulted during the development of the on scene EMS tasks in order to ensure a broad applicability and appropriateness of task distribution.⁷ The experiments compared crew performance and workload for typical medical response scenarios using two-, three-, and four-person first responder crews, along with a two-person ambulance crew. In total, 102 experiments were conducted to assess the time it took various crew configurations to complete the overall tasks in Parts 1, 2, and 3. In addition to first responder crew sizes, the experiments assessed the time necessary to access the patient, conduct a patient assessment, deliver on scene patient care, package the patient, and remove the patient from the incident scene to the ambulance. Two scenarios were selected as the basis of Parts 2 and 3. The scenarios included a patient with systemic trauma and a patient with chest pains leading to cardiac arrest.

The experiments also assessed the placement and number of responding ALS-trained personnel. There were 15 crew configurations considered during the experiments. These included the first responder crew being varied from two-, three-, and four-person crews. Additionally, the first responder crew configuration was varied to include either an all BLS crew or a combination crew containing one firefighter trained at the ALS level. The ambulance crew was held constant at two-persons. However, the ambulance crew configuration was varied to include two BLS crew members, one BLS and one ALS crew member, or two ALS crew members. Table 1 shows the crew configurations used throughout the experiments.

During the experiment crews dispatched to various scenarios included a first responder crew and ambulance transport unit or a single ambulance transport unit. For those experiments where both an engine company and an ambulance were dispatched, a three-minute stagger time was imposed for each of those trials. The three minute stagger time was determined from an analysis of deployment data from more than 300 fire departments responding to a survey of fire department operations conducted by the IAFC and the IAFF (2005). Each experiment containing a specific crew configuration was conducted in triplicate and completed in a randomized order (determined by randomization software) before a test configuration was repeated.

First Responder Engine Company	Ambulance Transport Unit	ALS Personnel On-Scene	Total Personnel On-Scene
N/A	2 BLS	0	2
N/A	2 ALS	2	2
N/A	1 BLS/1 ALS	1	2
2 BLS	2 ALS	2	4
3 BLS	2 ALS	2	5
4 BLS	2 ALS	2	6
1 BLS/1 ALS	1 BLS/1 ALS	2	4
2 BLS/1 ALS	1 BLS/1 ALS	2	5
3 BLS/1 ALS	1 BLS/1 ALS	2	6
2 BLS	1 BLS/1 ALS	1	4
3 BLS	1 BLS/1 ALS	1	5
4 BLS	1 BLS/1 ALS	1	6
1 BLS/1 ALS	2 BLS	1	4
2 BLS/1 ALS	2 BLS	1	5
3 BLS/1 ALS	2 BLS	1	6

Table 1: Crew Configurations for Time-to-Task Experiments

Radio Communication

Interoperability of radio equipment used by both participating departments made it possible to use regular duty radios for communication during the experiments. Company officers were instructed to use radios as they would in an actual incident. Montgomery County Fire and Rescue Communications recorded all radio interaction as a means of data backup. Once all data quality control measures were complete, the records were then overwritten as a routine procedure.

Task Timers

Ten observers/timers, trained in the use of identical standard stop watches with split-time feature, recorded time-to-task data for each field experiment. To assure understanding on the observed tasks, firefighters were used as timers, each assigned to specific tasks to observe and record the start and end times.

To enhance accuracy and consistency during recording times, the data recording sheets used several different colors for the tasks (see Appendix A). Each timer was assigned tasks that were coded in the same color as the recording sheet. All timers wore high-visibility safety gear on the incident scene.

Video records

In addition to the timers, video documentation provided a backup for timed tasks and for quality control. Cameras were used to record EMS scene activity from varied vantage points. Observer/timer data were compared to video records as part of the quality control process.

Crew Assignment

Crews from each department that regularly operated together were assigned to work as either a first responder crew or ambulance transport crew in each scenario. Both Fairfax County and Montgomery County crews participated in the experiment.

Crews assigned to each responding company position in one scenario were assigned to another responding company position in subsequent scenarios, with the objective of minimizing learning from one experiment to another. For example, crews in the role of first responder in the morning scenario might be assigned to the ambulance transport crew in the afternoon, thus eliminating learning the exact repetition of a task as a factor in time to completion. Additionally, participating crews from both Montgomery County and Fairfax County were from three different shifts, further reducing opportunities for participant repetition in any one position.

Props

Crews were assigned specific equipment lists to bring for this scenario. All equipment used was actual working equipment from the units assigned to the scenario. Specific items included in all scenarios were an airway bag, medical bag, oxygen cylinder, ECG monitor defibrillator, cot, and clipboard. Items specific to a particular scenario will be listed in that section of the report, including manikins and a live individual acting as a patient.

⁷ Technical experts included Greg Mears, Michael McAdams, and Philip Pommerening. More information about the experts is presented in the Acknowledgements later in this report.

Safety Protocols

Participant safety was a primary concern in conducting the experiments. All participants and experiments complied with guidelines and recommendations as outlined in NFPA 450: *Guide for Emergency Medical Services and Systems*, NFPA 1500: *Standard on Fire Department Occupational Safety and Health Program*, and NFPA 1999: *Standard on Protective Clothing for Emergency Medical Operations*.



Figure 3: Safety Officer

A safety officer from the Montgomery County Fire and Rescue Department was assigned to oversee all experiments.

The safety officer ensured all protocols concerning participant safety, under both real and experimental conditions were followed. This included wearing the correct personal protective equipment, vehicle maneuvering, and overall scene safety. The safety officer participated in all orientation activities and daily briefings. The safety officer had full authority to terminate any operation if any safety violation was observed. Radio communication was always available.

A closely related concern to firefighter safety and readiness to repeat experiments with equivalent performance was adequate rehabilitation. Each “team” of participants had ample time between experiments to rest and rehydrate.

Response Time Assumptions

Response time assumptions were made based on time objectives set forth in NFPA 1710. Time stagger allocations were set by project technical advisors in order to assess the impact of arriving unit time separation on task start and completion times, as well as overall scene time. Table 2 shows the values assigned to the various segments in overall response time.

Event Occurrence = time zero
60 seconds for recognition and call to 9-1-1
90 seconds for call processing and dispatch
60 seconds for responder turnout
Travel time = first responder engine = 420 seconds post event
Ambulance = 600 seconds post event

Table 2: Response Time Assumptions



Figure 4: Ascending Stairs to Access Patient



Figure 5: Carrying Patient Using Stair Chair



Figure 6: Trauma Patient Assessment



Figure 7: Trauma Patient Spinal Immobilization



Figure 8: Trauma Patient Packaging



Figure 9: Loading Patient on to Stretcher for Transport



Figure 10: Cardiac Patient Assessment



Figure 11: Cardiac Patient Intubation



Figure 12: Cardiac Patient I.V. & Medication Admin.



Figure 13: Moving Patient for Transport

Part 1: Patient Access and Removal from Incident Scene

Historically, total response time has been measured from the time a responding unit leaves a fire station until the time the unit arrives at the incident location. However, some studies suggest that total response time should include the additional time to locate and access the patient. Previous studies have shown a substantial time difference between the time the first responder arrives on scene and the time of patient access. One study noted that the patient access time interval represented 24 % of the total EMS response time interval among calls originating less than three floors above or three floors below ground and 32 % of those located three or more stories above ground (Morrison et al., 2005).

This study quantifies the time interval from arrival at the incident address until the crew begins the patient assessment, known as “at patient arrival time.” The experiment assumed the patient was on the 3rd floor of a garden style apartment complex with stair access. This is representative of a typical structure to which firefighters respond in many residential neighborhoods. Patient assessment and treatment were not performed during the patient access and removal experiment. The primary purpose of this part of the experiment was to ascertain patient access and removal times. This part of the experiment was conducted separately from the patient care scenarios in an effort to establish distinctive timelines for patient access and removal separate from the patient care scenarios where on scene time can vary widely based on patient illness or injury.

Incident Scene

Garden Apartment Complex Scenario:

Firefighters from Fairfax County (VA) and Montgomery County (MD) simulated an initial EMS response for a patient with difficulty breathing in a garden style apartment building, represented by Simulation Lab #1 on the grounds of the Montgomery County Safety Training Academy in Rockville, MD. Simulation Lab #1 is a seven-story building, consisting of concrete scissor stairwells leading to the top floor of the building. The front of the building was equipped with a Knox Box, which firefighters accessed before entering the building. This task was typical of security access at any apartment complex.

Apparatus and crews were staged approximately 500 ft (150 m) from the Montgomery County Simulation Lab #1. Apparatus responded to the incident location, personnel dismounted and assembled equipment. Equipment included a defibrillator, airway bag, oxygen, and drug bag. Additionally, ambulance crews were required to bring the stair chair for patient packaging and removal. A crew member obtained an access key from the Knox Box and gained entry. Once crews entered the building they proceeded with the equipment to locate the patient on the third floor stairwell landing.

Patient assessment and treatment were not performed in this part of the experiments. In each experiment, the patient was packaged onto a stair chair, and then the patient and equipment were carried down three flights of stairs and out of the building. The patient was then transferred to a stretcher and loaded into the ambulance for transport.

Tasks

Tasks for the garden apartment scenario for patient access and removal are delineated in Table 3.

Tasks	Measurement Parameters
1. Arrive on Scene	START- Engine stopped at building - Ambulance stopped at building - Wheels stopped/brake engaged
2. Assemble Equipment	START- Personnel off engine - Personnel off ambulance STOP- Equipment in hand moving toward patient
3. Conduct size-up/Scene safety	START- Officer off engine - Officer off ambulance STOP- Officer begins scene report
4. Enter door/building Knox Box or access code	START- Touch door STOP- Door open
5. Ascend stairs (three stories)	START- Personnel with foot on first stair STOP- Crew assembled at top of stairs
6. Package patient	START- Load onto stair chair with monitor, straps in place STOP- Moving patient out towards exit
7. Descend stairs	START- Personnel with foot on first stair STOP- Crew and patient at bottom of stairs
8. Exit door/building	START- Personnel exits building with patient on stair chair
9. Transfer patient to cot/stretcher	START- Begin transfer of patient onto cot/stretcher with monitor, straps in place STOP- Patient secure on cot/stretcher
10. Turn ambulance for loading	START- Firefighter in ambulance driver seat STOP- Ambulance positioned for patient loading
11. Load Ambulance	START- Patient secure on cot/stretcher STOP- Patient loaded and ambulance doors

Table 3: Time-to-Task Measures for Garden Apartment Scenario/Patient Access and Removal

Part 2: Trauma Patient

The trauma scenario involved time-to-task experiments focusing on a labor intensive traumatic scenario. In the experiment, a patient had fallen from a 25 ft (7.5 m) ladder at a construction site. This part of the experiment quantified the time intervals for different crew sizes and configurations responding to this event.

Incident Scene

The gymnasium at the Montgomery County (MD) Public Safety Training Academy was used for the trauma experiments. A classroom at the facility was also used for crew orientation and staging. Prior to the start of the experiments, participants were provided with the scenario background. Specifically, the call originated from a construction site that was only accessible by foot.

When cued, crews entered the gym and walked approximately 40 ft (12 m), carrying an airway bag (including suction), oxygen, spinal mobilization equipment, a trauma bag, and a radio and clip board. The “patient” was a 150 lb (68 kg) training manikin “voiced” when prompted by one of the timers. The patient could answer basic questions until the point in the sequence where the patient lost consciousness. During the scenario, when it became clear that the patient needed to be transported, a backboard was brought into the scene by the ambulance crew. After packaging the patient onto a backboard, the patient and equipment were carried out of the construction site to a waiting stretcher approximately 40 ft (12 m) away.

Tasks

The on-scene tasks focused on the activities firefighters regularly perform after they arrive on the scene of a patient with a traumatic injury. The experiments compared time-to-task performance based on varying crew sizes and ALS configurations.

Forty-five trauma experiments were conducted to assess the time it took various crew sizes and ALS configurations to complete the assigned tasks. Time between arrival of the first responding unit and ambulance transport unit was held constant at three minutes.

The following narrative describes the general sequence of activities in Part 2 of the experiments.

The first responding unit arrived, conducted a size-up and initial life safety assessment of the area, and gathered the appropriate equipment. The crew, with equipment, then proceeded into the construction site and located the patient. The patient was lying supine on the ground. The responders introduced themselves, obtained patient consent to examine and treat, and immediately initiated cervical spinal immobilization precautions and the patient interview. Other crew members then followed Airway, Breathing, and Circulation (A, B, C's) protocols. During the patient assessment, it was revealed the patient had a head laceration and an angulated fracture of the tibia/fibula (closed) on the right leg. Patient information was recorded on a standardized form created for the experiments and can be seen in Appendix B.

During the scenario, when the backboard straps were secure, the patient went into respiratory arrest. Crews then rechecked vital signs which revealed the patient had stopped breathing. The crew immediately began respiratory arrest protocol including administering a patent patient airway using an endotracheal tube. Intubation was performed using strict spinal immobilization restriction. With the airway established, the patient was then ventilated using a bag-valve-mask and patient packaging was completed. Crews then carried the patient and all equipment out of the construction site to the waiting stretcher.

Tasks	Measurement Parameters
1. At patient	START- Personnel at patient side One point in time
2. Spinal motion restriction	START- Personnel touches patient to position for immobilization STOP- Patient supine and personnel holding neck tension, patient immobilized
3. A, B, C's	START- At patient STOP- Personnel notes A, B, C's intact
4. Patient interview	START- Ask three questions 1) What happened? 2) Where are you hurting? 3) What is your name STOP- Questions answered 1) Don't know 2) Head and right leg 3) Joe
5. Body sweep- find laceration on head and angulated fracture of tibia/fibula (closed) on <u>Right</u> leg	START- Personnel starts patient survey/sweep- touches patient and explains "Sir, I am going to check you for injuries" STOP- Personnel locates/identifies head laceration and leg fracture. Head-to-toe sweep complete. Starts on right, goes down, the back up left side to shoulder
6. Oxygen (O ²) administration- face mask	START- Accessing O ² administration equipment STOP- Mask on patient and O ² on high flow
7. Check vitals	START- Accessing equipment for any vitals check Blood pressure (BP) cuff, stethoscope, cardiac monitor, or pulse oximeter STOP- All vitals checked and reported
8. Expose patient as indicated	START- Touch patient clothing for removal STOP- Patient chest and legs exposed
9. Control bleeding	START- Personnel accesses equipment (bandages) STOP- Head wound bandaged (gauze and tape)
10. Splint leg	START- Personnel accesses equipment (splint) or touch foot to check pulse STOP- Leg splinted- pulse check when splint in place
11. Back board	START- Personnel accesses equipment (board, collar, straps) STOP- Patient secured on back board- all straps in place
Movement causes labored breathing = Agonal Respiration >> Patient Vomits >> Patient Unconscious	
12. Airway- Endotracheal (ET) intubation with spinal motion restriction (completed on ground due to distance from transport unit)	START- Paramedic (and assisting personnel) touches airway bag (including laryngeal scope, ET tube, syringe, and stethoscope) STOP- ET tube in place, cuff inflated, lung sounds checked, and tube secured
13. Bag Valve Mask (BVM)	START- Paramedic touches BVM STOP- BVM- first squeeze
14. Package patient/move for transport	START- Pick up back board to move to cot/stretcher STOP- Ambulance door closed

Table 4: Time-to-Task Measures for Trauma Scenerio

Fourteen tasks were completed in the trauma experiments. Meticulous procedures gathered data to measure key areas of focus, such as individual task start times, task completion times, and overall scenario performance times. Each task was assigned a standardized start and end marker, such as accessing oxygen equipment (start) until the mask was on the patient and oxygen was flowing (stop). The 14 tasks can be seen in Table 4.

Part 3: Cardiac Patient

The cardiac scenario involved time-to-task experiments focusing on a labor-intensive medical event, i.e., a patient that experiences a myocardial infarction leading to cardiac arrest. This part of the experiment quantified the time intervals for different crew sizes and ALS configurations responding to the event.

Incident Scene

The cardiac experiments were conducted in a laboratory at the Fairfax County Fire and Rescue Department EMS Simulation Center. The Simulation Center houses classrooms, laboratories, and offices for training of EMT's and paramedics. Assorted furniture was staged in the laboratory to duplicate a "home" setting. When cued, crews entered the room and proceeded approximately 10 ft (3 m) to the patient. The patient was represented by SimMan® by Laerdal. SimMan® is an adult-sized manikin that can produce vital signs including, a pulse, heartbeat, lung sounds, blood pressure and other signs noted in real humans. SimMan® also had vocal capabilities such as speaking or crying (Laerdal, 2010). SimMan® was operated remotely from a control booth adjacent to the laboratory.

Prior to the start of the experiments, participants were provided with the scenario background. Specifically, the call originated from a private residence and the caller complained of chest pain. Responders entered the room carrying an airway bag, oxygen, drug bag, and defibrillator. The defibrillator was either an AED and/or a 12-Lead ECG model defibrillator dependent upon the arrival of ALS trained personnel. During the scenario, the patient went into cardiac arrest on cue and crews reacted by changing their path of patient care for chest pain to a more time-critical path of treatment for a pulseless, apneic patient. When crews had completed on-scene patient care tasks, the patient was packaged onto a backboard and stretcher. The patient and all equipment were removed from the room to conclude the experiment.

Tasks

As noted previously, the on-scene tasks focused on the activities firefighters perform after they arrive on the scene of a patient with

a cardiac emergency. The experiments compared crew performance for a typical cardiac scenario using a combination of varying crew sizes and configurations.

Forty-five cardiac experiments were conducted to assess the time it took various crew sizes and configurations to complete the assigned tasks. Time between arrival of the first responding unit and ambulance transport unit was held constant at three minutes.

The following narrative describes the general sequence of activities in Part 3 of the experiments.

The first responding unit arrived, conducted a size-up and initial life safety assessment of the building and gathered the appropriate equipment. The crew, with equipment, then proceeded to the front door of the patient residence, knocked, and entered. After confirming the scene was safe, patient assessment was begun.

The responders introduced themselves, obtained the patient's consent to examine and treat and then proceeded to conduct the patient interview. The patient interview was standardized to include SAMPLE and OPQRST protocols. Patient information was recorded on a standardized form created for the experiments and can be seen in Appendix C.

During the scenario, on cue, the patient went into cardiac arrest. Upon patient arrest, the crew rechecked the patient's vital signs which revealed the patient had stopped breathing and had no pulse.

The crew then followed protocol and moved the patient to the floor where they could immediately begin CPR and prepare to administer defibrillation. Study protocol then followed Advanced Cardiac Life Support guidelines for patient care (AHA, 2005).

Twenty-two tasks were completed in the cardiac experiments. Meticulous procedures gathered data to measure key areas of focus, such as individual task start times, task completion times, and overall scenario performance times. Each task was assigned a standardized start and end marker, such as accessing oxygen tank equipment (start) until the mask was on patient and oxygen was flowing (stop). The 22 tasks can be seen in Table 5.

Analysis of Experimental Results

This section describes the analytic approaches used to address the research objectives of the study. The statistical methods used to analyze the EMS time-to-task observations are presented. Then the time-to-task results are reported for EMS responses in three scenarios:

- access and removal of patient;
- a trauma event; and
- a cardiac event.

Time-to-Task Analysis

Time-to-task data were compiled into a database and assessed for outliers and missing entries. As is common in a repeated experiment with many pieces of data to be entered, occasionally data elements were not collected. Missing data occurred in less than 1 % of timing observations. Such instances were reviewed via video and/or radio tapes. Missing data attributable to timer error were replaced by the time observed in the video. Where video and/or radio documentation proved inadequate, missing data were imputed with the mean of the observed corresponding task times from the other two experiments. The extremely low occurrence of missing data and associated imputation should have a negligible impact on the statistical findings in the analyses.

Data Queries

The statistical methods used to analyze the time-to-task data were driven by the principal goals of this research project — to assess the effect of crew size, ALS placement on the responding crews, and the number of ALS trained personnel in the crew configuration on time-to-task for critical steps in each EMS scenario. The research goal motivated the development of four specific research questions (see Figure 14) that in turn pointed to specific statistical analyses to generate inference and insight.

TIME-TO-TASK RESEARCH QUESTIONS

For Response Access & Removal:

1. What are the effects of first responder crew size regardless of ALS placement with respect to:
 - a. reaching a patient?
 - b. removing a patient after packaging?

For Cardiac and Trauma Scenarios (task timings measured between arrival at patient to the completion of patient packaging):

1. What is the effect of crew size on EMS task times?
2. What is the effect of ALS personnel placement on EMS task times?
3. What is the effect of the number of ALS trained personnel on EMS task times?

Statistical Methods

The analysis of the time-to-task data involved a sequence of ordinary least squares regression models. The models relate the *experimental outcomes* (i.e., various measures of time — start time, completion time, or duration of the task) to *key dimensions* for each scenario as follows:

For Access and Removal:

- first responder crew size (regardless of ALS placement), and
- ambulance-only versus ambulance with first responder engine with varying crew sizes.

For Trauma and Cardiac scenarios:

- presence of an engine at the scene,
- crew size on the first responder engine, and
- placement and number of ALS personnel (on the engine, on the ambulance, or both).

To account for these dimensions in the analyses, indicator variables representing each key dimension were employed. For example, for the trauma and cardiac scenarios there were indicators for the number of first responders on the engine, three indicators of the assignment of ALS personnel to the ambulance or engine, and indicators for the “no engine” scenarios.

Using these indicators, sets of regression equations were developed for the analysis of each scenario. Indicators corresponding to the three scenarios and multiple dimensions listed above were included. For example, when an engine was sent, the number of first responders (two, three, or four) assigned to the engine were varied, as well as the placement of ALS personnel (one ALS on the engine only; one on the ambulance only; two on the ambulance; and one ALS each on the ambulance and engine). When no engine was sent, zero, one, or two ALS personnel were placed on the ambulance.

The regression equations took the form:

$$y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \dots + \beta_k x_{ik} + \varepsilon_i$$

Where the x_k represented the test conditions such as presence of an engine or placement of ALS personnel, and the dependent variable y represents the observed outcome (e.g., task duration).

The model coefficients from the completed regressions provided direct estimates of the change in time associated with the number of first responders (e.g., four versus two, three versus two), as well as the change in time associated with alternative assignments of ALS personnel. These estimates are generally the same as those obtained by comparing the difference in means across groups.

However, for a small number of outcomes, the estimates differ from those obtained using difference in means by appropriately accounting for data that are missing in particular scenarios.

Table 6 to Table 8 present the list of time-related outcomes that were used to explore effects on outcomes for patient access/removal, as well as for cardiac and trauma scenarios, respectively. Not all tasks were subjected to testing for this report. Only substantively critical milestones in the task sequence were considered. For instance, the *assembly of equipment* and *conduct*

Figure 14: Research Questions for Time-to-Task Experiments

of size-up were **not** assessed for the Access and Removal scenario. Instead, the elapsed time from arrival on scene to reaching the patient (as denoted by completing the ascent of stairs) was determined to be of primary importance. Similarly, the elapsed time between packaging patient and the completion of loading the ambulance was assessed rather than individual timings of any task in the sequence between these two major milestones. Similar judicious choices of critical milestones were made in the

assessments of trauma and cardiac, and these are depicted in the outcome measures tables.

Although several of the analytic questions of interest can be obtained directly from the model, others require a linear combination of the coefficients. The statistical software (Stata) calculates both the desired combination of coefficients and the measure of statistical significance via t-test.

ACCESS & REMOVAL -- Outcome Measures		
Task:	<i>Elapsed Time Arrival to Completion</i>	<i>Elapsed Time Package Patient to End of Loading</i>
1 Arrive on Scene		
2 Assemble Equipment		
3 Conduct Size Up - Scene Safety		
4 Enter Door - Building - 'Knox box'		
5 Ascend - Stairs (2 stories—ground floor to third floor)	X	
6 Package Patient - stair chair		
7 Descend Stairs (2 stories – third floor to ground) with Patient		
8 Exit Door - Building		
9 Transfer Patient to Cot/stretchers		
10 Turn Ambulance for Loading		
11 Load Ambulance / Seat Belt		X

Table 6:
Outcome Measures for Access and Removal Scenario by Task

TRAUMA -- Outcome Measures			
Task:	<i>Elapsed Time Until Start</i>	<i>Task Duration</i>	<i>Elapsed Time to Completion</i>
1	At Patient - Engine		
2	At Patient - Ambulance		
3	Spinal Motion Restriction	X	
4	ABC's	X	X
5	Patient Interview	X	
6	Body Sweep	X	X
7	O ² Administration	X	
8	Check Vitals	X	X
9	Expose Patient	X	
10	Wound Bandaged	X	
11	Splint Leg	X	X
12	Back Board	X	X
13	Airway - Intubation ET	X	X
14	Bag Valve Mask	X	
15	Package Patient /Equipment	X	X

Table 7:
Outcome Measures for Trauma Scenario by Task

CARDIAC -- Outcome Measures			
Task:	<i>Elapsed Time Until Start</i>	<i>Task Duration</i>	<i>Elapsed Time to Completion (from arrest)</i>
1	At Patient		
2	ABCs	X	X
3	Patient Interview	X	
4	O ² Administration	X	
5	Check Vitals	X	X
6	ALS Vitals 12-Lead	X	
7	Expose Chest	X	
8	Patient Arrest		
9	Position Patient		
10	ABC's (from Arrest time)	X	
11	Defibrillator pads (from Arrest time)	X	
12	Analyze / Shock #1	X	
13	ABC's after Shock #1 (from Arrest time)	X	
14	CPR		
15	Airway Intubation (from Arrest time)		X
16	IV Access	X	X
17	Meds (Epinephrine) (from Arrest time)	X	
18	Analyze / Shock #2 (from Arrest time)	X	
19	ROSC		
20	Meds (Lidocaine) (from Arrest time)	X	
21	Package Patient/Equip (from Arrest time)	X	X

Table 8:
Outcome Measures for Cardiac Scenario by Task

The objective of the experiments was to determine the relative effects of first responder crew size, ALS provider placement and the number of ALS providers on the effectiveness of the EMS crews relative to key milestones among the task intervention times for each of the three scenarios. The experimental results are discussed below.

Of the various EMS tasks measured during the experiments, those described in the remainder of this section were determined to have significant differences based on the crew configurations studied. Their differential outcomes based on variation of first responder crew size, ALS crew configuration, and the number of ALS level providers on scene, are statistically significant at the 95 % confidence level or better. Times reported in seconds are rounded to the nearest five seconds. As a final technical note, we did not adjust significance levels to take into account the large number of tests being conducted. The observed number of significant results far exceeds what would be expected simply by chance.

Measurement Uncertainty

The measurement of tasks using stopwatch timing has unique components of uncertainty that must be evaluated in order to determine the fidelity of the data. All timers were equipped with the same model of digital stopwatch with a resolution of 0.01s and an uncertainty of $\pm 3s$ per 24 hr. The uncertainty of the timing mechanism in the stopwatches is small enough over the duration of an experiment that it can be neglected.

There are three components of uncertainty when using people

to time the EMS tasks. First, timers may have a bias depending on whether they record the time in anticipation of, or in reaction to an event. Second, multiple timers were used to record all tasks. Third, the mode of the stimulus to which the timer is reacting—audible or visual.

Milestone events in the EMS experiments were recorded both audibly and visually. A test series described in the *NIST Recommended Practice Guide for Stopwatch and Timer Calibrations* noted that reaction times for the two modes of stimulus to be approximately the same, so this component can be neglected. Based on the assumptions made in the Residential Fireground Experiments (Averill et al., 2010), bias estimated for timer reaction time was determined to be 230 ms as a worst case scenario.

Considering the above, the total estimated combined standard uncertainty is ± 3.23 s. The magnitude of uncertainty associated with these measurements has no impact on the statistical inferences presented in this report.

How to Interpret the Time-to-Task Graphs

Figure 15 presents a sample of a time-to-task results graph. Each crew size/configuration has a bar graphic showing the start time and completion time for the task. Visually, bars start from the left and extend horizontally across the graph based on time expended by various EMS crew configurations. The length of the bar graphic is a visualization of the duration of the task. Longer bars indicate longer duration times. Actual time data are also shown on each bar.

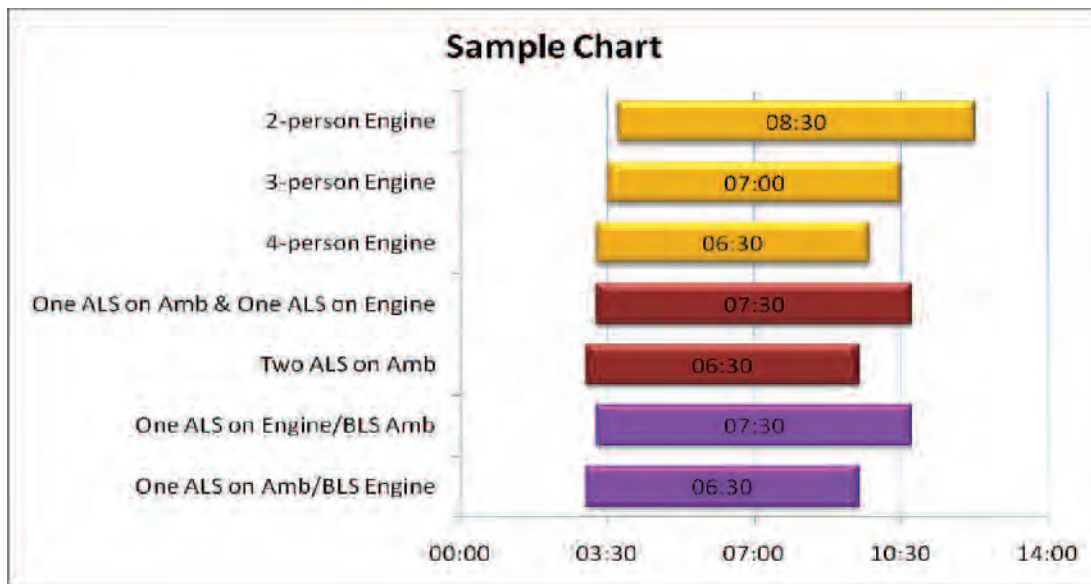


Figure 15: Sample Time-to-Task Graph

Time-to-Task Graphs

Part 1- Patient Access and Removal

Overall Scene Time (Time to complete all EMS tasks for Patient Access and Removal)

Access

The crews can differ in the time required to reach the patient (*access*) and in the time needed for patient *removal*. To address these tasks, sets of simulations were conducted by varying crew size on the first responding engine. Ambulance crews were held constant at two persons. As noted previously, the arrival times were staggered between the engine and the ambulance. When an ambulance was sent without a first responder engine, for measurement consistency, it was assumed to arrive at the scene *at the same time* as would an engine (i.e., there is no systematic, built-in delay).

The results for *patient access* show that two-person first responder crews take longer to reach a patient than configurations with larger crew sizes. Two-person crews finished the patient access tasks approximately *half a minute* later than larger first responder crews. Moreover, the ambulance crew alone finished

with a time between that of the two-person and the larger first responder crews. The *ambulance alone* result is likely attributed to the removal of the staggered arrival time when first responder crews were not sent. (See Appendix E for the timings by staffing configuration, difference of means and associated t-tests.)

Patient Removal

The patient removal results show substantial differences associated with crew size. Crews with two-person first responder crews completed patient removal between (1.2 – 1.5) minutes slower than larger crews, depending on crew size. This is largely the result of work load in carrying equipment, supplies and the patient with fewer crew members. All crews with first responders completed removal substantially faster (by 2.6 min. - 4.1 min.) relative to the ambulance-only crew. Again, this is largely the result of the difficulty of carrying and loading the patient, as well as the equipment and supplies with only a two-person crew, given that one person must remain with the patient at all times. (See Appendix E)

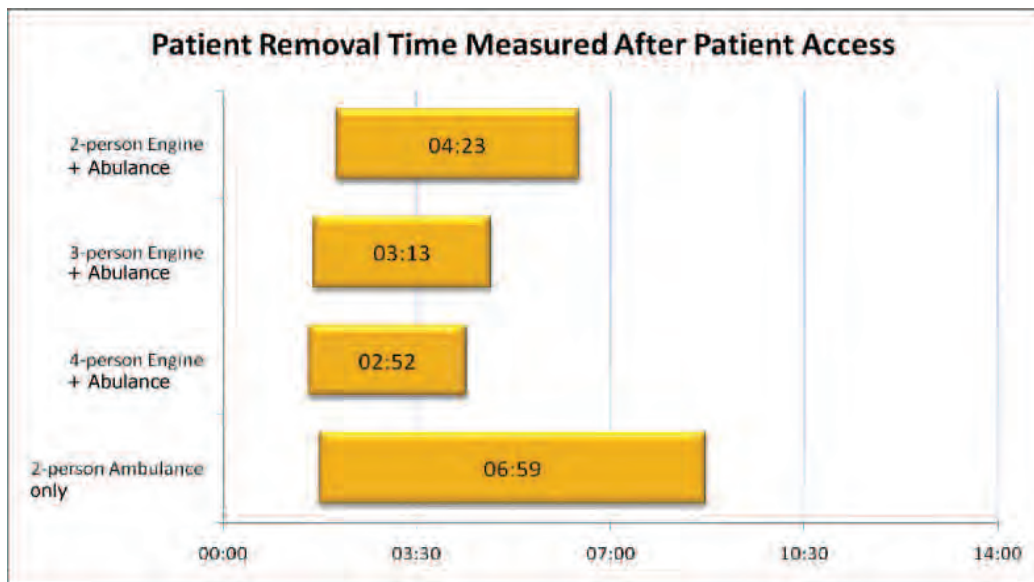


Figure 16: Patient Removal Time

Part 2- Multi-System Trauma

Overall Scene Time (Time to complete all EMS tasks for Trauma Patient)

As previously noted, for the trauma scenario part of the experiments, there was an assumed three minute stagger in arrival between the first responder crew and the ambulance crew.

Crews responding with one ALS provider on the engine and on the ambulance completed all trauma tasks 2.3 minutes (2 minutes and 16 seconds) faster than crews with a BLS engine and an ALS ambulance with two ALS level providers.

Crews responding with four-person first responder crews, regardless of ALS configuration, completed all trauma tasks 1.7 minutes (1 minute and 50 seconds) faster than first responder crews with three persons, and 3.4 minutes (3 minutes and 25 seconds) faster than first responder crews with two persons. This suggests that for trauma scenarios, the more hands available, the easier it is to implement the full portfolio of tasks to be completed.

The statistical tests that correspond to these findings appear in Appendix F. Appendix H shows the original regression coefficient estimates upon which the tests in Appendix F were constructed.

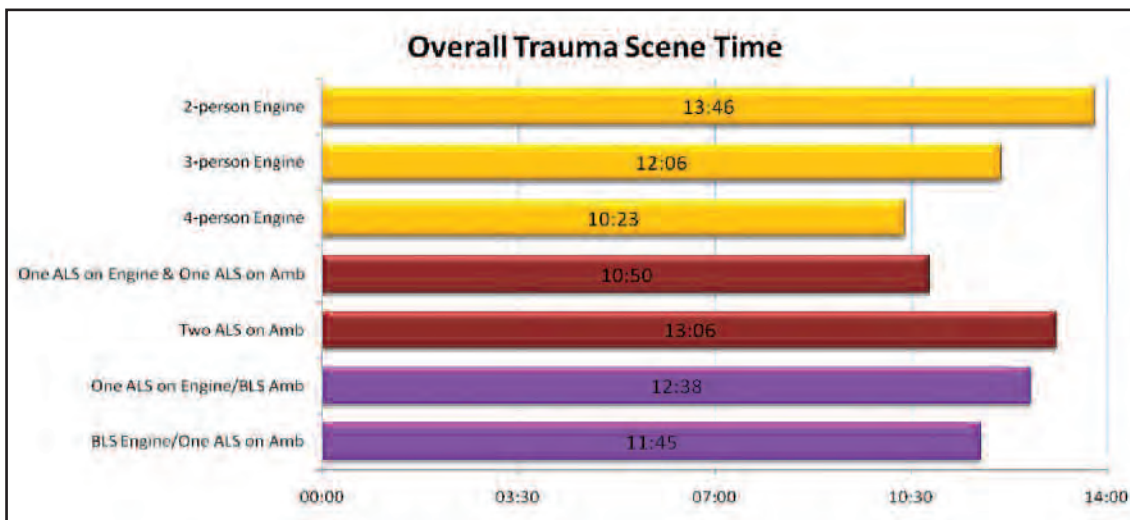


Figure 17: Overall Trauma Scene Time

Individual Task Times

Oxygen Administration

First responders with four-person crews were able to begin oxygen administration to the patient nearly a full minute (55 seconds) sooner than the three-person crew.

Vital Sign Assessment

First responders with four-person crews were able to begin checking the patient's vital signs nearly one minute (55 seconds) sooner than a two-person crew. They also completed the check about 80 seconds faster than the two-person crew. First responders with four-person crews were able to begin checking the patient's vital signs 30 seconds sooner than a three-person crew. To the extent that checking vitals is a critical task in a trauma response sequence, the reduction of half a minute to a minute of time could be seen as an important improvement.

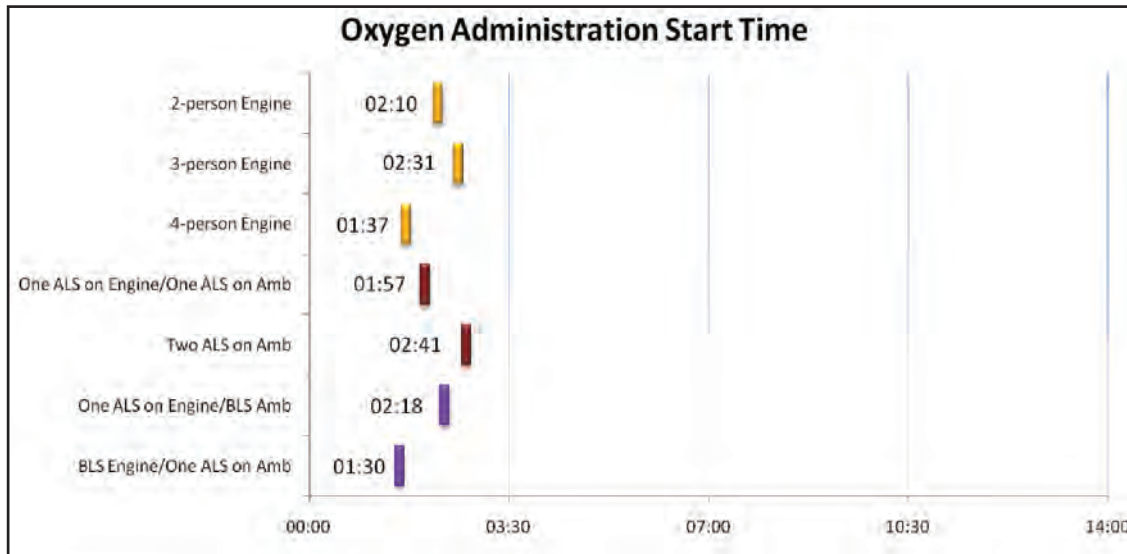


Figure 18: Oxygen Administration Start Time

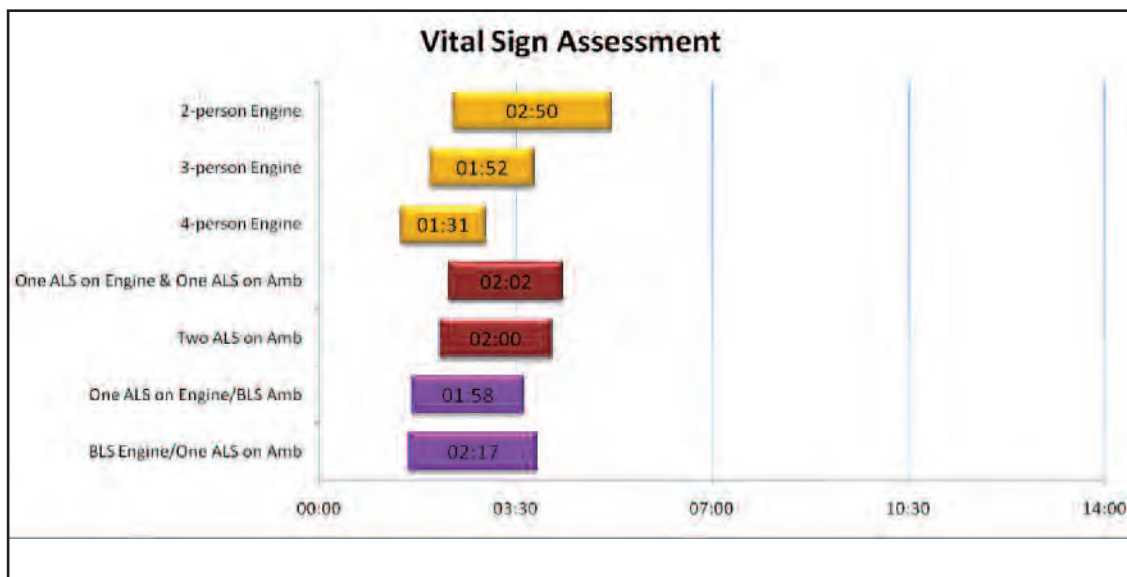


Figure 19: Vital Sign Assessment Start and Duration

Wound Bandaging

First responders with three-person crews were able to begin bandaging the patient's wounds a minute and 40 seconds sooner than first responders with two-person crews. The value of a four-person crew witnessed in the earlier tasks (e.g., checking vitals) did not manifest for this task.

Splint Leg

First responders with four-person crews were able to begin splinting the patient's leg approximately a minute faster than either the two- or three-person crews. A small advantage of a four-person crew re-emerges at this next step (i.e., following bandaging) in the response task sequence.

Crew configurations with one ALS provider on the first responding engine and one on the ambulance were able to begin splinting the patient's leg 40 seconds sooner than crews with two ALS providers on the ambulance.

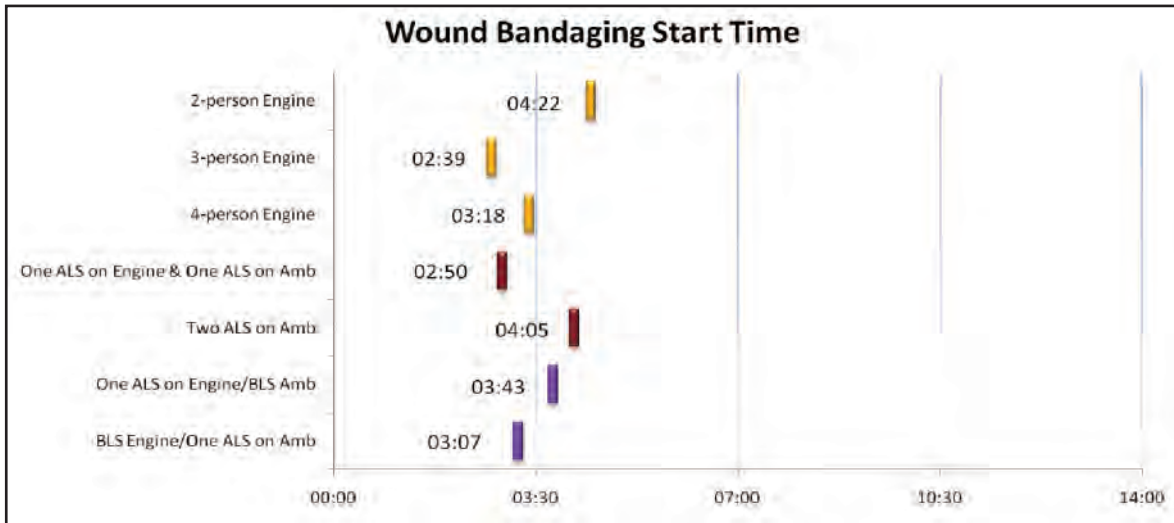


Figure 20: Wound Bandaging Start Time

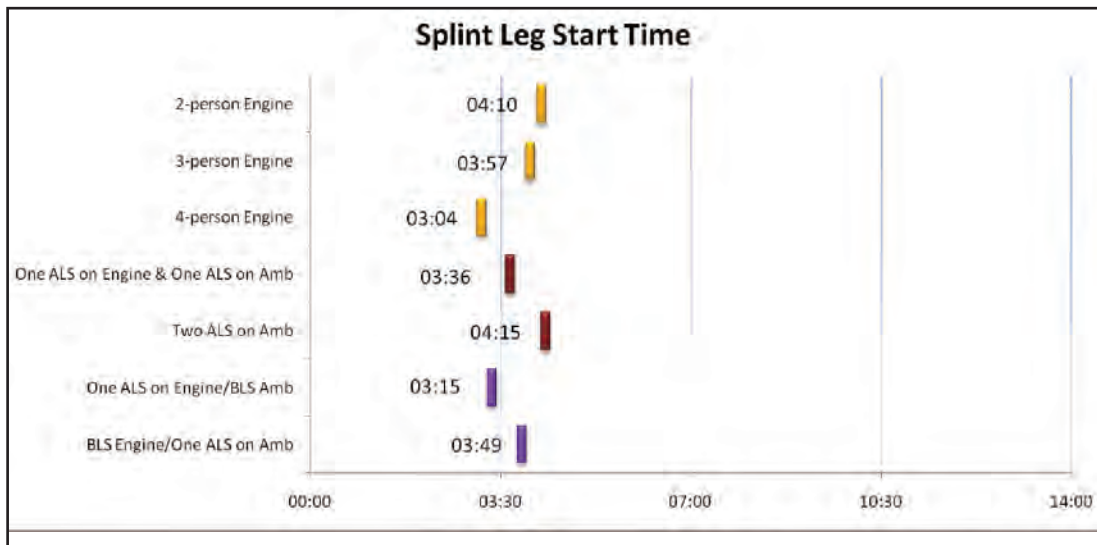


Figure 21: Splint Leg Start Time

Spinal Immobilization/ Back board

First responders with four-person crews were able to conduct spinal immobilization/back-boarding of the patient two minutes faster than either two- or three-person crews. No differences were observed based on placement or number of the ALS personnel.

Airway — Endotracheal Intubation

First responders with four-person crews were able to begin securing the patient’s airway using endotracheal intubation two and one-half minutes (2 minutes and 35 seconds) sooner than the two-person

crews and two minutes sooner than the three-person crews.

Crew configurations with one ALS provider on the first responding engine and one on the ambulance were able to begin securing the airway using endotracheal intubation one minute and 25 seconds sooner than crews with two ALS providers on the ambulance.

Additional personnel marginally speed up the intubation procedure. A second ALS person and having more than two persons on the engine each reduce the time of the intubation by half a minute.

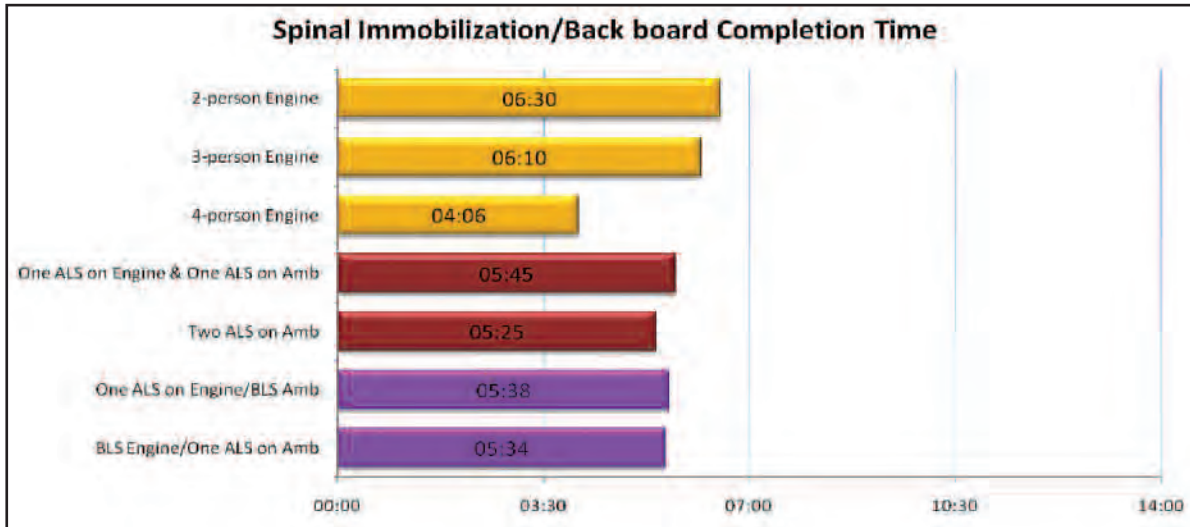


Figure 22: Spinal Immobilization Time Airway – Endotracheal Intubation

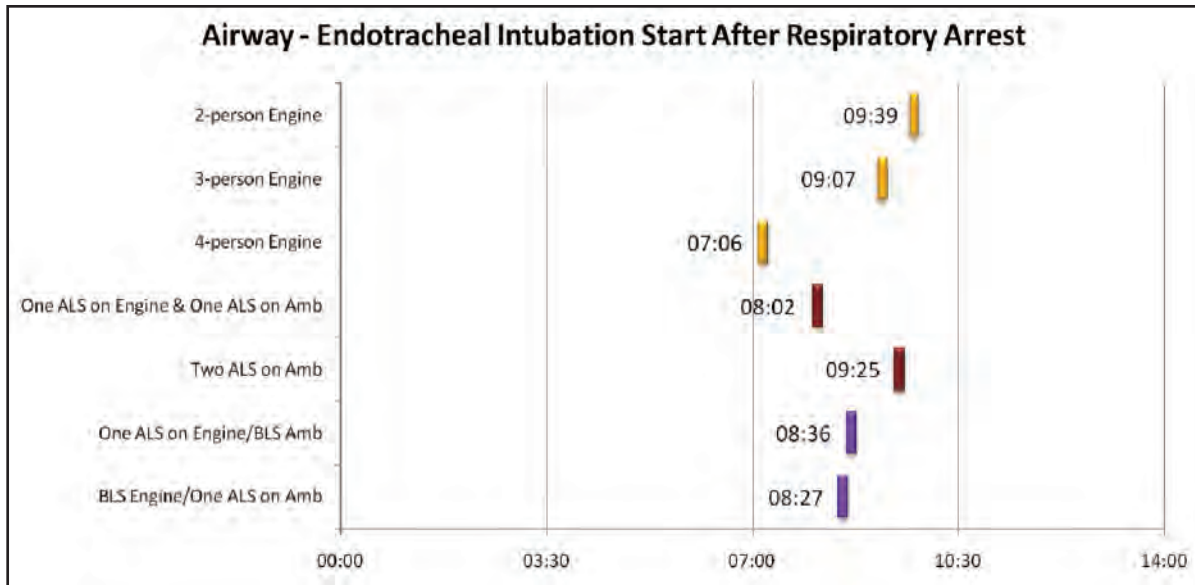


Figure 23: Airway – Intubation Start Time

Bag Valve Mask

First responders with four-person crews were able to begin bag valve mask ventilation after intubation two minutes and 35 seconds sooner than the two-person crews and nearly two minutes (110 seconds) sooner than the three-person crews.

Crew configurations with one ALS provider on the first responding engine and one on the ambulance were able to begin bag valve mask ventilation after intubation one and one-half minutes (one minute and 29 seconds) sooner than crews with two ALS providers on the ambulance.

Patient Packaging

Additional first responders reduce the times until the start and completion of packaging. First responders with four-person crews were able to begin patient packaging 3.1 minutes (three

minutes and 5 seconds) sooner and complete all packaging activities moving toward transport nearly 3.4 minutes (three minutes and 25 seconds) sooner than the two-person crews. In addition, the four-person crews were able to begin patient packaging 1.6 minutes (one minute 35 seconds) sooner and complete all packaging activities moving toward transport 1.7 minutes (one minute 40 seconds) sooner than the three-person crews.

Crew configurations with one ALS provider on the first responding engine and one on the ambulance were able to begin patient packaging 2.1 minutes (two minutes and 5 seconds) sooner and complete all packaging activities moving toward transport 2.3 minutes (two minutes and 15 seconds) sooner than crews with both ALS personnel arriving on the ambulance. No differences were associated with placement of a single ALS

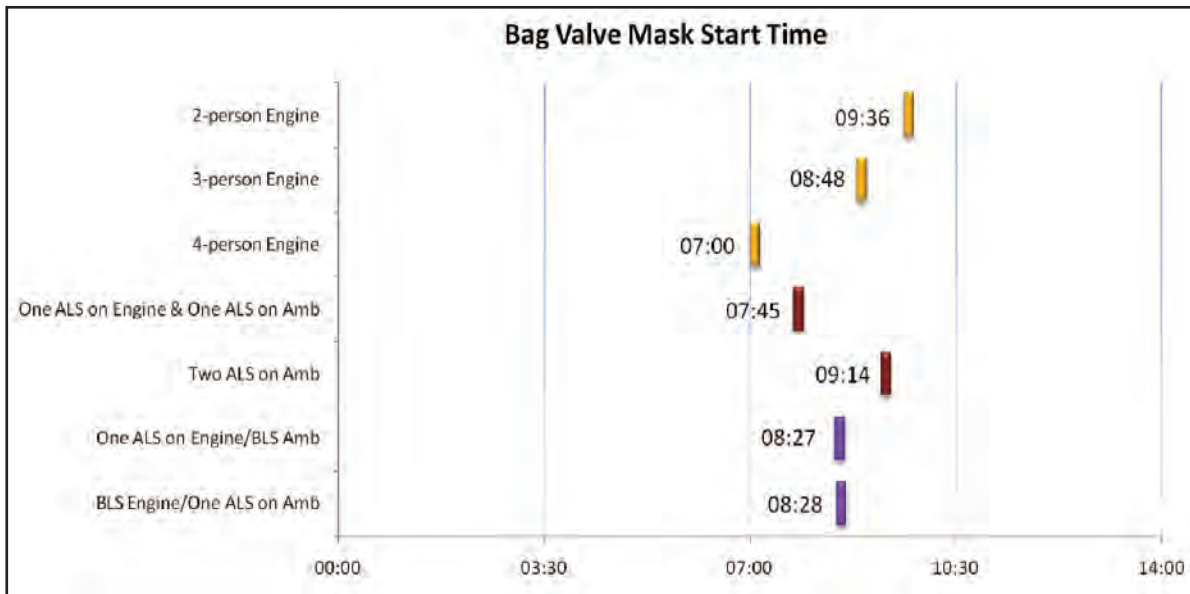


Figure 24: Bag Valve Mask Start Time

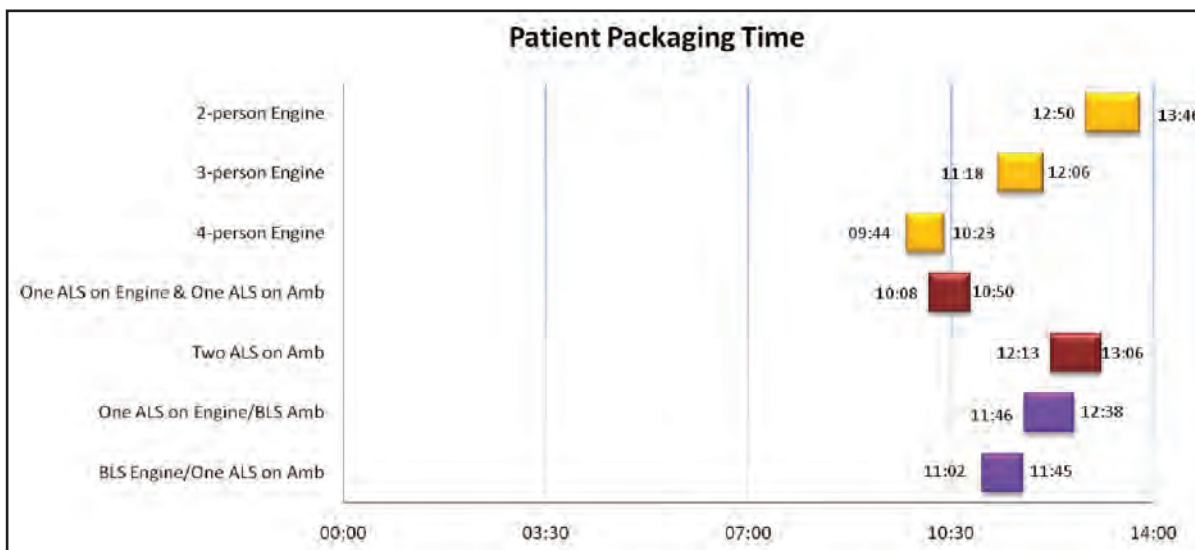


Figure 25: Patient Packaging Start and End Times

provider or with the availability of a second ALS provider.

Patterns in the Trauma Scenario

The preceding presentation focuses on the specific tasks that comprise the overall trauma response sequence. Examination of the collection of findings across tasks, reveals patterns that provide insight into how crew configurations affect trauma response. To examine this, the occurrences of significant differences of elapsed time to start by task were tabulated. Table 9 presents the task sequence and statistically significant differences when comparing ALS placement (Columns A and B) and contrasting crew sizes (Columns C – E) for the outcome “elapsed time to the start of a task.” Column A shows a clear advantage to placing one ALS on the engine (with one on an ambulance that arrives three minutes later) versus two ALS on a later arriving ambulance. The time advantage manifests in the last third of the task sequence, beginning with splinting the leg. One explanation for this would be that having an ALS on the engine creates small increments of time that cumulate and finally manifest (at a statistically significant level) beginning with splinting the leg and carrying forward to all subsequent tasks. Another factor may be that certain tasks may be performed concurrently rather than sequentially when enough hands are available at the scene and this leads to overall time reductions relative to smaller crews that

are forced to complete some set of tasks sequentially.

No clear pattern emerges for starting time significant differences when contrasting the addition of a second ALS person (Column B). The same appears to be true for comparing the crew sizes of three versus two (see Column C).

On the other hand, distinct patterns are seen in Columns D and E of Table 9 which depict the comparison of four versus two and four versus three crew sizes, respectively. Although there is some evidence of real time savings (as far as elapsed time to start a task) for the middle third of tasks in the sequence (for example between O₂ administration and splint leg), a consistent pattern favoring a crew size of four is seen beginning with airway intubation and continuing through patient packaging.

Taken as a whole, Table 9 suggests that while a crew size of four may not consistently produce time savings in the start of tasks initially in the trauma task sequence, there are clear advantages as work progresses, beginning with airway intubation through patient packaging. The same can be seen (beginning earlier with leg splinting) when comparing the start times for one ALS on the engine and one on the ambulance versus two ALS on the ambulance. No such pattern emerges for the single ALS provider regardless of placement on the engine versus the ambulance.

Trauma Scenario Coefficient Direction and Significant Differences for Elapsed Time to Start* by Task** and Staff Configuration					
	A	B	C	D	E
TRAUMA Task Sequence:	PLACEMENT: 1 ALS on Amb and 1 ALS on Engine vs 2 on Ambulance	PLACEMENT: 2 ALS vs 1 ALS	CREW SIZE: 3 vs. 2	CREW SIZE: 4 vs. 2	CREW SIZE: 4 vs. 3
Spinal Motion Restriction					
ABCs			S +		
Patient Interview		S +			
Body sweep					
O2 administration					S -
Check Vitals		S +		S -	S -
Expose patient					
Wound Bandaged					
Splint Leg	S -			S -	S -
Back Board	S -				
Airway - intubation	S -			S -	S -
Bag Valve Mask	S -			S -	S -
Package Patient / move for transport	S -		S -	S -	S -
<p>* An 'S' cell entry denotes a statistically significant difference at the 0.05 level for Elapsed Time to Start under the test shown in the Column heading. Also, a '+' indicates a positive coefficient value (longer time) ; a '-' denotes a negative coefficient value (shorter time). ** The contrast of one ALS on Engine vs one ALS on Ambulance showed no statistically significant differences for start time and therefore is not presented in this table.</p>					

Table 9: Trauma Scenario Coefficient Direction and Significant Differences

Part 3- Chest Pain and Witnessed Cardiac Arrest

Overall Scene Time

Crews responding with four first responders, regardless of ALS configuration, completed all cardiac tasks from the “at patient time” 70 seconds faster than first responder crews with three persons, and two minutes and 40 seconds faster than first responder crews with two persons.

Additionally, crews responding with one ALS provider on both the engine and ambulance completed all scene tasks from the “at patient time” 45 seconds sooner than crews with two ALS providers on the ambulance and a BLS engine.

Crews responding with an ALS Engine and a BLS Ambulance completed tasks from “at patient time” two minutes 36 second sooner than crews with a BLS Engine and one ALS provider on the Ambulance.

These results echo the trauma findings.

Due to the nature of the cardiac scenario, where crews began the experiment with a chest pain patient who then went into cardiac arrest (no pulse and no respirations), it was necessary to assess some tasks relative to the time the patient arrested. The arrest was cued from the end time for the 12-Lead ECG task.

Crews responding with four first responders, regardless of ALS configuration, completed cardiac tasks following the patient going into cardiac arrest 85 seconds faster than first responder crews with two persons.

Crews responding with a BLS engine and an ambulance with two ALS level providers completed all cardiac tasks following the patient arrest 50 seconds sooner than crews with an ALS provider on both the engine and ambulance. This counter-intuitive difference in the results may be attributable to the delay of the patient arrest time based on the arrival of the 12-Lead ECG monitor with the two-person ALS Ambulance crew. The 12-Lead ECG task *end time* was the arrest *start time*. In this scenario, there were instantaneously two ALS providers present at the arrest rather than the one ALS provider placing the 12-Lead ECG device in the ALS engine /ALS Ambulance crew.

The statistical tests that correspond to these findings appear in Appendix G. Appendix H shows the original regression coefficient estimates upon which the tests in Appendix G were constructed.

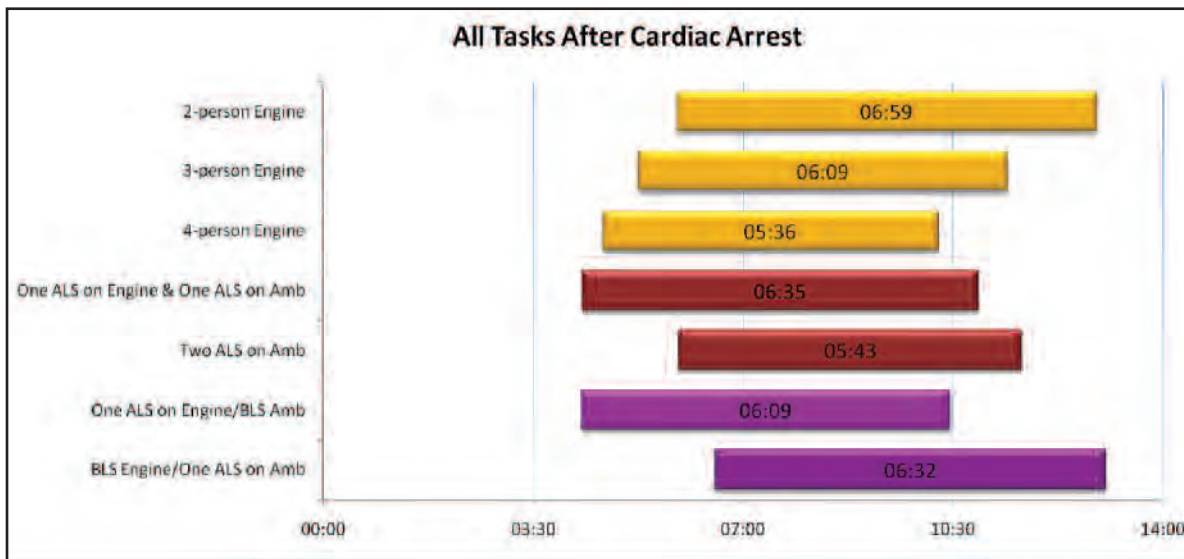


Figure 27: Total Cardiac Completion Time

Individual Task Times

12-Lead ECG Monitor

Crew configurations with one ALS provider on the first responding engine and one ALS level provider on the ambulance were able to apply the 12-lead ECG device two minutes and 20 seconds sooner than crews with both ALS providers on the ambulance.

Similarly, crew configurations with one ALS provider on the first responding engine and no medic on the ambulance also were able to apply the 12-lead ECG device two minutes and 20 seconds sooner than crews with no ALS on the first responding engine and a single ALS level provider on the ambulance.

These results may be influenced by the fact that this task can only be administered by ALS level providers. When ALS personnel are only on the ambulance, the task cannot begin until three minutes after the start of the experiment – the ambulance arrival time built into the experiments. Nonetheless, this finding is noteworthy given that national data show that ambulances typically arrive later than first responder crews.

Only a small difference in the time to begin applying the ECG device was associated with having a second ALS provider on the scene. This is not surprising, as ECG application typically requires a single ALS trained provider. Other ALS tasks later in the sequence show greater significance for having two ALS personnel on scene.

IV Access

Crew configurations with one ALS provider on the first responding engine and no medic on the ambulance were able to start the procedure for IV access two minutes and 30 seconds sooner than crews with no ALS on the first responding engine and a single ALS level provider on the ambulance. No reductions in the time to IV access were associated with a second ALS on scene. Although likely a by-product of the three-minute ambulance stagger, this finding is noteworthy because of the typical lag (behind first responders) in the arrival of an ambulance.

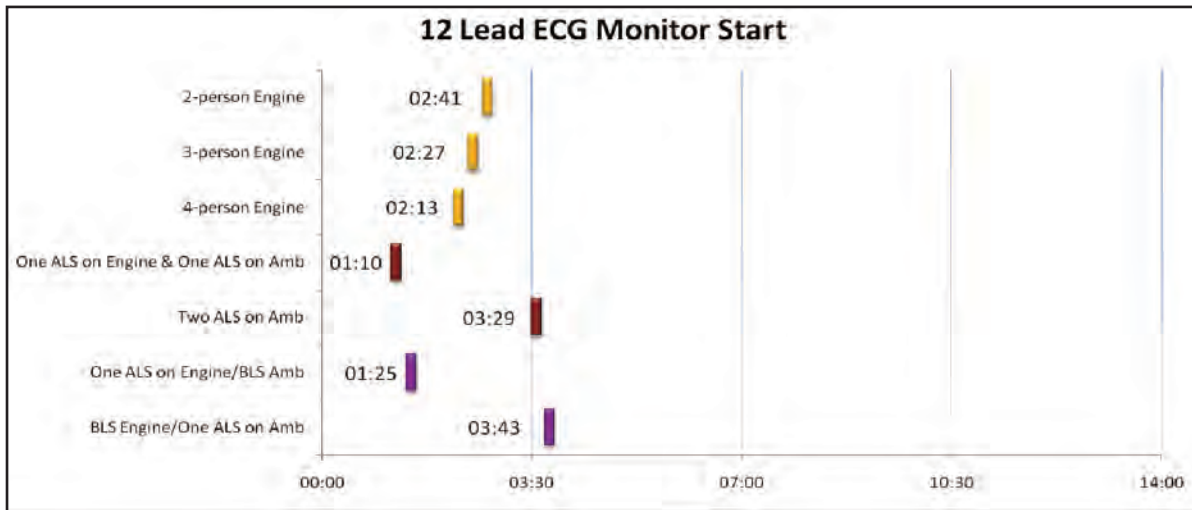


Figure 28: 12-Lead ECG Start Time

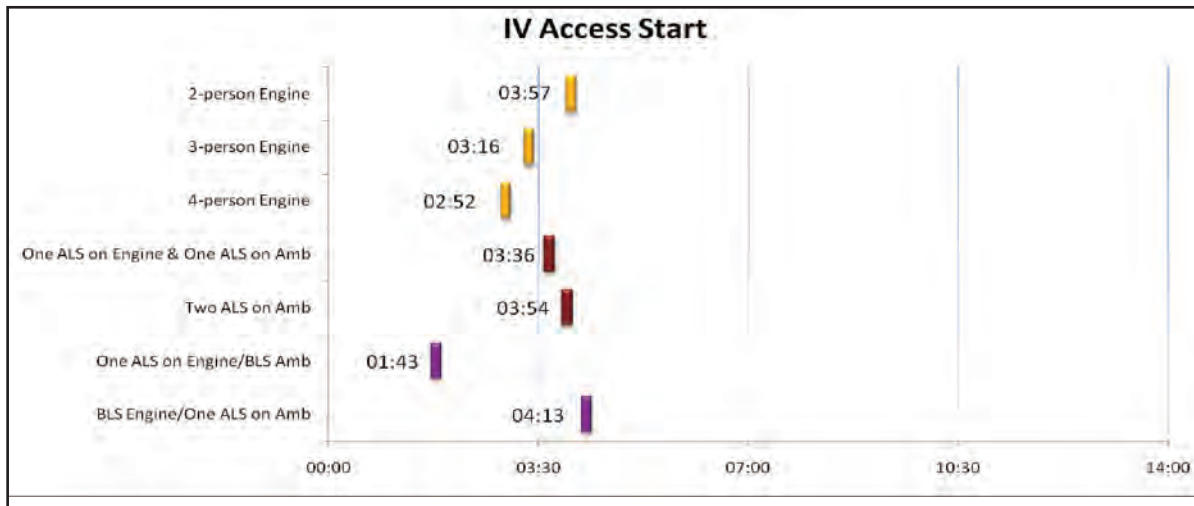


Figure 29: IV Access Start Time

Airway- Endotracheal Intubation

Crew configurations with two ALS level providers were able to begin to secure the patient’s airway using endotracheal intubation over a minute (65 seconds) sooner than crew configurations with one ALS provider.

Patient Packaging

Measured from the time of arrest, first responders with four-person crews were able to begin patient packaging one minute sooner and complete all packaging activities moving toward transport one minute and 25 seconds sooner than the two-person crews.

First responders with three-person crews were able to complete all patient packaging activities moving toward transport 50 seconds sooner than the two-person crews, while four-person crews were able to complete all patient packaging activities moving toward transport 85 seconds sooner than the two-person crews.

Crew configurations with two ALS personnel arriving on the ambulance were able to complete all packaging activities, post arrest and move toward transport 50 seconds sooner than crews with one ALS provider on the first responding engine and one on the ambulance.

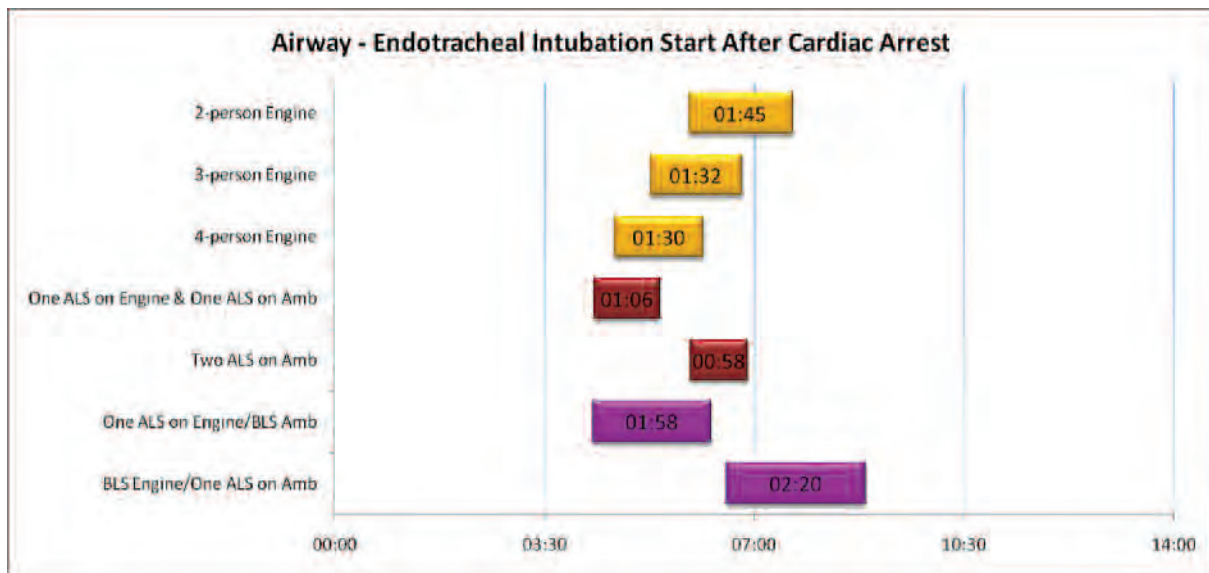


Figure 30: Airway- Intubation After Patient Arrest

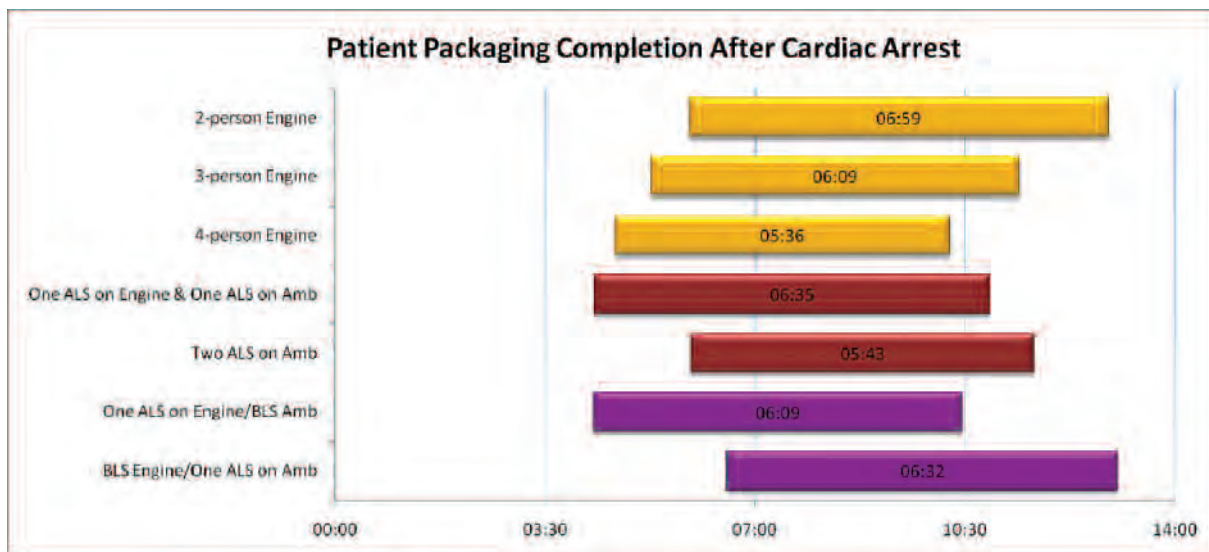


Figure 31: Patient Packaging Completion After Patient Arrest

Patterns in the Cardiac Scenario

As with the trauma analysis, the preceding presentation of findings focused on specific tasks that comprise an EMS cardiac response. The significant differences of elapsed task start times were tabulated by task and appear as Table 10. The table presents the task sequence and statistically significant differences when comparing ALS placement (Columns A – C) and contrasting crew sizes (Columns D – F) for the outcome “elapsed time to the start of a task.”

The results appear mixed. Column A shows that an ALS provider on an engine has advantages over an ALS provider on an ambulance for start times in earlier tasks – ALS Vitals 12-Lead through IV access. No other ALS provider placement advantages appear for the remainder of the response sequence.

Columns B and C show sporadic task-specific advantages for start times in a few tasks. For example, when comparing crews with one ALS provider on the engine and one ALS provider on

the ambulance versus two ALS providers on ambulance, and when comparing crew configurations with two ALS providers (regardless of placement) to crews with one ALS provider. A similar sporadic advantage appears when comparing first responder crew sizes of three versus a crew size two.

A pattern similar to that observed with trauma appears when comparing the start times for a first responder crew of four versus a first responder crew of two. The advantage of the four-person crew appears in a few early tasks with at least two tasks being completed sequentially, including the initial ABC’s being completed with the vital sign check, and the 12-Lead ECG being completed with exposing the patient’s chest task. However, comparing these first responder crew sizes, a greater sequential time advantage is revealed for the last three tasks (analyze shock #2 through package patient), as shown in the last three rows of Column E.

Cardiac Scenario Coefficient Direction and Significant Differences for Elapsed Time to Start* by Task** and Staff Configuration					
	A	B	C	D	E
CARDIAC Tasks:	PLACEMENT: 1 ALS on Engine vs 1 ALS on Ambulance	PLACEMENT: 1 ALS on Amb and 1 ALS on Engine vs 2 on Ambulance	PLACEMENT: 2 ALS vs 1 ALS	CREW SIZE: 3 vs. 2	CREW SIZE: 4 vs. 2
ABCs				S -	S -
Patient Interview					
O2 administration					
Check Vitals					
ALS Vitals 12-Lead	S -	S -			S -
Expose Chest	S -	S -			S -
IV Access	S -				
Position Patient (from arrest)			S -		
ABCs (from arrest)					
Defib pads (from arrest)					
Analyze / Shock #1 (from arrest)					
ABCs – After Shock #1 (from arrest)					
CPR – CPR (from arrest)					
Airway Intubation (from arrest)			S -		
Meds (Epi) (from arrest)		S +			
Analyze / Shock #2 (from arrest)				S -	S -
Medis (Lidocaine) (from arrest)			S -		S -
Package Patient/Equip (from arrest)					S -

Table 10: Cardiac Scenario Coefficient Direction and Significant Differences

Conclusions

The objective of the experiments was to determine how first responder crew size, ALS provider placement, and the number of ALS providers is associated with the effectiveness of EMS providers. EMS crew effectiveness was measured by task intervention times in three scenarios including patient access and removal, trauma, and cardiac arrest. The results were evaluated from the perspective of firefighter and paramedic safety and scene efficiency rather than as a series of distinct tasks. More than 100 full-scale EMS experiments were conducted for this study.

As noted in the literature review, hundreds of firefighters and paramedics are injured annually on EMS responses. Most injuries occur during tasks that require *lifting or abnormal movement* by rescuers. Such tasks include lifting heavy objects (including human bodies both conscious and unconscious), manipulating injured body parts and carrying heavy equipment. Several tasks included in the experiments fall into this category, including splinting extremities, spinal immobilization (back boarding) and patient packaging. During the experiments larger crews completed these tasks more efficiently by distributing the workload among more people thereby reducing the likelihood of injury.

A number of tasks are also *labor intensive*. These tasks can be completed more efficiently when handled by multiple responders. Several tasks in the experiments are in this category. These include checking vital signs, splinting extremities, intubation with spinal restriction, establishing IV access spinal immobilization, and patient packaging. Similar to the lifting or heavy work load task, larger crews were able to complete labor intensive tasks using multiple crew members on a single task to assure safe procedures were used reducing the likelihood of injury or exposure.

Finally, there are opportunities on an EMS scene to reduce scene time by completing tasks simultaneously rather than concurrently thus increasing operational efficiency. Since crews were required to complete all tasks in each scenario regardless of their crew size or configuration, overall scene times reveal operational efficiencies.

Each of these perspectives is discussed below for the patient access/removal scenario, as well as both the trauma and the cardiac scenarios.

Patient Access and Removal

With regard to accessing the patient, crews with three or four first responders reached the patient around half a minute faster than smaller crews with two first responders. With regard to completing patient removal, larger first responder crews in conjunction with a two-person ambulance were more time efficient. The removal tasks require heavy lifting and are labor intensive. The tasks also involve descending stairs while carrying a patient, carrying all equipment down stairs, and getting patient and equipment out multiple doors, onto a stretcher and into an ambulance.

The patient removal results show substantial differences associated with crew size. Crews with three- or four-person first responders complete removal between (1.2 – 1.5) minutes faster than smaller crews with two first responders. All crews with first responders complete removal substantially faster (by 2.6 min. - 4.1 min.) than the ambulance-only crew.

These results suggest that time efficiency in access and removal can be achieved by deploying three-or four-person crews on the

first responding engine (relative to a first responder crew of two). To the extent that each second counts in an EMS response, these staffing features deserve consideration. Though these results establish a technical basis for the effectiveness of first responder crews and specific ALS crew configurations, other factors contributing to policy decisions are not addressed.

Trauma

Overall, field experiments reveal that four-person first responder crews completed a trauma response faster than smaller crews. Towards the latter part of the task response sequence, four-person crews start tasks significantly sooner than smaller crews.

Additionally, crews with one ALS provider on the engine and one on the ambulance completed all tasks faster and started later tasks sooner than crews with two ALS providers on the ambulance. This suggests that getting ALS personnel to the site sooner matters.

A review of the patterns of significant results for task start times reinforced these findings and suggests that (in general) small non-significant reductions in task timings accrue through the task sequence to produce significantly shorter start times for the last third of the trauma tasks.

Finally, when assessing crews for their ability to increase on-scene operational efficiency by completing tasks simultaneously, crews with an ALS provider on the engine and one ALS provider on the ambulance completed all required tasks 2.3 minutes (2 minutes 15 seconds) faster than crews with a BLS engine and two ALS providers on the ambulance. Additionally, first responders with four-person first responder crews completed all required tasks 1.7 minutes (1 minute 45 seconds) faster than three-person crews and 3.4 minutes (3 minutes and 25 seconds) faster than two-person crews.

Cardiac

The overall results for cardiac echo those of trauma. Regardless of ALS configuration, crews responding with four first responders completed all cardiac tasks (from at-patient to packaging) more quickly than smaller first responder crew sizes. Moreover, in the critical period following cardiac arrest, crews responding with four first responders also completed all tasks more quickly than smaller crew sizes. As noted in the trauma scenario, crew size matters in the cardiac response.

Considering ALS placement, crews responding with one ALS provider on both the engine and ambulance completed all scene tasks (from at-patient to packaging) more quickly than a crew with a BLS engine and two ALS providers on the ambulance. This suggests that ALS placement can make a difference in response efficiency. One curious finding was that crews responding with a BLS engine and an ambulance with two ALS providers completed the tasks that follow cardiac arrest 50 seconds *sooner* than crews with an ALS provider on both the engine and ambulance. As noted, this counter-intuitive difference in the results may be attributable to the delay of the patient arrest time based on the arrival of the 12-Lead ECG monitor with the two-person ALS Ambulance crew. The 12 -Lead ECG task *end time* was the arrest *start time*. In this scenario, there were instantaneously two ALS providers present at the arrest rather than the one ALS provider

placing the 12-Lead ECG device in the ALS engine /ALS Ambulance crew.

A review of the patterns of significant results across task start times showed mixed results. An ALS on an engine showed an advantage (sooner task starting times) over an ALS on an ambulance for a few tasks located earlier in the cardiac response sequence (specifically, ALS Vitals 12-Lead through IV access). A crew size of four also showed shorter start times for a few early tasks in the cardiac response sequence (initial ABC's, and the ALS Vitals 12-Lead and expose chest sequence). More importantly, a sequential time advantage appears for the last three tasks of the sequence (analyze shock #2 through package patient).

Finally, when assessing crews for their ability to increase on-scene operational efficiency by completing tasks

simultaneously, crews with an ALS provider on the engine and one ALS provider on the ambulance completed all required tasks 45 seconds faster than crews with a BLS engine and two ALS providers on the ambulance. Regardless of ALS configuration, crews responding with four first responders completed all cardiac tasks from the "at patient time" to completion of packaging 70 seconds faster than first responder crews with three persons, and two minutes and 40 seconds faster than first responder crews with two persons. Additionally, *after the patient arrested*, an assessment of time to complete remaining tasks revealed that first responders with four-person crews completed all required tasks 50 seconds faster than three-person crews and 1.4 minutes (1 minute 25 seconds) faster than two-person crews.

Summary

While resource deployment is addressed in the context of three basic scenarios, it is recognized that public policy decisions regarding the cost-benefit of specific deployment decisions are a function of many factors including geography, resource availability, community expectations as well as population demographics that drive EMS call volume. While this report contributes significant knowledge to community and fire service leaders in regard to effective resource deployment for local EMS systems, other factors contributing to policy decisions are not addressed. The results however do establish a technical basis for the effectiveness of first responder crews and ALS configuration with at least one ALS level provider on first responder crews. The results also provide valid measures of total crew size efficiency in completing on-scene tasks some of which involve heavy lifting and tasks that require multiple responders to complete.

These experimental findings suggest that ALS provider placement and crew size can have an impact on some task start times in trauma and cardiac scenarios, especially in the latter tasks leading to patient packaging. To the extent that creating time efficiency is important for patient outcomes, including an ALS trained provider on an engine and using engine crew sizes of four are worth considering. The same holds for responder safety – for access and removal and other tasks in the response sequence, the availability of additional hands can serve to reduce the risks of lifting injuries or injuries that result from fatigue (e.g., avoid having small crews repeatedly having to ascend and descend stairs). Cost considerations for EMS response and crew configurations were not considered in this study.

Study Limitations

The scope of this study is limited to understanding the relative influence of deployment variables on labor-intensive emergency medical incidents, specifically multi-system trauma and cardiac arrest events. It should be noted that the applicability of the conclusions from this report to a large scale hazardous or multiple-casualty event have not been assessed and should not be extrapolated from this report.

The crews involved in this study typically operate using three- to four-person engine crews, and two-person ambulance crews. However, other departments across the United States vary in crew sizes, some using two- to five-person first responder engine crews and three-person ambulance crews.

Every attempt was made to ensure the highest possible degree of realism in the experiments including the use of multiple crews from multiple shifts in the participant departments. However, as the trauma and cardiac experiments were repeated a minimum of 45 times, for crews involved in more than one experiment, a learning curve on the part of the participants may have been established.

All experiments were conducted indoors, during daylight hours. Treating patients outside among varying weather conditions or at night, when visibility is lower, could pose additional obstacles.

Additionally, the actual effect of ALS interventions on patient outcome is beyond the scope of this study. Patient outcomes were not quantified or estimated.

The design of the experiments limited the patient care scenarios to a systemic trauma event and a medical cardiac event. Other patient illnesses and injuries including diabetes, seizures, gunshot wounds, stabbings, and motor vehicle accidents were not considered.

EMS protocols pertaining to the treatment and transport of patients vary by departments. For the purpose of this study, tasks were standardized by technical experts and individual times were recorded for each task. In real-world situations, as in this study, many of these can be performed simultaneously based on the number and training level of responding personnel. Attempts to generalize the results from these experiments to individual departments must take into account protocols and equipment that vary from those used in the experiments.

Finally, data from U.S. fire departments were used to set response and arrival time assumptions. For departments with different deployment capability for both first responder crews and ambulances, the results may vary.

Future Research

In order to realize a significant reduction in firefighter and paramedic line-of-duty injury, fire service leaders must focus directly on resource allocation and the deployment of resources, a known contributing factor to LOD injury. Future research should use similar methods to evaluate firefighter/paramedic deployment to other medical emergencies as well as combination scenes where both fire suppression and EMS resources are needed. Additionally, resource deployment to multiple-casualty disasters or terrorism events should be studied

to provide insight into levels of risks specific to individual communities and to recommend resource deployment proportionate to such risk. Future studies should continue to investigate the effects of resource deployment on the safety of firefighters, paramedics and the civilian population to better inform public policy. Finally, the ability to relate response and task timing to patient outcomes and survival rates should be quantified.

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A project of this magnitude extends well beyond the capabilities and expertise of the authors of this report. The following individuals were instrumental to the success of the EMS experiments.

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Glossary

12-Lead Electrocardiogram (ECG) — A representation of the heart's electrical activity recorded from 10 electrodes placed in standard positions on the body's surface.

Advanced Cardiac Life Support (ACLS) — A set of clinical interventions for the urgent treatment of cardiac arrest and other life threatening medical emergencies, as well as the knowledge and skills to use those interventions.

Advanced Life Support (ALS) — Emergency medical treatment beyond basic life support that provides for advanced airway management including intubation, advanced cardiac monitoring, defibrillation, establishment and maintenance of intravenous access, and drug therapy.

Ambulance Transport Unit — Provides transport for patients from the incident scene to a health care facility.

Automated External Defibrillator (AED) — A portable electronic device that automatically diagnoses potentially life-threatening cardiac arrhythmias of ventricular fibrillation, and is able to treat them through defibrillation, the application of electrical therapy which stops the arrhythmias, allowing the heart to reestablish an effective rhythm.

Basic Life Support (BLS) — A specific level of prehospital medical care provided by trained responders, focused on rapidly evaluating a patient's condition; maintaining a patient's airway, breathing, and circulation; controlling external bleeding; preventing shock; and preventing further injury or disability by immobilizing potential spinal or other bone fractures.

Cardiac Arrest — Sudden cessation of heartbeat and heart functions, resulting in the loss of effective circulation.

Cardiopulmonary Resuscitation (CPR) — Procedure designed to support and maintain breathing and circulation for a person who has stopped breathing (respiratory arrest) or whose heart has stopped (cardiac arrest).

Chain of Survival — The four components of EMS response to out-of-hospital cardiac arrest that are thought to effect the most optimal patient outcome. The four components include early recognition and EMS access, early CPR, rapid defibrillation, and advanced life support.

Combination Fire Department — Fire department consisting of both paid (career) and volunteer personnel.

Crew configurations — Specific ways of staffing or organizing members of the work force.

Definitive Medical Care — Medical treatment or services beyond emergency medical care, initiated upon inpatient admission to a hospital or health care facility.

Emergency Medical Services (EMS) — The treatment of patients using first aid, cardiopulmonary resuscitation, basic life support, advanced life support, and other medical procedures prior to arrival at a hospital or other health care facility.

EMS Protocols — Written medical instructions authorized by an EMS medical director to be used by personnel in the field without the necessity of on-line or real-time consultation with a physician or nurse.

Emergency Medical Technician (EMT) — A member of the emergency medical services team who provides out-of-hospital emergency care, trained to any level of emergency medical services.

Emergency Medical Technician- Basic (EMT-B) — A member of the emergency medical services team who provides out-of-hospital emergency care, trained in the delivery of Basic Life Support services.

Emergency Medical Technician- Defibrillator (EMT-D) — A member of the emergency medical services team with special training in the use of cardiac defibrillating equipment. (Defibrillation training is now part of Basic Emergency Medical training.)

Emergency Medical Technician- Paramedic (EMT-P) — A member of the emergency medical services team who provides out-of-hospital emergency care, trained in the delivery of Advanced Life Support services.

Endotracheal Tube (ET) — Flexible plastic catheter placed into the trachea to protect the airway and provide a means of mechanical ventilation.

First Responder — Functional provision of initial assessment (i.e., airway, breathing, and circulatory systems) and basic first-aid intervention, including CPR and automatic external defibrillator capability.

First Responder Unit — The first arriving unit at an emergency medical incident, whether it be a fire suppression vehicle or ambulance.

Intervention — Act designed to alter or hinder an action or development.

Intravenous (IV) — An injection administered into a vein.

Intubation — Insertion of a tube through the mouth or nose and into a patient's lungs to help them breathe.

Knox Box Rapid Entry System — Small, wall-mounted safe that holds building keys for firefighters and EMTs to retrieve in emergencies.

Myocardial Infarction — Heart attack.

Measurement uncertainty — Parameter, associated with the result of a measurement that characterizes the dispersion of the values that could reasonably be attributed to the measure.

National Fire Protection Association (NFPA) — A nonprofit organization, established in 1896, with the mission to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training and education.

NFPA 450— Guide for emergency medical services and systems.

NFPA 1500 — Standard on fire department occupational safety and health program.

NFPA 1710 — Standard for the organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by career fire departments.

NFPA 1720 — Standard for the organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by volunteer fire departments.

NFPA 1999 — Standard on protective clothing for emergency medical operations.

One-Tier EMS System — EMS system in which all units are advanced life support.

Operational Effectiveness — Capable of producing a particular desired effect in “real world” circumstances.

Operational Efficiency — The effect or results achieved in relation to the effort expended.

Ordinary Least Squares (OLS) — In statistics and econometrics, OLS or linear least squares is a method for estimating the unknown parameters in a linear regression model.

Out-of-hospital — Care for the sick or injured in settings other than hospitals or hospital-affiliated outpatient medical or surgical facilities, typically beginning with a call to 9-1-1.

Patient Packaging — Securing a patient to a mobile contrivance (e.g., stretcher or stair chair) for moving to the transport unit.

Pulse Oximeter — Medical device that measures the oxygen saturation of a patient’s blood.

Regression analysis — Includes any techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables. More specifically, regression analysis helps us understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held.

Standard of Response Cover (SORC) — Policies and procedures that determine distribution, concentration, and reliability of fixed and mobile resources for an emergency response system.

Standard t-test — Measures whether there is any statistical difference in the mean of two groups.

Statistical significance — A number that expresses the probability that the result of a given experiment or study could have occurred purely by chance. This number can be a margin of error or it can be a confidence level.

System resources — Personnel, vehicles, and equipment used in providing EMS.

Systemic trauma — Injury or shock affecting the body generally.

Transport — Conveyance of the sick or injured in an ambulance or emergency vehicle to a hospital setting.

Trauma and Injury Severity Scores (TRISS) — A system developed in the 1980’s to improve the prediction of patient outcomes through the use of physiological and anatomical criteria.

Two-Tier EMS System — EMS system that uses first responder or BLS units that typically arrive and begin treatment prior to the arrival of a transport unit.

Acronyms

- **A, B, C's** — Airway, Breathing, and Circulation
- **ACLS** — Advanced Cardiac Life Support
- **AED** — Automated External Defibrillator
- **AHA** — American Heart Association
- **ALS** — Advanced Life Support
- **BLS** — Basic Life Support
- **CFAI** — Commission on Fire Accreditation International
- **CPR** — Cardiopulmonary resuscitation
- **DHS** — Department of Homeland Security
- **DOL** — Department of Labor
- **ECG** — Electrocardiogram
- **EMS** — Emergency Medical Services
- **EMT** — Emergency Medical Technician
- **EMT-B** — Emergency Medical Technician- Basic
- **EMT-D** — Emergency Medical Technician- Defibrillator
- **EMT-P** — Emergency Medical Technician- Paramedic
- **FEMA** — Federal Emergency Management Agency
- **IAFC** — International Association of Fire Chiefs
- **IAFF** — International Association of Fire Fighters
- **LOD** — Line-of-Duty
- **NFPA** — National Fire Protection Association
- **NIST** — National Institute of Standards and Technology
- **OHCA** — Out-of-hospital cardiac arrest
- **OPQRST** — Onset, Provokes, Quality, Radiates, Severity, Time
- **SAMPLE** — Signs and Symptoms, Allergies, Previous history, Medications, Last oral intake, Events leading up to
- **SORC** — Standard of Response Cover
- **TBI** — Traumatic brain injury
- **TRISS** — Trauma and Injury Severity Scores
- **WPI** — Worcester Polytechnic Institute

Appendix A: Time to Task Measures

Time-to-Task Data Collection Chart -EMS

(Overall Response- Patient Access and Removal)

Date _____ Start Time _____ End Time (all tasks complete) _____

Crew Used: Montgomery County Fairfax County

Timer Name _____

Task	Start Time	Completion Time	Difference
Arrive on Scene			
Assemble Equipment			
Conduct Size-up – Scene Safety			
Enter Door- Building- ‘Knox box’			
Ascend – Stairs (3 stories)			
Package Patient – stair chair			
Descent – Stairs (3 stories) with patient in stair chair			
Exit Door – Building			
Transfer Patient to cot/stretchers			
Turn Ambulance for Loading			
Load Ambulance/ Seat Belt			

Time-to-Task Data Collection Chart -EMS

(Trauma — BLS — ALS on scene)

Date _____ Start Time _____ End Time (all tasks complete) _____

Timer Name _____

Task	Start Time	Completion Time	Difference
At Patient			
Spinal motion restriction			
A, B, C's			
Patient Interview			
Body sweep – find laceration on head and angulated fracture of tib/fib (closed) on <u>Right</u> leg			
O ² Administration – face mask			
Check Vitals (Pulse, Resp., BP, Pulse Ox)			
Expose patient as indicated			
Control Bleeding			
Splint leg			
Back Board			
Movement causes labored breathing – Agonal Respiration → Patient vomits (projectile)			
Airway – Intubation ET with spinal motion restriction – on ground due to distance from transport unit			
Bag Valve Mask			
Package patient / move for transport			

Time-to-Task Data Collection Chart -EMS

(Medical — Cardiac)

Date _____ Start Time _____ End Time (all tasks complete) _____

Timer Name _____

Task	Start Time	Completion Time	Difference
At Patient			
A, B, C's			
Patient Interview			
O ² Administration			
Check Vitals (Pulse, Resp., BP, pulse Ox)			
ALS Vitals - ECG 12-Lead			
Expose patient as indicated			
Patient Arrest >>>>>>>>			
Position patient			
ABC's			
Apply Defibrillator pads			
Defibrillate – Shock # 1 – Shock works = NO			
ABC's			
CPR – Bag Valve			
Airway Intubation - ET			
IV access			
Meds (1 Epi)	>>>>	>>>>>>>>>>	>>>>
AED Auto Countdown- "Analyze Patient"			
Defibrillate – Shock #2 – Shock works = YES			
Check Vitals – ROSC - unconscious			
Meds (1 Lidocaine Bolus)			
Package Patient			

Appendix B: Trauma Patient Assessment and Interview Form

Name: _____ Age: _____ Male / Female

Chief Complaint: _____

Mechanism of Injury: _____

Primary Survey:

Airway status: open / occluded

Breathing: normal / labored-abnormal / none

Circulation: normal / shocky / none

Mental Status: alert / voice / pain / unresponsive

Body Sweep Findings? _____

Secondary / Focused Survey Findings:

Head	L Arm
Face	R Arm
Neck	Abdomen
Chest	L Leg
Back	R Leg

Vital Signs:

BP _____ Pulse: _____ Resp: _____ PulseOx: _____

BP _____ Pulse: _____ Resp: _____ PulseOx: _____

Treatment:

oxygen C-spine Splinting Bandaging

Appendix C: Medical Patient Interview Form

Name: _____ Age: _____ Male / Female

Chief Complaint: _____

Mechanism of Injury: _____

"SAMPLE" history
Signs & Symptoms
Allergies
Medications
Previous Medical History
Last Oral Intake
Events Leading Up to?

"OPQRST" pain survey
Onset? What were you doing?
Provokes? What makes it better or worse?
Quality? "What does it feel like?"
Radiation? "Does it go anywhere?"
Severity? 1-10 scale
Time? When did it begin?

Vital Signs:

BP _____ Pulse: _____ Resp: _____ PulseOx: _____

Treatment:

oxygen ECG 12-lead IV

medications? _____

Appendix D: Medical Patient Assessment/Interview Form

“SAMPLE HISTORY”	Signs & Symptoms “What is bothering you this morning?”	Pain under my breastbone.
	Allergies “Are you allergic to any medications?”	None
	Medications “Do you take any medications?”	Aspirin and Cardizem.
	Previous History “Do you have any medical problems? Has this ever happened to you before?”	I was diagnosed with high blood pressure two years ago. No, I have never felt pain like this before.
	Last Oral Intake “Have you been eating normally?”	Yes. Had a full breakfast this morning.
	Events Leading Up to? “What happened prior to you developing this pain?”	Nothing, I was feeling fine before this.

PAIN SURVEY	PAIN SURVEY Onset? “What were you doing when pain began?”	I was sitting on the couch watching television.
	Provokes? “Have you done anything that makes the pain better?”	No, it is a steady pain and I can’t get in a comfortable position.
	Radiates? “Do you feel the pain anywhere besides your chest?”	Yes, I feel it in my spine also.
	Severity? “On a scale of 1 to 10, with ten worst pain you can imagine, how severe is your pain now?”	It is a 6.
	Time? “When did your chest pain begin?”	About 30 minutes ago.

Appendix E: Statistical Analysis of Time to Task Data Patient Access and Removal

Average Timing in Seconds by Numbers of First Responders Regardless of ALS Placement				
Task:	No First Responder	2-person First Responder Crews	3-Person First Responder Crews	4- Person First Responder Crews
Arrive Scene				
Assemble equipment	29.7	46.7	26.7	22.7
Conduct scene size up	31.7	181.7	167.3	172.0
Enter building	19.7	13.3	15.7	7.3
Ascend stairs	22.0	30.0	20.3	23.3
Time between Arrival and ascent of stairs	104.7	123.0	98.3	93.0
Package patient	59.7	46.3	59.0	36.0
Descend stairs	87.0	69.7	78.7	91.0
Exit door	102.7	114.3	92.3	89.0
Transfer patient	55.0	54.0	42.0	31.7
Turn ambulance	56.3	84.3	87.0	60.3
Load ambulance	76.3	53.3	31.0	18.3
Time between packaging patient and completion of loading patient	418.7	263.3	192.7	171.7

Access and Removal Differences of Means and Associated T-Tests (Time in Minutes)						
Dependent Variable:	Ambulance vs. 2 Crew	Ambulance vs. 3 Crew	Ambulance vs. 4 Crew	Value of 3 vs. 2 Crew	Value of 4 vs. 2 Crew	Value of 4 vs. 3 Crew
ACCESS: Arrival end to ascend stairs	-0.306	0.106	0.194	-0.411	-0.500	-0.089
SE	0.167	0.167	0.167	0.167	0.167	0.167
p-value	0.105	0.546	0.279	0.039	0.017	0.610
REMOVAL: Package patient to end	2.589	3.767	4.117	-1.178	-1.528	0.350
SE	0.521	0.521	0.521	0.521	0.521	0.521
p-value	0.001	0.000	0.000	0.054	0.019	0.521

Appendix F: Statistical Analysis of Time to Task Data Patient Systemic Trauma Patient

Testing the Effects of ALS, Engine Placements, and Crew Size on Engine to Address Research Questions for the Trauma Analysis (Contrasts are in Minutes)						
TRAUMA Task:	Q1: One ALS -- Engine vs. Ambulance	Q2: Two ALS: One Amb One Engine vs. Two on Ambulance	Q3: Value of 2nd ALS	Q4: Value of 3 vs. 2 Crew	Q5a: Value of 4 vs. 2 Crew	Q5b: Value of 4 vs. 3 Crew
Spinal Motion Restriction – start	-0.200	-0.106	0.064	-0.007	-0.092	-0.085
SE	0.104	0.083	0.066	0.090	0.086	0.066
p-value	0.062	0.213	0.343	0.939	0.296	0.206
ABCs – start	-0.026	-0.067	0.078	0.100	0.035	-0.065
SE	0.041	0.065	0.039	0.046	0.051	0.044
p-value	0.536	0.313	0.052	0.037	0.503	0.149
ABCs – duration	-0.130	-0.280	-0.234	-0.079	-0.157	-0.078
SE	0.229	0.160	0.140	0.191	0.163	0.156
p-value	0.574	0.090	0.102	0.681	0.344	0.622
Patient Interview – start	-0.017	-0.002	0.124	0.115	0.025	-0.090
SE	0.056	0.104	0.059	0.070	0.068	0.078
p-value	0.767	0.986	0.043	0.111	0.715	0.257
Body sweep -- start	-0.383	0.048	0.425	-0.247	-0.614	-0.367
SE	0.274	0.509	0.289	0.425	0.376	0.233
p-value	0.170	0.925	0.151	0.564	0.112	0.125
Body sweep - duration	-0.076	-0.248	-0.003	-0.093	-0.168	-0.075
SE	0.245	0.365	0.220	0.317	0.280	0.197
p-value	0.759	0.501	0.990	0.771	0.552	0.706
O2 administration – start	0.793	-0.724	0.414	0.347	-0.551	-0.899
SE	0.404	0.543	0.338	0.457	0.377	0.404
p-value	0.058	0.191	0.229	0.453	0.153	0.033
Check Vitals – start	0.065	0.165	0.596	-0.414	-0.932	-0.518
SE	0.260	0.448	0.259	0.360	0.328	0.254
p-value	0.727	0.302	0.140	0.842	0.300	0.070
Wound Bandaged – start	0.604	-1.239	0.045	-1.708	-1.064	0.644
SE	0.618	0.714	0.472	0.548	0.607	0.578
p-value	0.335	0.092	0.924	0.004	0.089	0.273
Splint Leg – start	-0.554	-0.650	0.385	-0.206	-1.099	-0.893
SE	0.450	0.294	0.269	0.308	0.348	0.331
p-value	0.227	0.034	0.161	0.509	0.003	0.011
Splint Leg – duration	0.830	-0.509	-0.277	-0.135	-0.340	-0.206
SE	0.268	0.380	0.233	0.283	0.250	0.317
p-value	0.004	0.189	0.242	0.638	0.183	0.521
Back Board – start	-0.250	-1.654	0.235	-0.293	-0.058	0.235
SE	0.539	0.604	0.405	0.536	0.514	0.432
p-value	0.646	0.010	0.565	0.588	0.910	0.590
Back Board – duration	0.063	0.330	-0.024	-0.340	-2.410	-2.069
SE	0.426	0.535	0.342	0.427	0.484	0.330
p-value	0.883	0.542	0.944	0.431	0.000	0.000
Airway - intubation – start	0.137	-1.389	0.194	-0.535	-2.558	-2.024
SE	0.692	0.500	0.427	0.582	0.432	0.542
p-value	0.844	0.009	0.652	0.365	0.000	0.001
Airway - intubation – duration	0.465	-0.437	-0.460	-0.775	-0.363	0.413
SE	0.268	0.291	0.198	0.193	0.281	0.244
p-value	0.091	0.142	0.026	0.000	0.206	0.100
Bag Valve Mask – start	-0.020	-1.487	0.031	-0.797	-2.603	-1.806
SE	0.622	0.519	0.405	0.550	0.439	0.493
p-value	0.974	0.007	0.939	0.157	0.000	0.001
Package Patient / move for transport – start	0.733	-2.089	-0.232	-1.525	-3.106	-1.581
SE	0.763	0.692	0.515	0.641	0.589	0.660
p-value	0.343	0.000	0.066	0.023	0.000	0.022

Appendix G: Statistical Analysis of Time to Task Data Cardiac Arrest Patient

Testing the Effects of ALS , Engine Placements, and Crew Size on Engine to Address Research Questions for the Cardiac Analysis (Contrasts are in Minutes)						
CARDIAC Tasks:	Q1: One ALS -- Engine vs Ambulance	Q2: Two ALS: One Amb and One Engine vs Two on Ambulance	Q3: Value of 2nd ALS	Q4: Value of 3 vs. 2 Crew	Q5a: Value of 4 vs. 2 Crew	Q5b: Value of 4 vs. 3 Crew
ABCs—start	-0.019	0.020	0.029	-0.057	-0.069	-0.013
SE	0.022	0.026	0.017	0.023	0.021	0.019
p-value	0.395	0.446	0.101	0.020	0.002	0.505
ABCs-- duration	-0.009	0.028	-0.004	0.022	-0.026	-0.049
SE	0.040	0.026	0.024	0.029	0.033	0.026
p-value	0.820	0.290	0.878	0.445	0.427	0.072
Patient Interview - start	0.000	0.031	0.016	-0.024	-0.024	0.000
SE	0.006	0.031	0.016	0.024	0.024	0.006
p-value	1.000	0.323	0.331	0.323	0.323	1.000
O2 administration- start	-0.120	-0.039	-0.106	-0.121	-0.169	-0.049
SE	0.140	0.111	0.089	0.095	0.120	0.113
p-value	0.396	0.729	0.246	0.210	0.166	0.669
Check Vitals – start	-0.100	-0.031	0.086	-0.268	-0.286	-0.018
SE	0.146	0.157	0.107	0.142	0.151	0.095
p-value	0.499	0.843	0.428	0.067	0.067	0.850
Check Vitals – duration	0.024	0.230	-0.008	0.031	-0.208	-0.239
SE	0.322	0.211	0.193	0.256	0.214	0.236
p-value	0.941	0.285	0.966	0.906	0.338	0.319
ALS Vitals 12-Lead - start	-2.309	-2.330	-0.240	-0.235	-0.471	-0.236
SE	0.277	0.239	0.183	0.233	0.222	0.216
p-value	0.000	0.000	0.198	0.321	0.041	0.281
Expose Chest - start	-1.665	-1.404	-0.094	-0.593	-0.985	-0.392
SE	0.447	0.490	0.331	0.392	0.397	0.428
p-value	0.551	0.113	0.081	0.476	0.358	0.811
Position Patient – start (difference from Arrest time)	0.039	-0.044	-0.042	0.028	0.000	-0.028
SE	0.029	0.024	0.019	0.023	0.022	0.025
p-value	0.183	0.077	0.034	0.229	1.000	0.265
ABCs – Start (difference from arrest time)	0.000	-0.033	0.067	-0.079	-0.131	-0.051
SE	0.072	0.122	0.071	0.093	0.093	0.071
p-value	1.000	0.786	0.352	0.402	0.170	0.473
Defib pads – Start (difference from arrest time)	0.006	-0.056	-0.055	-0.086	-0.156	-0.069
SE	0.120	0.119	0.084	0.120	0.118	0.061
p-value	0.963	0.642	0.521	0.477	0.195	0.265
Analyze / Shock #1 – Start (difference from arrest time)	-0.078	-0.069	-0.071	-0.133	-0.179	-0.046
SE	0.158	0.157	0.112	0.157	0.149	0.095
p-value	0.626	0.666	0.527	0.402	0.238	0.633

Appendix G: Statistical Analysis of Time to Task Data Cardiac Arrest Patient

Continued

Testing the Effects of ALS , Engine Placements, and Crew Size on Engine to Address Research Questions for the Cardiac Analysis (Contrasts are in Minutes)						
CARDIAC Tasks:	Q1: One ALS -- Engine vs Ambulance	Q2: Two ALS: One Amb and One Engine vs Two on Ambulance	Q3: Value of 2nd ALS	Q4: Value of 3 vs. 2 Crew	Q5a: Value of 4 vs. 2 Crew	Q5b: Value of 4 vs. 3 Crew
ABCs – Start – After Shock #1 (difference from arrest time)	-0.098	0.026	-0.034	-0.178	-0.239	-0.061
SE	0.153	0.214	0.132	0.187	0.182	0.098
p-value	0.526	0.904	0.796	0.349	0.198	0.539
CPR – CPR—Start (difference from arrest time)	0.207	0.026	-0.057	-0.015	-0.021	-0.006
SE	0.183	0.234	0.148	0.196	0.187	0.161
p-value	0.264	0.912	0.701	0.938	0.912	0.973
Airway Intubation- Start – (difference from arrest time)	-0.359	0.128	-1.123	-0.207	-0.247	-0.040
SE	0.438	0.254	0.253	0.321	0.256	0.347
p-value	0.418	0.618	0.000	0.524	0.340	0.908
Airway Intubation-- Duration	0.081	-0.037	0.582	-0.172	-0.594	-0.422
SE	0.346	0.315	0.234	0.319	0.301	0.232
p-value	0.681	0.097	0.009	0.135	0.021	0.328
Package Patient/Equip- Start (difference from arrest time)	-0.606	0.991	-0.193	-0.733	-1.013	-0.279
SE	0.551	0.583	0.401	0.538	0.450	0.480
p-value	0.279	0.098	0.634	0.182	0.031	0.565
Package Patient/Equip- Completion (difference from arrest time)	-0.380	0.867	-0.190	-0.843	-1.394	-0.551
SE	0.402	0.418	0.290	0.393	0.340	0.329
p-value	0.352	0.046	0.517	0.039	0.000	0.103

Appendix H: All Regression Coefficients Continued

Regression Analysis Coefficients, Standard Errors and P-Values For Addressing Research Questions about Cardiac Time from Arrest (Coefficients are in Minutes) : Each Task Row Represents a Separate Regression										
TRAUMA Tasks:	no engine	no engine & 2 ALS on ambulance	crew size 3 on engine	crew size 4 on engine	1 ALS on engine & 0 ALS on Ambulance	0 ALS on engine & 1 ALS on Ambulance	0 ALS on engine & 2 ALS on Ambulance	Constant		
p-value	0.000	0.002	0.453	0.153	0.496	0.290	0.191	0.000		
Check Vitals – start	3.290	0.950	-0.414	-0.932	-0.646	-0.711	-0.165	2.754		
SE	0.501	0.611	0.360	0.328	0.384	0.419	0.448	0.474		
p-value	0.000	0.130	0.259	0.008	0.102	0.099	0.715	0.000		
Check Vitals – duration	0.571	-0.572	-0.964	-1.311	-0.052	0.259	-0.028	2.784		
SE	1.458	1.434	0.601	0.546	0.524	0.574	0.687	0.658		
p-value	0.698	0.692	0.118	0.022	0.922	0.654	0.968	0.000		
Expose patient – start	3.266	-0.317	0.067	-0.325	-0.187	-0.102	0.424	1.879		
SE	0.329	0.148	0.333	0.309	0.273	0.259	0.404	0.298		
p-value	0.000	0.040	0.842	0.300	0.497	0.697	0.302	0.000		
Wound Bandaged – start	4.831	-1.533	-1.708	-1.064	0.876	0.272	1.239	3.763		
SE	2.074	2.549	0.548	0.607	0.764	0.667	0.714	0.677		
p-value	0.026	0.551	0.004	0.089	0.260	0.686	0.092	0.000		
Splint Leg – start	4.250	-1.689	-0.206	-1.099	-0.337	0.217	0.650	4.027		
SE	1.142	1.128	0.308	0.348	0.441	0.278	0.294	0.271		
p-value	0.001	0.144	0.509	0.003	0.450	0.442	0.034	0.000		
Splint Leg – duration	0.697	-0.700	-0.135	-0.340	0.946	0.117	0.509	2.281		
SE	0.650	1.018	0.283	0.250	0.266	0.226	0.380	0.192		
p-value	0.291	0.496	0.638	0.183	0.001	0.609	0.189	0.000		
Back Board – start	4.438	-0.017	-0.293	-0.058	0.467	0.717	1.654	2.134		
SE	0.865	1.087	0.536	0.514	0.547	0.224	0.604	0.367		
p-value	0.000	0.988	0.588	0.910	0.399	0.003	0.010	0.000		
Back Board – duration	4.283	-5.567	-0.340	-2.410	-0.109	-0.172	-0.330	6.661		
SE	1.165	1.465	0.427	0.484	0.419	0.438	0.535	0.506		
p-value	0.001	0.001	0.431	0.000	0.796	0.697	0.542	0.000		
Airway – intubation – start	8.904	-5.561	-0.535	-2.558	0.569	0.432	1.389	9.057		
SE	1.753	1.755	0.582	0.432	0.696	0.417	0.500	0.493		
p-value	0.000	0.003	0.365	0.000	0.420	0.308	0.009	0.000		
Airway – intubation – duration	0.293	0.772	-0.775	-0.363	0.911	0.446	0.437	2.296		
SE	0.481	0.706	0.193	0.281	0.229	0.305	0.291	0.250		

Appendix H: All Regression Coefficients Continued

Regression Analysis Coefficients, Standard Errors and P-Values For Addressing Research Questions about Cardiac Time from Arrest (Coefficients are in Minutes) : Each Task Row Represents a Separate Regression									
TRAUMA Tasks:	no engine	no engine & 2 ALS on ambulance	crew size 3 on engine	crew size 4 on engine	1 ALS on engine & 0 ALS on Ambulance	0 ALS on engine & 1 ALS on Ambulance	0 ALS on engine & 2 ALS on Ambulance	Constant	
p-value	0.546	0.282	0.000	0.206	0.000	0.153	0.142	0.000	
Bag Valve Mask – start	8.867	-5.556	-0.797	-2.603	0.702	0.722	1.487	8.878	
SE	1.830	1.812	0.550	0.439	0.643	0.444	0.519	0.499	
p-value	0.000	0.004	0.157	0.000	0.283	0.113	0.007	0.000	
Package Patient / move for transport – start	10.330	-5.544	-1.525	-3.106	1.643	0.909	2.089	11.670	
SE	2.542	2.644	0.641	0.589	0.738	0.546	0.692	0.611	
p-value	0.000	0.044	0.023	0.000	0.033	0.105	0.005	0.000	
Package Patient / move for transport – completion	11.030	-5.039	-1.672	-3.390	1.806	0.915	2.267	12.520	
SE	2.612	2.760	0.657	0.597	0.773	0.565	0.704	0.617	
p-value	0.000	0.077	0.016	0.000	0.025	0.115	0.003	0.000	

Appendix H: All Regression Coefficients

Regression Analysis: Coefficients, Standard Errors and P-Values For Addressing Research Questions about Cardiac Time from Arrest (Coefficients are in Minutes) : Each Task Row Represents a Separate Regression									
CARDIAC Tasks:	no engine	no engine & 2 ALS on ambulance	crew size 3 on engine	crew size 4 on engine	1 ALS on engine & 0 ALS on Ambulance	0 ALS on engine & 1 ALS on Ambulance	0 ALS on engine & 2 ALS on Ambulance	Constant	
ABCs—start	3.017	-0.017	-0.057	-0.069	-0.048	-0.030	-0.020	0.316	
SE	0.047	0.041	0.023	0.021	0.027	0.025	0.026	0.028	
p-value	0.000	0.687	0.020	0.002	0.084	0.249	0.446	0.000	
ABCs--duration	0.012	-0.044	0.022	-0.026	-0.015	-0.006	-0.028	0.172	
SE	0.046	0.051	0.029	0.033	0.041	0.033	0.026	0.035	
p-value	0.805	0.391	0.445	0.427	0.722	0.869	0.290	0.000	
Patient Interview - start	2.953	0.000	-0.024	-0.024	-0.031	-0.031	-0.031	0.047	
SE	0.046	0.000	0.024	0.024	0.031	0.031	0.031	0.046	
p-value	0.000	0.358	0.323	0.323	0.323	0.323	0.323	0.311	
O2 administration- start	3.207	0.044	-0.121	-0.169	0.065	0.185	0.039	0.815	
SE	0.283	0.452	0.095	0.120	0.132	0.123	0.111	0.094	
p-value	0.000	0.922	0.210	0.166	0.625	0.141	0.729	0.000	
Check Vitals – start	2.728	-0.050	-0.268	-0.286	-0.120	-0.020	0.031	1.005	
SE	0.133	0.052	0.142	0.151	0.130	0.141	0.157	0.128	
p-value	0.000	0.340	0.067	0.067	0.360	0.886	0.843	0.000	
Check Vitals – duration	0.335	-0.689	0.031	-0.208	-0.094	-0.119	-0.230	1.948	
SE	0.410	0.399	0.256	0.214	0.229	0.300	0.211	0.218	
p-value	0.419	0.094	0.906	0.338	0.683	0.695	0.285	0.000	
ALS Vitals 12-Lead - start	2.789	0.678	-0.235	-0.471	0.250	2.559	2.330	1.394	
SE	0.437	0.472	0.233	0.222	0.346	0.240	0.239	0.255	
p-value	0.000	0.160	0.321	0.041	0.474	0.000	0.000	0.000	
Expose Chest - start	2.772	-0.433	-0.593	-0.985	-0.037	1.628	1.404	2.267	
SE	0.583	0.479	0.392	0.397	0.496	0.501	0.490	0.470	

Appendix H: All Regression Coefficients Continued

Regression Analysis Coefficients, Standard Errors and P-Values For Addressing Research Questions about Cardiac Time from Arrest (Coefficients are in Minutes) : Each Task Row Represents a Separate Regression										
CARDIAC Tasks:	no engine	no engine & 2 ALS on ambulance	crew size 3 on engine	crew size 4 on engine	1 ALS on engine & 0 ALS on Ambulance	0 ALS on engine & 1 ALS on Ambulance	0 ALS on engine & 2 ALS on Ambulance	Constant		
Airway Intubation-- Duration	1.768	1.106	-0.696	-1.083	-1.889	0.619	0.298	4.199		
SE	0.958	1.398	0.563	0.570	0.783	0.761	0.809	0.893		
p-value	0.074	0.434	0.225	0.066	0.021	0.422	0.715	0.000		
IV Access – start	0.382	-0.578	-0.194	-0.243	0.080	0.282	-0.361	1.785		
SE	0.462	0.410	0.270	0.261	0.253	0.351	0.222	0.260		
p-value	0.414	0.168	0.476	0.358	0.755	0.428	0.113	0.000		
IV Access – duration	0.394	-0.261	0.028	0.000	0.083	0.044	0.044	0.072		
SE	0.259	0.272	0.023	0.022	0.032	0.021	0.024	0.021		
p-value	0.138	0.343	0.229	1.000	0.015	0.040	0.077	0.002		
Position – Patient – start (difference from Arrest time)	0.104	-0.383	-0.079	-0.131	-0.050	-0.050	0.033	0.307		
SE	0.364	0.336	0.093	0.093	0.113	0.108	0.122	0.141		
p-value	0.776	0.261	0.402	0.170	0.660	0.645	0.786	0.036		
ABCs – Start (difference from arrest time)	0.345	-0.378	-0.086	-0.156	0.085	0.080	0.056	0.555		
SE	0.247	0.265	0.120	0.118	0.093	0.130	0.119	0.117		
p-value	0.171	0.163	0.477	0.195	0.364	0.544	0.642	0.000		
Defib pads – Start (difference from arrest time)	0.242	-0.194	-0.133	-0.179	0.067	0.144	0.069	0.991		
SE	0.283	0.269	0.157	0.149	0.142	0.189	0.157	0.174		
p-value	0.399	0.475	0.402	0.238	0.641	0.449	0.666	0.000		
Analyze / Shock #1 – Start (difference from arrest time)	0.089	-0.189	-0.178	-0.239	-0.028	0.070	-0.026	1.522		
SE	0.331	0.239	0.187	0.182	0.188	0.226	0.214	0.256		
p-value	0.790	0.434	0.349	0.198	0.883	0.757	0.904	0.000		
ABCs – Start – After Shock #1	0.477	-0.356	-0.015	-0.021	0.148	-0.059	-0.026	0.779		
SE	0.459	0.460	0.196	0.187	0.191	0.182	0.234	0.186		
p-value	0.306	0.445	0.938	0.912	0.444	0.746	0.912	0.000		
CPR – Start (difference from arrest time)	1.545	0.183	-0.207	-0.247	0.880	1.239	-0.128	1.244		

Appendix H: All Regression Coefficients Continued

Regression Analysis Coefficients, Standard Errors and P-Values For Addressing Research Questions about Cardiac Time from Arrest (Coefficients are in Minutes) : Each Task Row Represents a Separate Regression										
CARDIAC Tasks:	no engine	no engine & 2 ALS on ambulance	crew size 3 on engine	crew size 4 on engine	1 ALS on engine & 0 ALS on Ambulance	0 ALS on engine & 1 ALS on Ambulance	0 ALS on engine & 2 ALS on Ambulance	Constant		
SE	0.588	1.163	0.321	0.256	0.313	0.374	0.254	0.236		
p-value	0.013	0.876	0.524	0.340	0.008	0.002	0.618	0.000		
Airway Intubation- Start and duration - (difference from arrest time)	-0.244	-0.078	-0.172	-0.594	-0.522	-0.604	0.037	2.800		
SE	0.417	0.453	0.319	0.301	0.322	0.286	0.315	0.260		
p-value	0.562	0.865	0.593	0.057	0.114	0.043	0.907	0.000		
Medis (Epi)- Start (difference from arrest time)	0.632	-0.542	-0.228	-0.508	-0.504	-0.394	-1.022	2.751		
SE	0.957	1.262	0.339	0.303	0.365	0.390	0.408	0.430		
p-value	0.513	0.671	0.506	0.103	0.177	0.318	0.017	0.000		
Analyze / Shock #2 -- Start time	-0.070	-0.300	-0.442	-0.479	-0.009	-0.137	-0.133	4.003		
SE	0.394	0.237	0.216	0.208	0.245	0.255	0.250	0.315		
p-value	0.860	0.214	0.049	0.027	0.970	0.594	0.597	0.000		
Medis (Lidocaine) - Start (difference from arrest time)	2.054	-2.278	-0.440	-0.721	0.293	0.424	-0.596	4.763		
SE	0.424	0.404	0.287	0.297	0.296	0.359	0.350	0.258		
p-value	0.000	0.000	0.135	0.021	0.329	0.246	0.097	0.000		
Package Patient/Equip- Start	1.444	0.328	-0.733	-1.013	-0.606	0.000	-0.991	5.795		
SE	0.673	1.375	0.538	0.450	0.554	0.530	0.583	0.480		
p-value	0.039	0.813	0.182	0.031	0.282	1.000	0.098	0.000		
Package Completion	2.173	-0.072	-0.843	-1.394	-0.433	-0.054	-0.867	7.327		
SE	0.610	1.248	0.393	0.340	0.365	0.458	0.418	0.402		
p-value	0.001	0.954	0.039	0.000	0.244	0.907	0.046	0.000		

I A F F

Safe Fire Fighter Staffing

– Critical Considerations –



International Association
of Fire Fighters



Safe Fire Fighter Staffing

Critical Considerations

Second Edition



**Department of Research and Labor Issues
International Association of Fire Fighters, AFL-CIO, CLC**

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Introduction

This manual identifies those benchmarks by which safe and effective minimum fire suppression services should be assessed. It provides both citizens and municipal officials with the facts they must consider in making informed decisions regarding the appropriate level of service for their communities. Fire fighter staffing directly affects delivery of fire protection service and is therefore essential to any discussion or debate involving service levels.

It is generally accepted that a municipality has the right to determine the overall level of fire protection it wants. However, regardless of the level of fire protection chosen by the citizens, neither they nor their elected representatives have the right to jeopardize the safety of the employees providing those services.

Citizens pay for protection of life and property through their tax dollars, and they assume that their elected and appointed officials will make informed decisions regarding that protection. Too often, that decision making process has been based solely on budgetary expedience. However, irrespective of the resources provided, citizens continue to believe that fire fighters are prepared to provide an aggressive interior assault on fires, successfully accomplishing victim rescue, fire control, and property conservation. They do not expect fire fighters to take defensive actions, i.e., to simply surround a fire and drown it, because to do so would be to concede preventable loss of both life and property. However, when staffing levels are reduced, misguided economics and community expectations collide, with politicians insisting that potential budgetary savings will not affect the level of service.



Unless citizens understand the relationship between staffing levels and their own life safety and the protection of their property, it is not realistic for fire fighters to expect them to insist on appropriate service levels, including minimum staffing. Elected officials and managers cannot be expected to make appropriate decisions concerning the level of service without an education in **effective** firefighting and an understanding of the impact their policy decisions have on the citizens they represent. Therefore, it is essential to make clear to the community that reduced staffing equates to reduced service levels, and that if they expect a continued aggressive attack on fires, they must provide the department with at least the minimum resources required to meet the community's expectations. To do less forces fire fighters to accept a level of risk to their own health and safety that the community at large finds unacceptable for itself.

Historically, the standard for fire suppression in North America has mandated an **offensive** attack in situations involving structural fire. Study after study has demonstrated that if the force available to initiate an interior fire attack is less than fifteen personnel, the goals of victim rescue, fire control, and property conservation are seriously compromised. These studies state that when fireground staffing is reduced below the level necessary for aggressive tactics, the inevitable result is that fire fighters must resort to **defensive** rather than offensive operations or risk their own safety.

Firefighting has always been labor intensive and remains so. Although new technology has improved firefighting equipment and protective gear, it is fire fighters who still perform the critical tasks necessary to contain and extinguish fires. When staffing falls below minimum acceptable levels, so does service, and the goals and expectations set by the community are essentially abandoned.

A number of court decisions and arbitration awards have recognized that while firefighting is one of the most dangerous occupations in North America, fire fighters should be provided the safest possible working environment. Thus, staffing affects not only the public safety but also the safety of fire fighters and as such is a condition of employment. Although firefighting is by its nature dangerous, that does not justify employers increasing that inherent level of risk by reducing safe minimum staffing under the guise of financial difficulty.

This position has been recognized by many organizations such as the International Association of Fire Fighters, Metropolitan Fire Chiefs' Division of the International Association of Fire Chiefs and the U.S. Fire Administration. Even the International City Management Association has stated:

...too few companies or poorly manned ones, can result in property and life loss beyond community accepted norms. Also, the cost of a firefighter death or disabling injury may far exceed the expense of a fire company. This is not to say that there is a fixed value on a life or injury. The point is that the firefighting forces are the asset that protects the economic and tax base as well as its health and welfare. This asset is a valuable one and must be carefully provided and wisely managed.

Chapter 1

Impact of Initial Fire Attack on Property Loss and Citizen Safety

Successful delivery of fire protection services involves two major elements – fire prevention and fire suppression. Fire prevention can be defined as those “*pre-fire activities that reduce the probability of fires occurring and help limit the loss of property and life in the fires that do occur.*”¹ Since fire prevention will never be 100 percent successful, it is necessary to buttress fire prevention goals with adequate fire suppression services. It is the objective of fire suppression to “*get to the fire as quickly as possible and to extinguish it with minimum loss to persons and property from the fire and from fire fighting activities.*”²

The successful attainment of the goals of both prevention and suppression require a balanced approach and commitment of resources. This balance has in recent years been tipped in the direction of fire prevention while largely ignoring fire suppression.

As the data in the following table shows, the concern with fire prevention has been substantially rewarded. According to the NFPA’s Annual National Fire Experience Survey, the total number of fires, civilian deaths, and injuries has declined remarkably over the last decade. This data attests to the substantial impact that public education, smoke detectors, and development and enforcement of building codes can have on preventing fires.

However, closer examination of the same data also tells the other side of the story, which is that de-emphasis of fire suppression in recent years has led to increasing rates of civilian deaths and injuries and property loss when fires do occur.

Year	Total Residential Fires	Total Civilian Deaths	Total Civilian Injuries	Rate Per 1,000 Residential Fires		Direct Property Damage Per Residential Fire	Real Property Damage Per Residential Fire [1]
				Civilian Death	Civilian Injuries		
1978	730,500	6,185	21,260	8.47	29.1	\$3,000.68	\$4,602
1979	721,500	5,765	20,450	7.99	28.3	\$3,505.20	\$4,828
1980	757,500	5,446	21,100	7.19	27.9	\$4,015.84	\$4,874
1981	733,000	5,540	20,375	7.56	27.8	\$4,446.11	\$4,891
1982	676,500	4,940	21,100	7.30	31.2	\$4,808.57	\$4,983
1983	641,500	4,820	21,450	7.51	33.4	\$5,153.55	\$5,174
1984	623,000	4,240	19,275	6.81	30.9	\$5,521.67	\$5,314
1985	622,000	5,025	19,825	8.08	31.9	\$6,067.52	\$5,623
1986	581,500	4,770	19,025	8.20	32.7	\$6,115.22	\$5,580
1987	551,500	4,660	20,440	8.45	37.1	\$6,707.16	\$5,904
1988	552,500	5,065	22,600	9.17	40.9	\$7,276.02	\$6,150
1989	513,500	4,435	20,750	8.64	40.4	\$7,785.78	\$6,279
1990	467,000	4,115	20,650	8.81	44.2	\$9,107.07	\$6,968
1991	478,000	3,575	21,850	7.48	45.7	\$11,615.06	\$8,547
1992	472,000	3,705	21,600	7.85	45.8	\$8,220.00	\$5,859
1993	470,000	3,825	22,600	8.14	48.1	\$10,304.00	\$7,131
1994	451,000	3,465	20,025	7.68	44.4	\$9,572.00	\$6,394
1978-84	-14.7%	-31.4%	-9.3%	-19.6%	6.2%	84.0%	15.5%
1984-94	-27.6%	-18.3%	4.0%	12.8%	43.7%	73.3%	60.8%

[1] Determined by deflating the direct property damage by the CPI-U.

SOURCE: National Fire Protection Association

During the six-year period 1978-84, measures of both fire prevention and fire suppression exhibited equally impressive results. Through the efforts of fire prevention, the total number of residential fires declined 14.7%, while the total number of civilian deaths and injuries, respectively, dropped by 31.4% and 9.3%.

In those situations where fires did occur, firefighting also scored substantial gains. During the period, the rate of civilian deaths per 1,000 fires declined 19.6%, while the rate of civilian injuries and real property damage showed only modest increases.

However in the last ten years, the results were substantially different. Between 1984 and 1994, the rate of civilian fire deaths per 1,000 residential fires increased 12.8%, the rate of civilian injuries increased 43.7% and real property loss rose 60.8%.

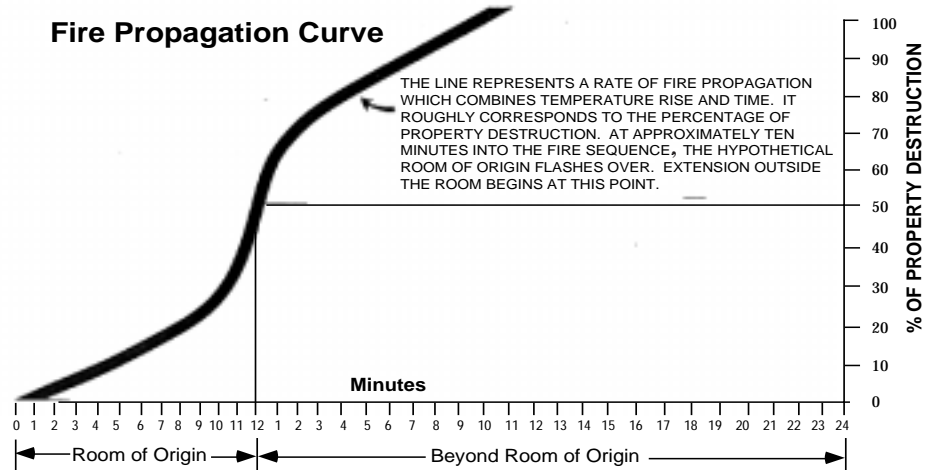


The ability of adequate fire suppression forces to greatly influence the outcome of a structural fire is undeniable and predictable. Data generated by the National Fire Protection Association provides empirical proof that rapid and aggressive interior attack can substantially reduce the human and property loss associated with structural fires. At each stage of a fire's extension beyond the room of origin, the rate of civilian deaths, injuries, and property damage grows exponentially.

Fire Extension in Residential Structures:	Rate Per 1,000 Fires		Average Property Damage
	Civilian Deaths	Civilian Injuries	
Confined to Room of Origin	2.07	24.30	\$1,505
Confined to Floor of Origin	18.60	80.44	\$12,134
Beyond Floor of Origin	27.23	55.37	\$21,343

SOURCE: National Fire Protection Association

Clearly, an early aggressive and offensive initial interior attack on a working structural fire results in greatly reduced loss of life and property damage. Consequently, given that the progression of a structural fire to the point of “flashover” (the very rapid spreading of the fire due to super heating of room contents and other combustibles) generally occurs in less than 10 minutes³, two of the most important elements in limiting fire spread are the quick arrival of sufficient numbers of personnel and equipment to attack and extinguish the fire as close to the point of its origin as possible.



SOURCE: John C. Gerard & A. Terry Jacobsen

Assuming a crew of five fire fighters is 100% effective in performing the critical tasks required for an interior fire attack, the following table shows the impact that reduced staffing has on the effectiveness of fireground operations involving a single-family residential structure.

Impact of Crew Size of First Alarm Assignment on Fire Attack in a Residential Structure

Crew Size:	1st Engine Company		2nd Engine Company		Truck/Ladder Company		
	Charge Initial Interior Line and Advance	Locate & Rescue Victim	Charge Interior Support Line & Advance	Charge Exterior Line & Advance	Roof Ventilation	Search and Rescue	Check Exposures for Fire Extension
5 Fire Fighters	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
4 Fire Fighters	84.7%	96.1%	77.9%	72.9%	79.0%	90.3%	80.2%
3 Fire Fighters	71.3%	82.8%	0.0%	62.3%	0.0%	79.6%	0.0%

SOURCE: “Dallas Fire Department Staffing Level Study,” McManis Associates, June 1984.

The conclusions reached in the Dallas Study have recently been confirmed for small fire departments by the Westerville, Ohio Fire Department.⁴ Using standard firefighting tactics, the results of the Westerville Fire Department study showed that 4 fire fighters could perform rescue of potential fire victims 80% faster than a 3 fire fighter crew.

The implications that enhanced crew size can have on rescue operations is all the more dramatic when victim survivability is considered. Data produced by the Dallas Fire Department showed that:

when rescue occurred between 12 and 15 1/2 minutes, the survival rate was 46.6 percent. The rate dropped to 5.5 percent when rescue occurred between 15 and 17 1/2 minutes.

Thus, a variance of only 2 to 3 minutes in the speed with which rescue operations could be completed can increase fire victim survivability eightfold.

Consequently, the fire service in North America has for most of the twentieth century accepted the premise and the expectation that fire fighters will perform aggressive interior fire attacks when confronted with a working structural fire. This has been and still is the industry's standard of performance.



ENDNOTES

¹ Measuring Fire Protection Productivity in Local Government, Philip S. Schaenman and Joe Swartz (Boston, MA:NFPA) 1974; p. 5.

² *Ibid.*; p. 30.

³ "Reduced Staffing: At What Cost?," John C. Gerard and A. Terry Jacobsen, *Fire Service Today*, September 1981, pp. 15 and 17; and "Hazard I Fire Hazard Assessment Method," National Institute of Standards and Technology, U.S. Department of Commerce, June 1991.

⁴ National Fire Academy, "Manning Levels for Engine and Ladder Companies in Small Fire Departments" (RR No. 14613), Richard C. Morrison.

Chapter 2

Staffing for Initial Fire Attack and Fire Fighter Safety

The purpose of this manual is to objectively relate staffing to fire fighter safety. Discussion of staffing must also address the level of effectiveness of the fire suppression services. It is expected that fire fighters will aggressively intervene to extinguish a fire. Fire fighter safety and the effectiveness of fire suppression service are closely linked. Fire fighters cannot maintain the same level of aggressive fire suppression services while receiving fewer and fewer resources.



FIRE FIGHTER SAFETY AND EFFECTIVENESS OF INITIAL FIRE ATTACK

Inappropriate reductions merely shift the burden of attempting to maintain the expected level of service to the fire fighter at the expense of his/her own safety. Consequently, fireground productivity and effectiveness are seriously compromised.

Over the last 25 years deviations from the industry's standard regarding recommended, acceptable levels of staffing per unit of response have seriously compromised fire fighter safety. In 1967, the International City Management Association (ICMA) recommended that engine companies maintain a minimum of 5 personnel, while those operating in "high value" areas require 7 personnel. The ICMA went further to state that "ladder companies are governed by similar manpower considerations." Citing the reason for these requirements, ICMA stated:

It is axiomatic that there must be enough men to put fire apparatus into effective use. Three men are needed to place a single line of 2 1/2-inch hose in service. One additional man is needed to operate a pump, plus a foreman so pumper companies require a minimum of five men.

Thus a reduction in the “industry standard” regarding the appropriate level of fire company staffing would be justified only in those circumstances where the nature and number of tasks to be accomplished at any given structural fire by fire suppression personnel were also reduced. Fire suppression has always been labor intensive and a substantial impact on productivity in the form of reductions in the number of personnel required at the company level can only be offset by major advances in technology or increased risk to the fire fighter.

Some advances have been made in technology. The industry has developed state-of-the-art apparatus, electronic communications, self-contained breathing apparatus, and personal protective gear. However, none of these advances have eliminated the critical tasks that must be performed by fire fighters at the scene of a structural fire. In fact, these advances in many ways have been offset by introduction of more hazardous materials and construction techniques.

New technologies and materials used in construction and furnishings are more combustible and toxic than those in use a quarter century ago, while advances in such areas as SCBA’s and personnel protective gear have in some quarters increased the expectation that fire fighters can perform more aggressive interior fire attacks with fewer personnel.

However, just as it is logical to accept that technologies enhancing fire fighter safety also lead to increased fireground effectiveness, it is also logical to accept that diminished safety correspondingly reduces the effectiveness of fireground operations. Given that structural fire suppression is so labor intensive, reductions in firefighting personnel must inevitably lead to increased injuries unless those reductions are accompanied by viable alternative technologies or the number of critical tasks that must be performed are reduced.

The level of available technology and critical tasks that must be performed at the scene of a structural fire remain essentially unchanged. Today, however, very few jurisdictions operate units with staffing levels of more than 4 fire fighters, with many now suggesting that 2 or 3 fire fighters is an adequate and acceptable level of fire company staffing.

But, as an article in *Fire Engineering* succinctly put it:

A football coach who sent his team out on the field with six men and then fed the other five in piecemeal as the game progressed would be considered an idiot. Yet this is the same policy that many city officials and their hired consultants are forcing on fire chiefs—always in the guise of greater efficiency and, of course, economy.

*One man cannot be called a fire company, no matter how many men are available after he has made a sizeup and hollered for help. Neither can two or three men be considered a fire company. (These are not enough to handle a fair-sized grass fire.)*²

The requirement for initial arriving apparatus to be staffed with at least 4 personnel to initiate an interior fire attack is not new. It has been the fire service standard and industry practice for most of the twentieth century, as well as recognized and recommended by the National Fire Protection Association (NFPA) since at least 1962. The adherence to a minimum level of safety staffing grew out of intuition and experience and is empirically

grounded in results from study after study showing the causal relationship of deficient fireground staffing and increased fire fighter injuries.

In 1966, the National Fire Protection Association issued NFPA Standard 197, *Training Standard on Initial Fire Attack*. This standard set forth the evolutions required for an initial interior attack on working structural fires. The minimum standard required sufficient number of fire fighters and equipment to deploy two attack one-and-one-half inch hose lines producing at least 150 gpm within 60 seconds of arrival, followed by a two-and-one-half inch backup line providing at least 250 gpm within 180 seconds of arrival.

While the NFPA 197 did not specify the number of fire fighters necessary to deliver this required flow, it does specify the tasks that must be performed within a given time period.

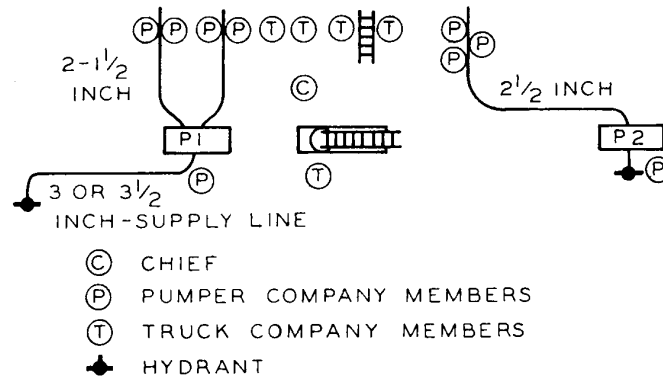
Although NFPA 197 was silent on the minimum number of fire fighters necessary to safely conduct these evolutions, the National Fire Protection Association clearly defined in its book, Fire Attack-1, the number of personnel required:

Standard initial fire attack for isolated buildings of average size such as one- or two-story single family dwellings consists of ability to quickly apply 1 1/2-inch attack lines plus at least one standard 250 gpm stream from 2 1/2-inch hose supplied by a pumper. The latter is required for knocking down any heavy volume of fire and for protecting exposures where necessary. Such an attack requires two pumper companies with adequate manning to run the lines and operate the nozzles and pumps, plus a truck company capable of simultaneously performing forcible entry, search and rescue, ventilation, raising of ladders, salvage operations, and operation of the various power tools carried on the truck such as electric generators and lights and smoke removal equipment. The entire operation is directed and coordinated by a chief officer.

The desirable number of men normally required to respond with the apparatus to give this level of performance with properly manned hose streams and equipment would be approximately fifteen plus the chief. An aide who assists the chief in giving orders and in serving as radio communications specialist in contact with the alarm office, supplies the chief with one additional man.

The operation may be performed with slightly less men (but with reduced efficiency) where weaker truck service is provided. In a standard operation, the truck operator is expected to operate the power ladder if needed for ventilation, rescue or access, and also to operate auxiliary power equipment such as generators and to provide the various tools and appliances that are likely to be required during the fire. Therefore, his basic position is with his truck just as a pump operator or 'engineer' should be provided with each pumper to give the correct volume and pressure to each hose stream. The balance of the truck crew may be divided into teams. One of these teams would normally be assigned to inside search, rescue, forcible entry and ventilation in support of the fire

attack. The other would be an outside crew for raising ladders (up to 35 feet) for possible rescue as well as for topside ventilation. They would also provide truck support for hose crews assigned to the rear of the fire building. All truckmen should perform salvage operations as soon as practicable.



Hose crew requirements are based upon the need for two men to properly apply each stream from 1 1/2-inch hose and three men to effectively operate a 250 gpm stream from a 2 1/2-inch hand line. ³ (UNDERLINING ADDED)

Hence, adherence to NFPA 197 required two pumpers and a ladder truck with a total complement of at least 15 personnel. NFPA further stated that:

Ordinarily (except where there are major rescue operations), the greatest manpower is needed for fast application and operation of hand hose streams carried directly to the seat of the fire. Thus, adequate manpower on the initially arriving pumper companies is most essential, and large forces mobilized later cannot be accepted as a substitute for deficiencies in the manning of the first alarm response. ⁴

The NFPA further cross-referenced the initial attack criteria of NFPA 197 in the Fire Protection Handbook, ⁵ stating:

Regardless of how companies are organized, response to alarms for structural fires should include sufficient apparatus and manpower under at least one chief officer. Normally, a minimum initial response would be two pumpers, a vehicle for truck service, and 12 to 15 men and a chief.

and

An initial response of this level should be able to handle the immediate tactical fire fighting and rescue requirements for structures where there are no major rescue problems, no serious internal or external exposures,

and where the possible area involved in fire, heat or smoke normally will be less than 12,500 cubic feet.

It is important to note that in the past edition of its Managing Fire Services,⁶ the International City Management Association not only subscribed to the NFPA 197 Standard, but also endorsed the National Fire Protection Association's definition relating to the number of personnel required to conduct those initial interior attack operations.

In 1985, a revised Training Standard on Initial Fire Attack was adopted as NFPA 1410. This revised standard continued to maintain that:



The required performance for handlines shall consist of obtaining a water supply through one or two supply lines, placing one initial attack line into operation, and providing immediate backup with another line.

and

The total flow of the required streams shall be a minimum of 300 gpm. The initial attack line shall provide a minimum flow of 100 gpm.

and

The required flow from the back-up line shall be a minimum of 200 gpm.

NFPA 1410 *Training Standard on Initial Attack* also linked for the first time personnel requirements necessary for interior fire attack and fire fighter safety. Appendix A-3-2.1 of NFPA 1410 states:

The limitation of emergency scene operations to those that can be safely conducted by the number of personnel on the scene is intended to reduce the risk of fire fighter death or injury due to understaffing. While members may be assigned and arrive at the scene of an incident in many different ways, it is strongly recommended that interior fire fighting operations not be conducted without an adequate number of qualified fire fighters operating in companies under the supervision of company officers.

It is recommended that a minimum acceptable fire company staffing level consist of four members responding on or arriving with each engine or aerial ladder company responding to any type of fire. Companies responding in high-risk areas should have a minimum acceptable staffing of six fire fighters per ladder company and five fire fighters per engine company. These recommendations are based on experience from actual fires and in-depth fire simulations, critically and objectively evaluating fire company effectiveness. These studies indicate significant reductions in performance and safety when crews have fewer members than the above recommendations. Overall, five-member crews were found to provide a more coordinated approach for search and rescue and fire suppression tasks. (See NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, A-6-2.1.)

(UNDERLINING ADDED)

This language in NFPA 1410 for complying with safe minimum staffing per unit also appears in NFPA 1500 *Standard on Fire Department Occupational Safety and Health Program*:

The limitation of emergency scene operations to those that can be safely conducted by the number of personnel on the scene is intended to reduce the risk of fire fighter death or injury due to understaffing. While members can be assigned and arrive at the scene of an incident in many different ways, it is strongly recommended that interior fire fighting operations not be conducted without an adequate number of qualified fire fighters operating in companies under the supervision of company officers.

It is recommended that a minimum acceptable fire company staffing level should be 4 members responding on or arriving with each engine and each ladder company responding to any type of fire. The minimum acceptable staffing level for companies responding in high-risk areas should be 5 members responding or arriving with each engine company and 6 members responding or arriving with each ladder company. These recommendations are based on experience derived from actual fires and in-depth fire simulations and are the result of critical and

objective evaluation of fire company effectiveness. These studies indicate significant reductions in performance and safety where crews have fewer members than the above recommendations. Overall, 5 member crews were found to provide a more coordinated approach for search and rescue and fire suppression tasks.

During actual emergencies, the effectiveness of companies can become critical to the safety and health of fire fighters. Potentially fatal work environments can be created very rapidly in many fire situations. The training and skills of companies can make a difference in the need for additional personnel and in reducing the exposure to safety and health risks to fire fighters where a situation exceeds their capabilities.⁷

This direct linkage between NFPA 1410 and NFPA 1500 specifically indicates that the number of personnel required to successfully conduct an initial interior fire attack is not just a service issue but most importantly an issue of fire fighter safety.

Acknowledging this linkage, the National Fire Protection Association again endorsed a minimum initial attack staffing level. In its 1991 version of the Fire Protection Handbook, the NFPA produced its most strongly worded statements on fireground staffing to date:

The effectiveness of pumper companies must be measured by their ability to get required hose streams into service quickly and efficiently. NFPA 1410, Training Standard on Initial Fire Attack, should be used as a guide in measuring this ability. Seriously understaffed fire companies generally are limited to the use of small hose streams until additional help arrives. Often this action may be totally ineffective in containing even a small fire and in conducting effective rescue operations.⁸

and

Critical task analysis indicates that fewer than eleven fire fighters would be most hard pressed to accomplish safe, effective, initial interior fire attack in a timely manner at a detached single-family dwelling.⁹

The NFPA went further in its recommendations as to the number of personnel and equipment necessary to perform an interior structural fire attack by type of hazard involved as follows:

<p>Typical Initial Attack Response Capability Assuming Interior Attack and Operations Response Capability</p>
<p>High-Hazard Occupancies (Schools, hospitals, nursing homes, explosive plants, refineries, high-rise buildings, and other high life hazard or large fire potential occupancies) At least 4 pumpers, 2 ladder trucks (or combination apparatus with equivalent capabilities), 2 chief officers, and other specialized apparatus as may be needed to cope with the combustible involved, not less than 24 fire fighters and 2 chief officers.</p>
<p>Medium-Hazard Occupancies (Apartments, offices, mercantile and industrial occupancies not normally requiring extensive rescue or fire fighting forces) At least 3 pumpers, 1 ladder truck (or combination apparatus with equivalent capabilities), 1 chief officer, and other specialized apparatus as may be needed or available; not less than 16 fire fighters and 1 chief officer.</p>
<p>Low-Hazard Occupancies (One, two- or three-family dwellings and scattered small businesses and industrial occupancies) At least 2 pumpers, 1 ladder truck (or combination apparatus with equivalent capabilities), 1 chief officer, and other specialized apparatus as may be needed or available, not less than 12 fire fighters and 1 chief officer.</p>
<p>Rural Operations (Scattered dwellings, small businesses, and farm buildings) At least 1 pumper with a large water tank (500 gal [1.9m³] or more), one mobile water supply apparatus (1000 gal [3.78m³] or larger), and such other specialized apparatus as may be necessary to perform effective initial fire fighting operations; at least 12 fire fighters and 1 chief officer.</p>
<p>Additional Alarms At least the equivalent of that required for Rural Operations for second alarms; equipment as may be needed according to the type of emergency and capabilities of the fire department. This may involve the immediate use of mutual aid companies until local forces can be supplemented with additional off-duty personnel. In some communities, single units are "special called" when needed, without always reporting to a multiple alarm. Additional units also may be needed to fill at least some empty fire stations.</p>

**INTERNATIONAL CITY
MANAGEMENT
ASSOCIATION (ICMA)**

In its second edition of Managing Fire Services published in 1988, the International City Management Association (ICMA) supported the minimum level for safe fireground staffing called for in NFPA 1410 and NFPA 1500:

Fire suppression operations have three basic functions: (1) rescue; (2) work involving the ladder, forcible entry, and ventilation; and (3) the application of water through hose lines. Rescue and ladder companies handle the first two, and engine companies the third. To raise ladders, ventilate, search, and rescue simultaneously takes quick action by at least four and often eight or more firefighters, each team under the supervision of an officer. The number of firefighters required to search and rescue should never be fewer than two and typically at least four. The number of firefighters needed to advance and operate one hose line varies from two on smaller lines to four on large hand lines.

The standard formula for determining the volume of water needed and the number of hose lines to be advanced at a working structural fire is based

**CENTAUR/FEMA
STUDY**

on a minimum of two engine companies with at least eight firefighters. This formula calls for the discharge of three gallons of water per minute for every 100 cubic feet of involved fire area with typical fire loading. An area of 40 feet by 40 feet with 8-foot ceilings requires 384 gallons per minute. Two hose lines are needed to produce that flow, and a third line to cover the floor above. Exposure coverage and search and rescue are not yet taken into consideration, but already eight or nine hosemen are needed, plus the pump operators, plus the supervisor.

Various controlled and statistically based experiments by some cities and universities reveal that if about sixteen trained firefighters are not operating at the scene of a working fire within the critical time period, then dollar loss and injuries are significantly increased, as are the square feet of fire spread.

As firefighting tactics were conducted for comparative purposes, five-person fire suppression companies were judged to be 100 percent effective in their task performance, four-person companies 65 percent effective, and three-person companies 38 percent effective; six person companies are judged 20 percent faster than four person companies.¹⁰

The linkage between fire fighter safety and the number of personnel on the initial fire attack has been demonstrated in study after study. In 1982, the U.S. Fire Administration conducted a survey of over 150 fire departments as to current crew size and standard response practices.¹¹ When asked to identify those factors that were most important in determining crew size and initial response, fire chiefs and city managers ranked crew safety at the top of the list.



COLUMBUS , OH FIRE DEPARTMENT STUDY

Ohio State University, in a 1980 study of actual fireground operations of the Columbus, Ohio Fire Department, developed data on fire fighter injuries and rate of fire spread involving 404 structural fires. The data showed that when the total number of fire fighters at the scene fell below 15 the rate of fire fighter injuries per 10 residential structural fires increased 46.7%, and the number of fires which spread beyond 25 square feet per 10 residential fires increased 24%.

Fireground Staffing:	Rate Per 10 Fires	
	Fire Fighter Injuries	Number of Fires Which Spread Beyond 25 Square Feet
I. Residential		
Less Than 15 Fire Fighters	2.2	3.6
15 or More Fire Fighters	1.5	2.9
Difference	46.7%	24.1%
II. Large Fire Risk		
Less Than 23 Fire Fighters	5.9	3.4
23 or More Fire Fighters	3.4	2.9
Difference	73.5%	17.2%

SOURCE: Ohio State University

The data associated with large risk fires such as high-rise apartments, etc., showed that staffing had an even more dramatic impact on fire fighter injuries. When fireground staffing was reduced in those types of structural fires to less than 23 personnel, the rate of fire fighter injuries per 10 structural fires increased 73.5%, while the number of fires which spread beyond 25 square feet per 10 fires increased nearly 17.2%.

SEATTLE , WA FIRE DEPARTMENT STUDY

In 1982, the NFPA's *Fire Service Today* published the results of a study conducted by the Seattle Fire Department. Based on a series of textbook training drills and live fire drills, the Seattle Fire Department calculated model effectiveness indices of various levels of manpower as follows:

	3 Person	4 Person	5 Person	6 Person
Engine	45%	59%	79%	100%
Ladder	N/A	57%	78%	100%

These effectiveness indices related to the time required to successfully complete all the given tasks required by a particular evolution in the initial fire attack. The study concluded that:

These effectiveness indices relate to the time taken to accomplish an objective. A large index means a shorter time. Specifically, if a six-man engine takes 5 minutes to accomplish an objective, a three-man engine will require $5 \div .45 = 11.1$ minutes to accomplish the same objective; a four-man engine will take $5 \div .59 = 8.5$ minutes, and a five-man engine will take 6.33 minutes. (Seattle did not examine levels of manpower greater than six men.) The same process was used to compare ladder company evolution times.

The conclusion is that doubling the manpower from three to six men more than doubles the team's effectiveness. There is a synergetic effect at work....

While the Seattle Fire Department's main objective was to produce an appropriateness of service model, unpublished data on fire fighter injuries relating to various levels of staffing were also examined. At the time of the Seattle study, the fire department consistently operated engine and truck companies with varying levels of staffing. To test the relationship between staffing effectiveness and fire fighter injuries, Jon Cushman of the Seattle Fire Department, undertook three separate analyses over a 5-year period.

The results of each analysis yielded the same results:

Average time per disability increased as company strength decreased for both types of companies.

One analysis performed by Cushman examined the Seattle Fire Department's disability report statistics. The results of this analysis indicated that the rate of fire fighter injuries expressed as total hours of disability per hours of fireground exposure were 54% greater for engine companies staffed with 3 personnel when compared to those staffed with 4 fire fighters, while companies staffed with 5 personnel had an injury rate that was only one-third that associated with 4-person companies.

Unit	Average Man-Hours Per Disability	Total Disability Hours	Total Number Disabilities	Total Man-Hours At Fire	Frequency (Column #4 Into #3)	Severity (Column #4 Into #2)
3-Man Engine	90.607	2,537	28	12,660	.00221	.20
4-Man Engine	58.375	1,401	24	10,460	.00229	.13
5-Man Engine	49.500	99	2	2,125	.00094	.05
6-Man Engine	59.517	1,726	29	12,924	.00224	.13
4-Man Ladder	58.000	986	17	3,964	.00429	.25
5-Man Ladder	20.455	450	22	4,895	.00449	.09
6-Man Ladder	45.857	642	14	6,366	.00220	.10

SOURCE: Seattle Fire Department

An even more telling statistic relates to severity rates in Cushman's subsequent analysis that also concluded that average hours per disability associated with 3-person company staffing was nearly 50% greater than those occurring when units were staffed with 4 and 5 personnel.

The Dallas Fire Department, in 1969 and again in 1984, also conducted textbook drills and live fire tests to compare effectiveness among various levels of staffing.¹² The study concluded that deficient levels of staffing will result in an inability to cover critical tasks. As the numbers of fire fighters decrease without eliminating any of the tasks to be accomplished the Department must delay some of the required tasks or attempt to perform all the tasks unsafely with inadequate staff.

Consequently, the Dallas Fire Department concluded that in a residential fire:

The five-person crews demonstrated a more coordinated and effective attack on the fire and search and rescue operation, while

The four-person crew was capable of performing satisfactorily in controlling the fire and in effecting the rescue operation.

The study's conclusion regarding the three-person crew was that not all the required critical tasks could be accomplished within a given time span. Regarding the three-person crew, the report stated:

At this level there was little margin for error and any appreciable delay in arrival might place the control of the fire beyond their capability.

This is an extremely important statement given that the Dallas Fire Department took great care to insure that improvements in the time it took to complete each critical task was not made at the expense of sound operating practices or safety. However, this would not be the situation in actual fireground operations. Fire fighters operating in understaffed environments are too often expected to perform beyond their capabilities.

The Dallas study, in addressing this issue, indicated that inadequate staffing resulted in:

- A cumulative effect created by combined delays and lost functions on the part of each crew resulting in an even greater loss of overall effectiveness;
- Increased physiological stress on fire fighters as they try to compensate for the lower staffing level; and
- Increased risk to the fire fighters when aggressive procedures are undertaken without the support necessary to complete them safely.¹³

The National Fire Academy also noted in a research project developed for its Executive Development III Program that:

In 1977 a test was conducted by the Dallas Fire Department, which consisted of a simulated fire involving several rooms at the rear of the third floor of an old school. This simulated fire was being done to determine how long it took a three, four, or five man team to advance its line to this area, get water on the fire, and to check each individual's physical condition afterwards. Timing began as each engine company entered the school yard.

**U.S. FIRE ACADEMY
FIRE RISK ANALYSIS**

The average time of the Engine Companies is revealing. The first consisted of a three-man team and their average was 18.18 minutes. All personnel were exhausted, rubber legged, had difficulty standing up and all three were unfit for further fire fighting.

The four-man team conducting the very same test, averaged 10.29 minutes and upon completing they were nearing exhaustion.

Next came the five-man team which averaged 6.15 minutes, and afterwards all showed little evidence of fatigue.¹⁴

The Academy's project report went on further to state:

The implication is that when a smaller work force, using the same heavy equipment, has to do the job that was done in the past by a larger workforce, injuries of this nature will continue to increase. Injuries to back and knees are injuries that take a long time to correct. The cost to the city and department are heavy.¹⁵

In 1984, the U.S. Fire Academy introduced the training manual Fire Risk Analysis: A System's Approach. The manual stated that suppression capability must be measured to include both initial attack operations that attempt to quickly deal with marginal situations before they get out of control, and sustained firefighting procedures that can be put into operation against major fires. In addition to the ability to apply water to the fire, the analysis emphasized that the size of the fireground workforce must be of sufficient size in order to simultaneously have the ability "to engage in search and rescue, forcible entry, ventilation, preservation of property, and additional support activities as required by the situation." The U.S. Fire Academy further stated that time is a critical factor in determining the effectiveness of the tasks with the expectation for the fire to increase until sufficient personnel are assembled to overcome it.

Thus, interior offensive tactics should be measured by the ability to place effective handlines in operation in interior positions and the attempt to gain control of the fire before it exceeds the assembled workforce's capability. This involves assigning personnel to a myriad of activities contingent upon the nature and complexity of the target hazard.

Initial attack capability must be measured in terms of a reflex action by the fire department. Upon receiving an alarm, the department must be able to respond quickly and with the necessary equipment and personnel to put a fire attack into motion without delay.

Based on the above objectives, the U.S. Fire Academy concluded that in order to safely conduct an effective interior attack required at least 15 personnel distributed as follows:

**FIRE DEPARTMENT
EVALUATION SYSTEM
(FIRE DAP)**

Hoselines:
 2 personnel per attack line (1- 1/2 inch lines – 100 gpm) = 2
 2 personnel per attack line (1- 3/4 inch lines – 150 gpm) = 2
 2 personnel per backup line (2 inch line – 200 gpm) = 2
 1 personnel to operate each pumper = 2

Search and Rescue Operations:
 1 of 2 personnel team for every 2,000 sq. ft. = 2
 (residential occupancies)

Support Functions:
 At least 1 fire fighter to perform forcible entry, utility control, and related support functions for each hand-line placed in operation = 2

Ventilation:
 At least 2 personnel to perform ventilation = 2

Command:
 At least 1 individual assigned as fireground commander = 1

TOTAL PERSONNEL REQUIRED 15

In December 1991, the Phoenix, AZ Fire Department developed the Fire Department Evaluation System (FIRE DAP) to precisely identify the components and objectives for complying with the NFPA’s 1410 *Training Standard on Initial Fire Attack*.¹⁶ This evaluation system involved responding to and extinguishing a working fire in a single story residential structure of 2,000 square feet with no exterior exposures.

The Department concluded that to safely conduct an aggressive interior attack based on standard evolutions and the critical tasks that needed to be accomplished required 15 personnel distributed as follows:

4 personnel on each engine = 8 personnel
 4 personnel on truck = 4 personnel
 2 personnel in BC vehicle = 2 personnel
 1 personnel on utility vehicle = 1 personnel
 TOTAL 15 personnel

It is important to note that the Phoenix study indicated that one of the primary objectives of the first arriving engine company was to “*utilize hose line for fire control and personnel protection.*”

It should be further noted in the Phoenix study’s findings that the initial attack ultimately required at least 15 personnel on the scene. This is consistent with previous studies such as the Dallas, Ohio State University and Seattle studies, ICMA’s Managing Fire Services, NFPA’s Fire Attack-1, NFPA’s Fire Protection Handbook, and NFPA’s Training Standard on Initial Attack.

**AUSTIN , TX FIRE
DEPARTMENT STUDY**

These studies not only form the basis for the “industry standard and practice” for training but also are the basis for the actual response to structural fires which will require aggressive and offensive actions including interior attack.

In 1993, the Austin Fire Department embarked on a study to determine whether companies staffed with 4 fire fighters were safer and more effective than the 3 person companies the Department was currently deploying. In order to compare the effectiveness, physiological impact on fire fighters and Austin Fire Department injury rates at various staffing levels, the Fire Department conducted drills consisting of a series of common fireground tasks divided into three scenarios: a simulated two-story residential fire, a simulated aerial ladder evolution, and a simulated engine company highrise fire.

These simulations revealed, once again, that regardless of the experience or how prepared fire fighters are, with an insufficient number of personnel to conduct the tasks efficiently, life and property continue to suffer inevitably. Severity and the degree of hazard increases until controlled or the fire passes the critical point. Consequently, the Austin Fire Department concluded that the effectiveness significantly improved when the company was increased from 3 to 4 personnel. The Austin Fire Department’s report stated:

In the two-story residential fire the efficiency or time improvement between the three person and four person crews was 73%.

In the aerial ladder evolution the efficiency improvement between three and four person crews was 66%.

In the engine company high-rise fire the efficiency improvement between three and four person crews was 35%.

Averaging all scenarios the improved efficiency was 58%.

The Austin study also examined the physiological impact of increased company level staffing had on fire fighters. Before and immediately after the completion of each scenario, medical evaluations including pulse, respiration, blood pressure, EKG strips, body temperature, and visual assessment were given to each fire fighter.

Not surprisingly, the crews consisting of 4 fire fighters recorded a notable decrease in the pulse rate (cardiovascular stress level) and respirations than did 3 person crews:

For three person staffs the average pulse rate per minute, post drill, was 127.28; whereas, the average pulse rate per minute for four person staff was 119.69. This is a 16% difference rate increase with the two crews having equal baseline pulse rates.

Air consumption for each firefighter working on a four-person crew as opposed to a three person crew decreased by 53%. The dramatic decrease was determined to be a result of less exertion involved in the exercises with four-person crews.

Visual assessment of each firefighter verified the additional exhaustion level of the three person crew members.

In addition to the fireground simulations, the Austin Fire Department also reviewed injury reports involving 136 emergency incidents to which 1,938 fire fighters responded from 1989 to 1992. The analysis revealed:

Four- and five-person crews' injury rate was 5.3 per 100 firefighters;

while

Three-person companies experienced an injury rate of 7.77 injuries per 100 firefighters – a 46% higher rate than the larger crews.

Upon its conclusion, the Austin staffing study had exactly confirmed the results the Dallas study conducted some ten years earlier. The Austin Fire Department had found that inadequate staffing directly caused the following problems:

- A higher risk for victims due to delays which are indirectly related to likelihood of survival;
- A loss of critical functions;
- An increased loss of overall effectiveness as a result of combined delays and loss of critical functions;
- Higher physiological stress on fire fighters as they attempt to compensate for lower crew size;
- Higher risk to fire fighter safety as aggressive procedures are conducted without the necessary support.

The Austin study concluded that increased staffing levels from 3 to 4 provided substantial benefits such as:

- A smaller number of multiple alarms;
- Lower fire damage dollar loss and higher loss/save ratio;
- Fewer injuries/deaths for civilians and fire fighters;
- Fewer Worker's Compensation for fire fighters;
- Retainment of tax base properties; and
- Lower civil liability for the City and the Fire Department.

**ENFORCING AN
INDUSTRY STANDARD
(CLARK Co., NV
FIRE DEPARTMENT)**

It was this concept of ignoring “industry standards” that was the basis of a 1989 complaint filed by the Division of Occupational Safety and Health of the Nevada Department of Industrial Relations against the Clark County Fire Department. Nevada OSHA’s regulations maintain that an employer shall not:

Require, permit or suffer any employee to go or be in any employment or place of employment which is not safe and healthful.

Fail to furnish, provide and use safety devices and safeguards or fail to adopt and use methods and processes reasonably adequate to render such employment and place of employment safe and healthful.

Fail or neglect to do every other thing reasonably necessary to protect the life, safety and health of such employees....¹⁷

Citing that the Clark County Fire Department had prior knowledge that units staffed with 3 personnel were unsafe, N.D.O.S.H. issued a complaint that the Fire Department had willfully violated the industry standards relating to fire fighter safety. In late 1990, the N.D.O.S.H. agreed to vacate the violation when the Clark County Fire Department stipulated that it would immediately “maintain minimum staffing levels at each fire station so that no engine or ladder truck shall be dispatched from a fire station, manned with less than four persons.”

In addition, the stipulation entered into by the Fire Department stated that:

Any engine or ladder truck manned with less than four persons shall be defined to be “unsafely manned.”

The body of evidence and industry practice over the last quarter century certainly indicates that the adherence to a minimum safe fireground staffing level is professionally appropriate.

**ONTARIO FIRE
MARSHAL STUDY**

In 1993, the Fire Marshal of Ontario (Canada) Research Project embarked on a study to thoroughly examine the tasks which 3- and 4- person crews could safely accomplish. The project determined that 3-person crews are very limited in their firefighting capabilities. It is found that until additional assistance has arrived on the scene, the following cannot be accomplished safely:

- deployment of back-up protection lines;
- conducting interior suppression or rescue operations;
- ventilation operations requiring access to the roof of the involved structure;
- the use of large (65mm) hand-held hose lines;
- the establishment of a water supply from a static source within the reasonable time limits.

**METROPOLITAN FIRE
CHIEFS AND
MINIMUM STAFFING**

In addition, the companies' 3-person crews were not of sufficient size in order to provide the necessary breaks to recover from metabolic heat and exhaustion during incidents requiring abstained fireground operations.

Four-person crews were also determined to be substantially more effective versus 3-person crews once a water supply from an external source is established. Such additional tasks which may be accomplished by a 4-person crew include:

- two person interior search and rescue with no hand-held back-up line;
- two person interior structure firefighting with no rescue component and no hand-held back-up line;
- limited roof level ventilation operations;
- laddering operations; and
- salvage operations.

Four-person crews, depending on the circumstance, may also be capable of completing the following:

- use of large (65mm) diameter hand lines;
- establishment of a water supply from a static source;
- establishment of a second point of entry and approach to the fire location in the structure; and
- preparing for a second area of search and rescue for person(s) in need of rescue.

The study further concluded that the addition of one crew member allows for increase command and pumper operations as the driver or supervisor is given a single function.

At their 1992 annual meeting, the Metropolitan Fire Chiefs Division of the IAFC not only endorsed the assembly of at least 4 fire fighters before initiating an interior attack, but went further stating:

In order to permit the effective operation of fire companies at the scene of a structure fire, the minimum number of personnel on both engine and ladder companies should be five members per unit.

In support of its position and addressing the impact that inadequate fireground staffing has on fire fighter safety, the IAFC's Metro Chiefs listed the following points:

A fire company should be able to function as an independent unit at the scene of a fire in order to permit the Incident Commander to employ the proper tactics and strategies to safeguard the occupants of the building, as well as the operating force, and to protect the property of the citizens.

Whenever understaffing necessitates the combination of two companies to accomplish a specific task at the scene of a fire, which normally could be completed by one effective unit, the standard operating procedures are dramatically and adversely affected.

Proper fire fighting procedures require strategies that result in the commitment of fire companies not only to the area involved on arrival, but to the internal and external exposures as well, if the endangered citizens are to be safeguarded and the property damaged limited. Understaffing prevents the Incident Commander from achieving these essential objectives.

To justify the position taken by the Metro Fire Chiefs, there is sufficient documentation available that indicates increased injury rates to occupants and fire fighters, as well as higher property losses, are due to an inadequate firefighting force at the scene of a fire.

The Metro Chiefs recognize that current economic difficulties are affecting public safety organizations nationwide but these factors do not alter the tasks that must be accomplished at the fire scene.

The decline in the number of members per unit, as well as the reduction in the number of fire companies in cities, have already reached a dangerously low level. To accept or support further reductions is inappropriate.

Any fire chief who attempts to obtain sufficient funding to provide adequate personnel for the protection of the community he serves, even if he fails, is performing his sworn duty to the best of his ability. In doing so, he is conscientiously informing the elected officials and the citizenry of their needs according to his professional judgment and experience.

We believe that our, the Metro Fire Chiefs, position is strong enough to assist all fire chiefs in their efforts to obtain adequate staffing.

This firm position has been taken by the Metro Chiefs solely in the interest of the safety of both those we serve and our nation's fire fighter.

**INCREASING
FIREGROUND INJURIES**

Since the NFPA 1500 *Standard on Fire Department Occupational Safety and Health Program* was promulgated, the average annual rate of fireground injuries per 1,000 fires has increased by 6.4% as the table below shows.

Rate of Fire Fighter Fireground Injuries Per 1,000 Fires

	Total	Smoke Inhalation, Eye Injuries, Burns	Wounds, Dislocations, Fractures, Heart Attack, Sprains and Strains
1981-1986	25.22	8.89	13.54
1987-1993	26.83	7.45	15.59
% Change	6.4%	(16.2%)	15.1%

Note: Prior to 1981, data was not classified in same manner.

SOURCE: NFPA Annual National Fire Experience Survey

Comparing the average annual rate of fireground injuries for the six-year period prior to the promulgation of NFPA 1500 to the seven-year post NFPA 1500 period reveals that those injuries (i.e., smoke inhalation, eye injuries and burns) most closely associated with SCBA usage and personal protective equipment declined by 16.2%. On the other hand, the rate of fireground injuries for those injuries (i.e., wounds, dislocations, fractures, heart attacks, strains and sprains) associated with understaffed fireground operations increased by 15.1%.

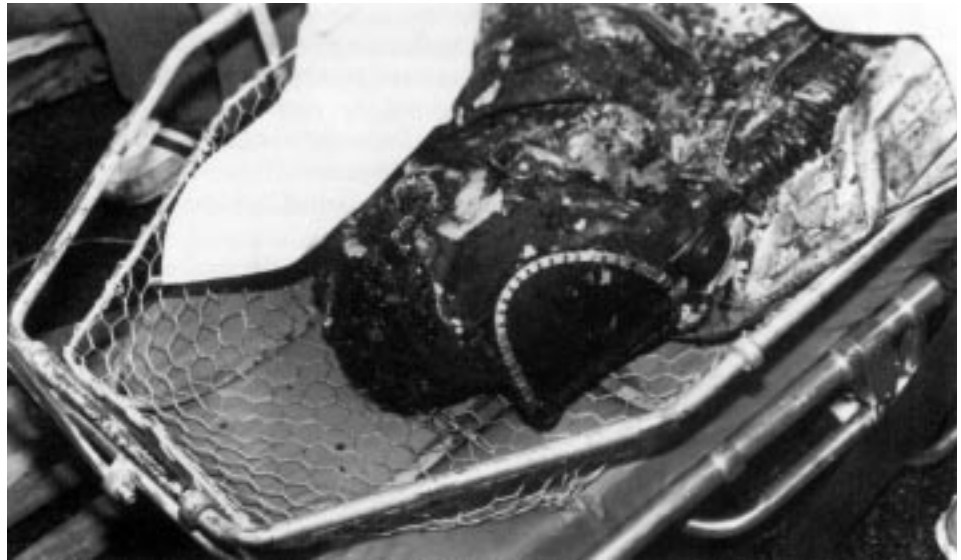
**JOHNS HOPKINS
UNIVERSITY STUDY**

A recent study produced by the IAFF with the cooperation of Johns Hopkins University also reflects the fact that fire fighter injuries are significantly influenced by inadequate staffing. This analysis compared the rate of injuries per 100 fire fighters and per 100 alarms for cities operating 4-person staffing versus those operating 3-person units.

The analysis showed that:

- Cities which operated fire suppression companies with less than 4 personnel had an injury rate per 100 workers that was 36.3% greater than those cities which had staffing levels of 4 or more;
- The percentage of cities having an injury rate of 10 injuries or more per 100 fire fighters was nearly double for those operating with less than 4 person crews as compared to those cities operating with minimum staffing levels of 4 or more;
- Fire fighter injury rates per 100 alarms were an average of 38% greater in cities with minimum staffing of less than 4 personnel per unit; and
- 72.5% of the cities staffing with less than 4 had an injury rate per 100 alarms of 0.5 or greater compared to only 35.3% of the cities staffing with at least 4 per fire suppression unit.

**PROVIDENCE , RI
EXPERIENCE**



Tests for statistical significance on this data established that such differences in the injury rates associated with 3 versus 4 person staffing are not due to random chance.

The significant effect that increasing staffing from 3 to 4 can have on the rate of fire fighter injuries is apparent from a recent trial experience in Providence, Rhode Island. In order to test the hypothesis that 4 person staffing was safer than units staffed with only 3 fire fighters, the City agreed to provide 4 person minimum staffing on 6 of its 15 units and examine the results.

As the following table shows, the resulting 55.4% drop in fire fighter injuries was so dramatic that the Mayor entered into an agreement with the local union to extend the 4 fire fighter minimum staffing level to all 15 of the Providence Fire Department's fire suppression units.

**COMPARISON OF INJURY RATES IN PROVIDENCE, RI
FOR 3 PERSON VERSUS 4 PERSON STAFFING**

Year	Fire Suppression Incidences	Fire Fighters On-Duty	Number of Fire Fighters	# of Injuries at Emergency Scene	Emergency Scene Injuries Per 100 F/F	% Decrease in Emergency Scene Injuries Per 100 FF
1989	3,869	83	479	431	90.0	
1990	3,871	89	479	339	70.8	21.3%
1991	4,143	98	479	192	40.1	43.4%
TOTAL DECLINE						55.4%

In 1989, minimum staffing per piece was 3 personnel. Beginning in September of 1990, 6 units were staffed with 4 personnel through overtime; beginning in October of 1991, all 15 units were staffed with 4 personnel through overtime.

U. S. FIRE ACADEMY'S FINDINGS

In conjunction with the Providence study, an applied research project was conducted as part of the U.S. Fire Academy's Executive Officer Program. This project addresses the fire fighter perspective and explores possible areas of discrepancies within the study. Through literature reviews, interviews with the Providence Fire Department Chief, the Fire Department Historian, and a member of the Department of Economic Planning and Development, and examinations of the Providence Fire Department Injury-Exposure Database, the analysis provides substantial evidence in support of the initial Providence staffing study findings:

- a 23.8% decrease in the number of reported injuries;
- a 25% decrease in the number of time loss injuries when staffing increases;
- a 71% decrease in work time lost; and
- a dramatic decrease in the frequency and severity of fire injuries when staffing increases from three- to four-person crews.

The study further concluded that this significant decline in frequency and severity of injuries was not caused by the decrease in the number of fires or incident volume, nor was the drop in fire fighter injuries caused by changes in protective clothing, new safety or operational procedures, substantive training changes, new physical fitness programs, or the implementation of new OSHA programs since these were held constant during the study period. Taking all of these factors into consideration, the analysis concluded that increased staffing from 3 to 4-person crews leads directly to significant reductions in the frequency and severity of fire fighter injuries.



**INDUSTRY CONSENSUS
STANDARD ON
FIRE DEPARTMENT
OCCUPATIONAL SAFETY
& HEALTH
(NFPA 1500)**

In 1993, the National Fire Protection Association (NFPA) included in its Consensus Standard on Fire Department Occupational Safety and Health (NFPA 1500) a requirement addressing the minimum number of fire fighters necessary to initiate an offensive interior attack on a structural fire. This Tentative Interim Amendment (TIA) to the fire fighter safety standard states:

At least four members shall be assembled before initiating interior fire fighting operations at a working structural fire.

However, while the above language was clear as to the minimum number of personnel required to safely begin interior firefighting operations, it left some confusion as to how personnel would be “assembled.”

Consequently, in 1994, Mr. M.E. Hines, Director of the Texas Commission on Fire Protection, sought formal clarification from the NFPA on this issue. NFPA’s formal interpretation of how the 4 fire fighters should assemble is as follows:

...when a company is dispatched from a fire station together as a unit (which includes both personnel responding on or arriving with apparatus), rather than from various locations, the standard recommends that the company should contain a minimum of four fire fighters.

The National Fire Protection Association (NFPA) interpretation of the Standard goes even further to address “high risk” fires:

It should be noted that four fire fighters is a baseline recommended minimum for ‘any type of fire.’ For companies responding in ‘high risk areas’ a higher minimum of 5 responding or arriving with each engine company and 6 responding or arriving with each ladder company is recommended.

**FEDERAL OCCUPATIONAL
SAFETY AND HEALTH
ACT’S “2 IN/2 OUT”
STANDARD**

The Occupational Safety and Health Act of 1970, signed into law on December 29, 1970, was designed to assure so far as possible every working man and woman in the nation safe and healthful working conditions. In administering the Act, the U.S. Department of Labor’s Occupational Safety and Health Administration (OSHA) issues standards and rules for safe and healthful working conditions, tools, equipment, facilities, and processes. OSHA also conducts workplace inspections to assure the standards are followed. Under the Act, employers have the general duty of providing their workers a place of employment free from recognized hazards to safety and health, and must comply with OSHA standards.

Many of OSHA’s standards are not new. Employers have operated under them for years as national consensus standards – those agreed upon by members of groups such as the American National Standards Institute and the National Fire Protection Association – or as federal standards established under other laws, such as the Public Contracts Act. Many of these standards were codified as OSHA standards upon passage of the OSHA act. Included were ANSI standards pertaining to the use of respiratory equipment.

The International Association of Fire Fighters requested officials at Federal OSHA to provide uniform interpretation and compliance information on its standards addressing self-contained breathing apparatus use and the application of these standards to fire fighters responding to hazardous materials incidents and structural fires. On May 1, 1995, Federal OSHA issued a compliance instruction to all OSHA Regional and Area Offices, Compliance Officers and State Agencies having responsibility for enforcing safety and health regulations. This compliance instruction thus not only establishes the link between fire fighter safety and fireground staffing, but also provides for universal interpretation and enforcement of these regulations.

This compliance standard known as the “2 in/2 out” rule provides federally enforced protection for all professional fire fighters, whether state, county, or municipal, in any of the states or territories where an OSHA State Plan agreement is in effect. The following 25 states/territories have State OSHA Plans:

Alaska	Kentucky	North Carolina	Virginia
Arizona	Maryland	Oregon	Virgin Islands
California	Michigan	Puerto Rico	Washington
Connecticut	Minnesota	South Carolina	Wyoming
Hawaii	Nevada	Tennessee	
Indiana	New Mexico	Utah	
Iowa	New York	Vermont	

While there is not universal occupational health and safety coverage for all U.S. and Canadian fire fighters, these regulations must be considered the minimum acceptable standard for safe fireground staffing when self-contained breathing apparatus is required to be used. Thus, this interpretation is appropriate evidence for arbitration and grievance hearings on fire fighter safety.

In addition, Executive Order 12196 issued February 26, 1980 and implemented December 21, 1980 requires that all federal agencies comply with the same safety and health requirements as private employers. Thus, federal fire fighters are protected under Federal OSHA safety and health standards, including this interpretation.

The U.S. Environmental Protection Agency (EPA) has promulgated a standard that adopts the OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) to protect employees who work in the public sector where there is not an OSHA approved State program in place (40 CFR 311). Additionally, EPA and OSHA have agreed that all interpretations regarding compliance with HAZWOPER will be made by OSHA. Thus, those fire fighters in the 27 non-OSHA states and other U.S. territories (e.g., Guam, Canal Zone) making a response to emergency operations where there is a potential release of hazardous substances, as defined by this standard, are covered by the interpretation.

The substance of Federal OSHA’s “2 in/2 out” standard is as follows:

- *The HAZWOPER standard requires the use of the buddy system with standby personnel for emergency response operations involving the release of hazardous substance(s) producing IDLH conditions for employees responding. The regulation specifies a minimum of four personnel, two as a team in the buddy system and two standby backup personnel, to conduct operations in hazardous areas safely.*

- *The use of SCBA's in IDLH atmospheres for circumstances not covered by HAZWOPER is covered by the Respiratory Protection standard which requires two standby personnel to be present outside the IDLH hazard area. Failure to have two standby persons for a known, existing IDLH, e.g., an interior structural fire, would be a violation of 1910.134 (e)(3)(ii).*
- *The Fire Brigade standard covers employers whose employees perform interior attack on interior structural fires and references the Respiratory Protection standard's requirements above.*
- *The National Fire Protection Association (NFPA) recognizes that fire fighters must operate in teams of two or more when conducting interior structural firefighting operations; failure to respond with teams of two or more would be a violation of the General Duty Clause.*
- ***The Respiratory Protection standard and industry practice (as codified through the NFPA standards) require that a minimum of four fire fighters be involved in emergency operations during interior structural firefighting. Two act as a team in the hazard area, and two stand by outside the hazardous area to monitor the operation and provide assistance should a rescue be necessary.***
- *OSHA regulations and NFPA standards specifically require communication between members of the team. Fire fighters working in teams of two or more (buddy system) in hazardous areas (IDLH atmospheres) are required to maintain communications (voice, visual contact, or tethering with a signal line). Radios or other means of electronic contact shall not be substituted for direct visual contact between employees within the individual team in the danger area.*
- *One of the individuals outside of the hazard area may be assigned more than one role, such as the incident commander in charge of the emergency or operator of fire apparatus, where it does not jeopardize worker safety and health.*

Clearly, the evidence establishes the connection between staffing and fire fighter fire-ground injuries. So long as understaffed fire suppression units are expected to initiate and perform sustained interior attack operations involving structural fires, the rate of fireground injuries will continue to increase at alarming rates.

ENDNOTES

- ¹ Municipal Fire Administration, International City Managers' Association (Chicago, IL: ICMA) 1967; pp. 161-162.
- ² "Manpower – How Much Do You Need?" James F. Casey, *Fire Engineering*, October 1969; p. 112.
- ³ Fire Attack-1 Command Decisions and Company Operations, Warren Y. Kimball (Boston, MA:NFPA) 1966; pp. 20-21.
- ⁴ *Ibid.*; p. 44.
- ⁵ Fire Protection Handbook, 13th Edition, National Fire Protection Association (Quincy, MA: NFPA) 1969; pp. 10-24 and 10-25.
- ⁶ Managing Fire Services, International City Management Association (Washington, DC: ICMA) 1979; p. 80.
- ⁷ *Standard on Fire Department Occupational Safety and Health Program*, NFPA No. 1500, National Fire Protection Association, 1992; Appendix A-6-4.1.
- ⁸ Fire Protection Handbook, 17th Edition, National Fire Protection Association (Quincy, MA: NFPA) 1991; p. 10-41.
- ⁹ *Ibid.*; p. 10-40.
- ¹⁰ Managing Fire Services, 2nd Edition, International City Management Association (Washington, DC:ICMA) 1988; pp. 119-120.
- ¹¹ "Report on the Survey of Fire Suppression Crew Size Practices," Centaur Associates conducted for FEMA, June 30, 1982; pp. 18-20.
- ¹² "Dallas Fire Department Staffing Level Study," McManis Associates & John T. O'Hagan & Associates, June 1984; pp. II-1 through II-7.
- ¹³ *Ibid.*; p. I-2.
- ¹⁴ "Fire Engines Are Becoming Expensive Taxi Cabs—Inadequate Manning," National Fire Academy, Executive Development III Program, 1981; p. 4.
- ¹⁵ *Ibid.*; p. 2.
- ¹⁶ "Fire Department Evaluation System (FIRE DAP)," Phoenix, AZ Fire Department, December 1991; p. 1.
- ¹⁷ State of Nevada NRS 618.385.

Chapter 3

Local Jurisdiction's Overall Fire Protection Requirements

In any community, the level of service provided by the fire department is based on factors such as community expectations, financial resources, and political decisions. Fire fighter safety and requirements for performing successful interior structural fire attacks should not be subject to political debate.

These precepts are best described in a statement by the International City Management Association (ICMA):

The fire control system is by far the most costly element of a fire department's operations and should be designed and operated in the most cost-effective fashion. (The value of 'cost-effectiveness' is determined by definition at each local level of government and will vary from community to community. This variation results from the process of balancing the accepted or tolerated risk against the actual risk in each community.) One three or four man company costs several hundreds of thousands of dollars per year. A fire control company not needed or poorly utilized represents a significant financial waste. On the other hand, too few companies, or poorly manned ones, can result in property and life loss beyond community accepted norms. Also, the cost of a firefighter death or a disabling injury may far exceed the expense of a fire company. This is not to say that there is a fixed value on a life or injury. The point is that the firefighting forces are the asset that protects the community's economic and tax base as well as its health and welfare. This asset is a valuable one and must be carefully provided and wisely managed.

There is no single problem or solution to be found when a community's fire control system is designed, although many fire chiefs and managers are engaged in just such a search. But such an attempt merely illustrates a lack of understanding of the complexities of what constitutes an adequate fire protection delivery system. ¹ (UNDERLINING ADDED)

In its 1988 edition of Managing Fire Services, ICMA suggested an overall master plan for providing safe and effective fire suppression services:

A prudent response pattern needs quick response times as well as a sufficient number of firefighters for the immediate attack.

Officials need to establish a maximum response time following receipt of the dispatch instructions at the station. In some urban areas, one and a half minutes are considered a desirable maximum, whereas in other urban areas the number is set at two and a half or three. Obviously, the response time policy varies according to the fire danger, the ability of the munic-

pality to locate stations and staff apparatus, and traffic speed. Average urban response speed is usually about 20 miles per hour. Once fire apparatus and personnel arrive at the scene, their initial activities require several more minutes.

Considering that the time required for flashover in structural fires with standard fuels is typically about seven minutes, the apparatus and fire-fighters must arrive and get operating very quickly. If it takes a resident two or three minutes to discover and report a fire and three minutes for the apparatus to be dispatched and arrive, the sizing up and initial attack need to be done in a minute or two, or the typical fire will have grown significantly in size. An unconscious person with depleted oxygen will typically suffer permanent brain damage after approximately four minutes. All of this needs to be considered within the context of multiple alarm fires and simultaneous alarms. Delayed response and understaffed response appear inevitable under those circumstances, unless planning is complete.

One task, then, in evaluating suppression ability is to determine how fast adequate firefighting forces can arrive at the scene of an incident and launch rescue operations, if needed, plus initial fire attack. Once the community or the evaluation team has determined satisfactory parameters for the size of the initial attack team and response time and has measured the local situation, it can judge how satisfactory the response is. Often the response time is longer than officials expected, especially if the time span is measured from the moment the alarm was received to the actual initial attack. Team size may not be satisfactory until several vehicles arrive, and this time delay must be considered as well. The efficiency of the attack team will be greatly diminished if an optimum number are not working at the scene.² (UNDERLINING ADDED)

Thus, if successful and safe, initial interior structural fire attack minimally requires at least:

- 4 fire fighters arriving with the first due engine,
- and
- total fireground resources of 15 to 16 personnel staffing 2 pumpers and 1 ladder truck,

the only additional piece of the equation is response time.

RESPONSE TIME

Response time involves four elements: detection time, alarm processing time, turnout time and travel time. For the first of these elements — detection time — no reliable data or analysis exists.

However, for the two elements involving alarm processing³ and turnout time,⁴ the International Association of Fire Chiefs' Accreditation Committee recently completed an analysis.⁵ The study indicated that in "staffed departments" the average time required to process the alarm was 53.76 seconds, while the average turnout time was 57.55 seconds.

**MINIMUM STAFFING
AND RESPONSE TIMES
REQUIRED FOR
DELIVERY OF
EMERGENCY MEDICAL
CARE**

On the basis of the International City Management Association statement that fire apparatus in an urban setting can average about 20 miles per hour, travel time involving distances of 1 mile is approximately 3 minutes. Therefore, the total average response time of “staffed departments” approximates 5 minutes from receipt of the alarm to arrival at the scene.

The response times for fire suppression are also consistent with those recommended by the American Heart Association (AHA) for delivery of pre-hospital emergency medical care. The AHA’s emergency medical services maximum response time recommendation has been 4 minutes for initiation of basic life support (BLS) and 8 minutes for initiation of advanced life support (ALS).

Recently the AHA reconfirmed this recommendation by stating:

For cardiac arrest, the highest hospital discharge rate has been achieved in patients in whom CPR was initiated within 4 minutes of arrest and ACLS within 8 minutes. Early bystander rescue breathing or CPR intervention and fast emergency medical services (EMS) response are therefore essential in improving survival rates.⁶ (UNDERLINING ADDED)

In 1992, the National Conference on Cardiopulmonary Resuscitation and Emergency Cardiac Care, listed among its recommendations that all fire-fighting units be equipped with and trained to operate automatic external defibrillators and the following recommendation regarding minimum staffing per EMS response:

Early ACLS provided by paramedics at the scene is another critical link in the management of cardiac arrest. EMS systems should have sufficient



TACTICAL FIRE SUPPRESSION GOALS

staffing to provide a minimum of two rescuers trained in ACLS to respond to the emergency. However, because of the difficulties in treating cardiac arrest in the field, additional responders should be present. In systems that have attained survival rates higher than 20% for patients with ventricular fibrillation, the response teams have a minimum of two ACLS providers plus a minimum of two BLS personnel at the scene. Most experts agree that four responders (at least two trained in ACLS and two trained in BLS) are the minimum required to provide ACLS to cardiac arrest victims...
(UNDERLINING ADDED)

Given the total requirements of firefighting personnel and equipment to safely conduct an initial interior structural fire attack and provide pre-hospital emergency medical care according to the industry's standard, the only politically driven decision that is appropriately within a local community's discretion is response times. For it is through its decision regarding these response times that the local community defines the acceptable level of risk in providing the delivery of fire suppression services.

The International City Management Association (ICMA) defines just such a set of tactical fire suppression goals as the following:

For all structural fires, to deploy one engine company within five (5) minutes and an additional engine company, one ladder company, one paramedic unit, and one chief officer within ten (10) minutes for 90 percent of all alarms in areas with a required fire flow of 4,500 gallons per minute (GPM) or less. For all areas over 4,500 GPM, the first engine and truck (ladder) must arrive within five (5) minutes for 90 percent of all alarms. The lapsed time (reflex time) is to include fire dispatch and response time. The objective is to control the fire before flashover (sudden spread), or before the fire has extended beyond the first (original) area of involvement. (Using the standard time versus temperature curve as a base, flashover is estimated to be eight (8) minutes after ignition in standard fuels.)

The general tactical objective is to develop an attack force that can aggressively advance two standard fire stream hand lines (or the equivalent). For major emergencies beyond the normal capability of the first alarm assignment, the objective is to deploy a programmed reserve and automatic aid fire force of six (6) engine companies, three (3) truck (ladder) companies, and three (3) chief officers within fifteen (15) minutes of a third alarm. The objective is to prevent large fires from extending to other structures.

For all fire and emergencies (i.e., a probability of fire or explosion) in petroleum storage and production areas, to deploy, within ten (10) minutes, special light water or foam firefighting equipment and prepare for long relays and extended pumping operations. The objective is to provide engine companies with adequate petroleum firefighting equipment. For fires in water deficient areas, the objective is to deploy, within ten (10) minutes, a pumper-tanker and relay operation of adequate capacity to augment local supplies.

For fires in harbor areas, to deploy within five (5) minutes for 90 percent of all marine-oriented incidents adequate marine firefighting equipment of 500 GPM.

To maintain and deploy one engine company within five (5) minutes of notification in 90 percent of all light rescue emergencies. In addition, a paramedic unit shall be deployed within five (5) minutes 80 percent of the time. The objective is to provide emergency medical services (EMS) and rescue all trapped persons, including those who need to be extricated with forcible entry equipment.

*To deploy a truck company in addition to an engine and paramedic unit on heavy rescue incidents. The truck shall arrive within ten (10) minutes 90 percent of the time. The objective is to rescue all trapped persons regardless of the situation.*⁸

The requirement to establish tactical objectives in terms of response times and to provide sufficient personnel and equipment to successfully and safely initiate structural interior fire attacks is also required by NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*. In this regard, the NFPA 1500 Standard, Section 2-1.2 mandates that:

The fire department organizational statement shall set forth the operational response criteria for the various types of emergency incidents to which the fire department is required to respond. This written criteria for each type of emergency incident shall contain and identify the following:

(a) The types of standard firefighting functions or evolutions, such as incident management, providing a water supply, hose deployment, forcible entry, search and rescue, ladder placement, ventilation, salvage, and overhaul required to safely complete the operation; specifying a determination of functions or evolutions that need to be performed simultaneously;

(b) The minimum number of members required to safely perform each identified fire function or evolution, based on written standard operating procedures;

(c) The number and types of apparatus and members required for the initial response to each type of emergency incident, as well as the total complement of apparatus and members to be dispatched for each type of incident that defines the total response for all incidents up to the level of a major incident for that Jurisdiction;

*(d) A description of a typical emergency operation, including alarm time, response time, arrival sequence, initiation of basic function and evolution assignments, and standard operating procedures, as these factors relate to fire fighter safety and health.*⁹ (UNDERLINING ADDED)

Section 6-4.1 of NFPA 1500 further mandates that fire departments adhere to the industry's standard of safe minimum fire fighter staffing by requiring that a fire department not force any

fire fighter(s) to perform duties that are unsafe.

*The fire department shall provide an adequate number of personnel to safely conduct emergency scene operations. Operations shall be limited to those that can be safely performed by the personnel available at the scene. No member or members shall commence or perform any firefighting function or evolution that is not within the established safety criteria of the organizational statement as specified in 2-1.2 of this standard.*¹⁰

These studies and the industry's standard of performance endorse the International Association of Fire Fighters' position that the minimum safe and effective fire fighter staffing per unit of response must be:

...at least 4 fire fighters on each engine or pumper company and at least 5 fire fighters on each ladder truck company to any type of structural fire. It must be noted that this is the minimum company staffing for safe and effective operations. Safe fire suppression operations involving high density or high risk occupancies will require additional personnel assigned to each company.

This position is consistent with NFPA Standards 1500 and 1410. Furthermore, it is supported by the National Fire Protection Association in its Fire Protection Handbook and the International City Management Association's Managing Fire Services.

The IAFF position has been endorsed and supported by the U.S. Fire Administration and the Metropolitan Fire Chiefs Division of the International Association of Fire Chiefs.

Study after study, including the Dallas, Seattle, Ohio State, Phoenix, Providence and Westerville studies, have independently provided additional evidence supporting the IAFF's position. Appropriate unit staffing and station distribution further lead to a reasonable standard of performance for response to fires and medical emergencies that has been endorsed by fire service professionals and city administrators as follows:

- First responding unit shall arrive at the scene within 4 minutes of receipt of the alarm in 90% of the instances,

and/or

the initial alarm assignment, consisting of two engine companies and one ladder, shall arrive at the scene within 8 minutes of the alarm in 90% of the instances.

The initial alarm assigned to a fire shall be comprised of sufficient personnel and equipment to control a fire in a structure up to 5,000 square feet in area and effectively remove or rescue any endangered occupants.

and

- The initial alarm response to a medical emergency shall be sufficient to provide advanced life support for victim stabilization, including cardiac emergency, in a manner consistent with the American Heart Association and the American Medical Association recommendations.



ENDNOTES

¹ Managing Fire Services, International City Management Association (Washington, DC:ICMA) 1979, pp. 214-215.

² Managing Fire Services, 2nd Edition, International City Management Association, (Washington, DC:ICMA) 1988, p. 120.

³ “Alarm processing time” is defined as the period of time that is required for the Communications Center to identify the fact that an emergency is in progress, collect the information pertinent to making the appropriate dispatch, and access the methodology used by the agency to deploy resources.

⁴ “Turnout time” is defined as the period of time that is required for the on-duty emergency system and hazardous material personnel to discontinue the activities they are engaged in, properly attire themselves, and board the vehicle in readiness for response.

⁵ “IAFC Accreditation Committee Surveys Fire Department, Charts Response Times,” International Association of Fire Chiefs’ *On Scene*, September 1, 1992; pp. 7-8.

⁶ *The Journal of the American Medical Association*, October 28, 1992; p. 2184.

⁷ *Ibid.*; p. 2291.

⁸ Managing Fire Services, International City Management Association (Washington, DC:ICMA) 1979, pp. 218-219.

⁹ *Standard on Fire Department Occupational Safety and Health Program*, NFPA No. 1500, National Fire Protection Association, 1992; Chapter 2, Section 2-1.2.

¹⁰ *Ibid.*; Chapter 6, Section 6-4.1.

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AFTERSCHOOL RECREATION PROGRAM FY24



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INTRODUCTION

Recognizing our community's diversity, the Library and Community Services Department strives to engage the community, improve health and wellness, support lifelong learning and personal enrichment by providing access to various materials and current technology, courteous staff, affordable services, programs, and special events.

Background

During the budget process for FY23, Council approved funding of \$100K for after-school programming. The funds were split between operations costs and staffing. Although staff has made a start on after-school programming, additional staffing is needed to fully implement a complete after-school program plan with a comprehensive youth sports component. Staff has been building the program and has developed the following over the past year:

- Hiring additional staff has allowed for the re-opening of Camacho Gym after two years of closure due to COVID
- Camacho Gym staff offer basketball, volleyball, and soccer open play; soccer/futsal skills and practice classes available for nominal charge
- Contract instructors have been brought on board to assist with programming needs at Camacho Gym
- Casa de Salud after-school programs are developing further, with the E-Sports program expanding into tournament play
- After many years, the first Summer Camp was held in 2022, and staff is anticipating the growth of this program

Youth Development in National City

Although our organization has started to create additional opportunities for youth to enjoy after-school programming in their local City parks and facilities, we are also mindful of the efforts put forth by our local school districts, youth sports leagues, and non-governmental organizations (NGOs) that strive to create additional educational, creative and wellness opportunities for our local students. The table below illustrates many of these efforts.

Youth Development/Partnership with Schools/NGOs

Program/Activity	City	NSD	SUHI	OW	ARTS	YL
Sports						
Team Sports		x	x			x
Clinics and Training	x	x	x			
Running Clubs		x	x			
Aquatics	x	x	x			
Cheer		x	x			x
Football		x	x			x
Tennis		x	x			
Basketball	x	x	x			
Futsal/Soccer	x	x	x			
Volleyball	x	x	x			
Baseball/Little League		x	x			x
E-Sports	x					
Environmental						
Park Clean-up	x	x	x	x		
Recycle Program	x	x	x	x		
Art						
3D Printing	x					
Arts and Crafts	x	x	x	x	x	
Maker Space			x		x	
Sound Booth					x	
Family Excursions	x					
Memory Lab	x					
Health and Wellness						
Wellness Initiatives		x		x		
Gardening and Food Production	x	x		x		
Safe Environment						
Day Camp	x	x		x		
Teen Center	x	x				
Education						
STEAM	x	x	x	x	x	
Computer Science	x	x	x		x	
Literacy	x	x	x			
Workforce Development/Job Pipelines						
Police Cadets	x					
Mentoring/Shadowing	x		x			
Fire Boot Camp	x				x	
Volunteerism/Community Service						
Environmental Stewardship	x	x	x	x	x	
Community Service	x	x	x	x	x	

NSD NSD partners with Southbay YMCA to provided afterschool services. The Program is called REACH (Recreation, Educations, Academics for Children)

YL Youth Leagues: Diablos Football & Cheer, and 2 Little League Organizations.

In addition to its current programs, the City also leases its facilities to the Boys & Girls Club and A Reason to Survive (ARTS) to facilitate the creation of additional opportunities for the community's youth.

AFTERSCHOOL RECREATION PROGRAM PLAN

Afterschool programs (also known as Out-of-School Time programs) enhance residents' lives, creating a safe and encouraging environment for youth to play, learn and grow. As part of an overall afterschool plan, this proposed afterschool recreation program will:

- Provide a variety of cost-effective recreational experiences that support healthy lifestyles
- Offer services that enhance the quality of life through wellness, creative and educational opportunities
- Grow and adapt to the community's changing priorities and expectations
- Collaborate with local community organizations to enhance and expand services

Staff has been exploring options for growth in the afterschool program and would like to see a comprehensive approach. The department strives to offer more diverse programs to meet various interests and abilities. This recreational program will include athletics, dance classes, arts and crafts, teen programming, E-sports, intergenerational programs, and those designed to meet other special interests or needs.

In addition, staff has been exploring the possibility of including “feeder” programs or structured league play. A feeder program is a club sports program, such as basketball, that feeds into a specific high school. These programs grow participants' skills by assessing them and placing them on teams to assist their athletic development. Sometimes, coaches from the local high school may also assist in coaching the feeder teams. Leveraging schools and local athletes to provide more services to residents would strengthen program outcomes and encourage youth to engage in athletics as they age from elementary school through middle school and into high school. Local cities typically create league structures around basketball and soccer. This is mainly because baseball and football leagues are run separately by independent organizations like Little League. Counties or larger cities are able to create leagues around football and baseball because of additional resources and participation.

PROPOSED RECREATION PLAN

The proposed recreation program offers youth sports focused on age-specific programming. The program is designed to provide recreational level play that focuses on sportsmanship, developing skills and technique of each sport.

- This option starts with youth ages 9-11 and grows the program as youth age into the next age category.
- Participants ages 12-14 added in second year to build connection with local middle schools and help prepare youth for high school sports.
- PeeWee Sports added in the third year of the program.
- Sports programs consist of 8-week clinics designed to introduce youth to sports programs that feed into the next age level and will prepare the student for school sports.
- League structure play for two older age categories consisting of 12 weeks for basketball and soccer only.
- Current contract classes would no longer be offered at Camacho Gym, as staff could charge a lower rate to participants for in-house programming.

The program would be staffed by a full-time Program Coordinator specifically for youth sports who will coordinate activities, practice, games, scheduling, etc. This position will also work closely with the Recreation Supervisor, and train staff and coaches to ensure a quality program. In addition, Recreation Aides can be hired at the high school level, allowing us to help create a recruitment pipeline from the local high school.

ACTIVITY	YEAR 1	YEAR 2	YEAR 3
Soccer	9-11 years old	9-11 years old 12-14 years old	5-8 years old
Basketball			9-11 years old
Flag football			12-14 years old
Volleyball			12-14 years old
League Play (Basketball and Soccer only)	9-11 years old	9-11 years old 12-14 years old	9-11 years old 12-14 years old

STAFF	YEAR 1	YEAR 2 ¹	YEAR 3
Program Coordinator (FT) ²	\$ 79,000.00	\$ 79,000.00	\$ 79,000.00
Recreation Leader III ³	\$ 32,900.00 (2)	\$ 49,350.00 (3)	\$ 49,350.00 (3)
Recreation Aide	\$ 48,100.00 (3)	\$ 48,100.00 (3)	\$ 96,200.00 (6)
Operations (supplies, etc.)	\$ 15,000.00	\$ 15,000.00	\$ 20,000.00
Total:	\$175,000.00	\$191,450.00	\$244,550.00

Staff is recommending a budget enhancement of \$175,000 for the afterschool recreation program to accommodate increased staffing and supplies.

Additional Programs

In addition to the youth sports programs, staff will provide additional programs listed below operated either through contractor-led instruction or as a city-staffed program. These additional programming opportunities can utilize the existing budget. Opportunities for educational programming at the Library will also be explored. The classes listed below are just a sampling of the possible offerings for this program.

LOCATION	PROGRAM	DESCRIPTIONS
Camacho Class Room	Music	City staff taught music classes such as guitar, ukulele, and singing
Camacho Class Room	Arts & Crafts	City staff operated program
El Toyon	Dance	Contract Instructor-led classes. Instruction may include Ballet Folklorico, jazz, and hip-hop
El Toyon	Martial Arts	Contract Instructor-led classes. Instruction may include Karate, Tae Kwando, Jujitsu, and modern arts
Las Palmas Park	Cheer	Contract Instructor-led classes

¹ In this matrix, Years 2 & 3 do not include COLA or other increases for staff.

² Based on lowest step salary for Recreation Center Supervisor. Program Coordinator position would need to be approved by Civil Service Commission and Council.

³ Based on lowest step salary for part-time staff.

REVENUE

The current fee schedule allows for charging residents 40% cost recovery and non-residents 70% cost recovery for all youth recreation programs. At the current rate, we may not get a high level of participants because of cost; many of our residents struggle financially and cannot add to their economic burden. Therefore, staff recommends a lower cost to residents to ensure continued participation. Staff requests direction on cost recovery and will estimate annual revenue based on options and anticipated participation.

Current Program Offerings and Fees

Program	Program Length	Resident	Non-Resident	Internal	External	Volunteer
Basketball	6 weeks	\$100	\$150			
	8 weeks	\$150	\$200		X	
	10 weeks	\$250	\$250			
Soccer/ Futsal	15 weeks	\$20	\$30	X		
Volleyball	Open play	No cost		X		
Soccer	Open play	No cost		X		
Basketball	Open play	No cost		X		
E-Sports	15 weeks	No cost		X		
Cultural Dance	Ongoing	No cost				X
Ballet Folklorico	13 weeks	\$60	\$84		X	

Tentative Program Offerings and Fees

Program	Program Length	Resident	Non-Resident	Internal	External	Volunteer
League Structure (basketball /soccer)	12-week session	\$100	\$125	X		
Football	8-week session	\$20	\$60	X		
Tennis	8-week session	\$20	\$60	X		

Basketball	8-week session	\$20	\$60	X		
Soccer/ Futsal	8-week session	\$20	\$60	X		
Volleyball	Open play	No cost		X		
E-Sports	Open play	No cost		X		
Music class	10 weeks	\$20	\$40	X		
Martial Arts*	10 weeks				X	
Cheer*	8-week session				X	
E-Sports	15 weeks	No cost	No cost	X		
Cultural Dance	Ongoing	No cost	No cost			X
Ballet Folklorico	13 weeks	\$60	\$84		X	

*No cost estimate is available at this time.

There is also the possibility of creating a scholarship program which could be used to reduce the out-of-pocket expense for enrichment opportunities and would be available only for National City residents. Uses may include summer day camps, educational programs and classes, family outings, sports, and program activities. This program would ensure that all community residents have access to recreation activities offered by the City. The program could be funded by sponsorships and donations.

Other Local Offerings

Local cities offer a variety of youth recreation and sports programs; cost recovery varies. Below are examples of programs from local municipal recreation programs.

Chula Vista

Chula Vista offers youth sports leagues and clinics in basketball and soccer for all skill levels. Programs for youth sports leagues provide assessments and placement according to skill level. Youth sports clinics focus on teaching fundamental skills such as dribbling, shooting, and rebounding. All youth sports programs encourage good sportsmanship and give

participants the skills needed to advance in organized team sports. Programs are typically 12 weeks. Residents: \$110; Non-residents: \$135

San Diego

San Diego offers a wide variety of sports clinics and league play for all skill levels and ages. Programs can be a single-day clinic, an 8-week skill-building program, or a 12-week league structure with corresponding costs. Costs are generally low and depend on location, age group, and sport. For example, eight-week sessions typically cost between \$0-30, with league play costing \$50-\$72. In addition, most youth sports programs for ages 5-8 are free of charge.

El Cajon

El Cajon offers youth sports leagues for indoor soccer and basketball. Programs include evaluations and placement for ages 7 - 12. Leagues play for 9 weeks, meeting twice per week. Participants learn fundamental skills, basic rules, focus on personal success and effort. Equal participation, sportsmanship, and teamwork are emphasized.

Residents:\$56; Non-residents: \$70

Volleyball and Basketball clinics are offered for ages 7-14. Clinics are open to all skill levels and operate for 8 weeks.

Residents: \$42; Non-residents: \$55

County of San Diego - Spring Valley

The County of San Diego offers a variety of sports leagues for volleyball, basketball, soccer, and flag football. Programs are 6 to 8 weeks, meeting twice per week. The program is designed for youth ages 8-14 and teaches skills, rules, teamwork, and sportsmanship. All levels are welcome. Youth sports program fees typically cost between \$40-\$60 with no residency requirement.

CITY OF SAN DIEGO, CALIFORNIA
COUNCIL POLICY

CURRENT

SUBJECT: CITY COUNCIL FUNDING OF COMMUNITY PROJECTS,
PROGRAMS AND SERVICES
POLICY NO.: 100-06
EFFECTIVE DATE: December 8, 2011

PURPOSE:

It is the purpose of this policy to establish guidelines and uniform eligibility requirements for the annual appropriation and expenditure of funding for each City Council Office for community projects, programs and services to be expended at the discretion of each Councilmember during the fiscal year.

Annual funding levels are subject to budget priorities as established by the City Council each year.

POLICY:

It is the policy of the City Council that:

1. Proposed funding levels for annual allocations for Community Projects, Programs and Services for each Council Office will be included each year in the Mayor's Proposed Budget.
2. Proposed funding levels for Community Projects, Programs and Services for each Council Office for the following fiscal year may be initially determined based on estimated savings to be achieved related to the administration of each Council Office by the current fiscal year-end.
3. Variances in actual savings from budgeted amounts may result in recommendations from the Mayor to the Council to revise appropriations to reflect actual savings, as a mid-year budget adjustment, depending on financial circumstances, and prior year results for the General Fund and reserves.
4. Funding for Community Projects, Programs and Services may be provided to City Departments, Public Agencies, and to Non-Profit community organizations, for one-time community, social, environmental, cultural or recreational needs which serve a lawful public purpose.

CITY OF SAN DIEGO, CALIFORNIA
COUNCIL POLICY

CURRENT

5. Funding for Community Projects, Programs and Services can be used to supplement the appropriations of any existing General Fund activity or a new activity that would typically be supported by the City's General Fund.
6. Funds are not permitted to be used for food, beverages, and travel. Funds shall not be used for any private purpose, political, religious, or fundraising activities.
7. Funding requests to supplement City Departmental expenses or existing capital improvement projects shall be made of the Chief Financial Officer.
8. Community Projects, Programs and Services funding should be considered a one-time resource, and planned uses should be one-time in nature, to avoid service interruptions or employee impacts if funding is discontinued.
9. Community Projects, Programs and Services funding is not permitted to be utilized for administrative expenses related to the Council District.
10. Upon request of the respective Councilmember, available appropriations in non-personnel expense accounts in the Council Office administrative budget may be reallocated to supplement the departmental funding level of the Community Projects, Programs and Services account within the current fiscal year.
11. Unexpended Community Projects, Programs and Services funds will not be considered in the savings estimates when determining the amounts for addition to the following year's budget.
12. Establishment of a new City capital project must be done by Council resolution.
13. The allocation of funding under this Policy shall be posted on the City Website, including the amount of funding, the Council District from which funds are allocated, the project for which funds will be used, and the name of the recipient of funding.

PROCEDURE TO AWARD FUNDS TO PUBLIC AGENCIES OR NON-PROFIT ORGANIZATIONS:

1. Funding allocations for public agencies or non-profit organizations
 - a. Types of Funding for Public Agencies or Non-Profit Organizations:

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- i. Capital Improvements: Funds may be awarded to pay for items or services needed to design, process and build capital improvements, including materials; contracted labor; contracted consultant and professional services. Capital improvements are defined to include the construction or acquisition of buildings and recreational facilities, or other community improvements, such as landscaping, maintenance, or other work designed to improve, enhance or extend the useful life of a facility.
 - ii. Goods, Supplies, Materials, or Equipment: Funds may be awarded to purchase, create, install, remove, maintain and repair these tangible items, so long as it serves a lawful public purpose.
 - iii. Community Program or Project: Funds may be awarded for one-time community, social, environmental, cultural, or recreational needs, so long as it serves a lawful public purpose.
- b. Each Council District shall recommend funding recipients based on its review of application materials and supporting documentation from all applicants who have complied with the requirements herein, including the requirements in the application.
 - c. Funding awarded to public agencies or non-profit or tax exempt organizations under this program may only be done by resolution of the City Council.
 - d. Council Offices are encouraged to group recommended allocations for approval at City Council.
 - e. Council Office should encourage applicants to seek matching funds outside of the Community Projects, Programs and Services funding. The availability of matching funds is to be considered by the District when considering an application for funding.
2. Funding Eligibility: To be eligible for Community Projects, Programs and Services funding, each organization must:
 - a. Be a public agency or legally recognized tax-exempt and/or not for profit status entity.

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- b. Be financially solvent, and submit the most current Internal Revenue Service [IRS] Form 990 at time of application. Public agencies are not required to provide Form 990.
 - c. Disclose all sources of funding to organization; including all funding for the specific project request. Private funding may be listed as “Private Funding”. The source of private funds does not have to be identified. Public agencies must disclose all sources of funding only as it relates to the specific project request.
 - d. Enter into an Agreement with the City that specifies the responsibilities of the organization with respect to the use of funds awarded, and stipulating that all expenses shall be documented pursuant to the Agreement.
 - e. Acknowledge that all documents related to the funding request, including application materials, agreement and expenditure documentation are a matter of public record and as such, may be provided to members of the public.
 - f. Recognize that submission of an application for funding does not guarantee in any way that an organization will receive funding.
3. Application: Each organization requesting funding must submit the standard Community Projects, Program and Services Application to the Council District from which it requests funds.
- a. The application and supporting documentation must comply with all requirements herein and those enumerated in the application and its instructions.
 - b. A request for funding and subsequent allocation may not be less than \$1500.
 - c. Applicants must adequately describe the project and how it will benefit the community.
 - d. Applicant organizations must notify Council Districts if they have submitted multiple funding requests for the same project, or for any other project, from any other Council District.
 - e. Applicant organizations must disclose all prior funding received from the City in the last three years, including a brief project description, amount of funds received and the source of funding.

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- f. A Council District may not ask for less documentation than what is required under this Council Policy, the standard Application, and the Application Instructions, but may ask for more documentation at its discretion.
- g. An organization may not apply to receive funding for an event or program which has already occurred, nor any capital improvements, goods, supplies, materials or equipment which have already been purchased.

4. Execution of Funding Agreement:

- a. Funds will only be provided on a reimbursement basis. Funds will not be reimbursed without the documentation required under the agreement.
- b. Organizations must submit required reimbursement documentation within sixty days of expenditure, and no later than thirty days after the end of the City's fiscal year.
- c. If an organization is delinquent in providing required documentation under the Community Projects, Programs and Services program, or any other City program, funding will not be guaranteed.
- d. Funding is awarded by fiscal year only. Expenditures must occur in the fiscal year in which funds are awarded. Requests for reimbursement for expenditures made outside of the fiscal year in which funding is allocated will not be processed.
- e. The Agreements under this program will be administered by the Mayor or designee, with assistance from Council Administration.
- f. If the recipient organization chooses to give written recognition for the funding received, it shall recognize the City of San Diego, not individual Council Members and not individual Council Districts.

HISTORY:

“City Council Funding of Community Projects,
Programs and Services”

Adopted by Resolution R-306903 - 07/7/2011

Amended by Resolution R-307189 - 12/08/2011