FAIRFAX TOWN COUNCIL MEETING
STAFF REPORT

MEETING DATE	October 7, 2026
PREPARED FOR	Mayor and Town Council
PREPARED BY	Bridget Wipfler, Climate Action Coordinator
SUBJECT	Accept the Fairfax Fleet Electrification Plan, a Phased Roadmap for Transitioning the Town Fleet to Zero-Emission Vehicles by 2044, and Accept an update on the Fairfax Municipal Microgrid Project

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RECOMMENDATION

Accept the Fairfax Fleet Electrification Plan and accept an update on the Fairfax Municipal Microgrid Project.

BACKGROUND

The Town's fleet, electric vehicle (EV) charging, solar, and battery backup should be planned as one system. The electrical capacity that the Town's EV fleet charging will require is an important factor in planning the solar and battery needs of Town operations. This Fleet Electrification Plan, while covering the EV fleet transition of vehicles and chargers, will be helpful context for the Municipal Microgrid plans.

Fleet Electrification Plan:

The Town's Fleet Electrification Plan is a roadmap for replacing the Town's gas-powered vehicles with electric ones over the next 10 to 20 years, and for building the charging equipment needed to support them. This Plan was developed with a $100,000 grant secured by Sean Youra, a previous Climate Action Coordinator. The grant covered technical support from the Metropolitan Transportation Commission (MTC), and it also fulfills a state requirement: California's Advanced Clean Fleets rule requires local governments to gradually switch their medium- and heavy-duty vehicles (like large trucks) to zero-emission models.

Fairfax has 20 vehicles in its fleet: 3 light-duty vehicles (like sedans and SUVs), 4 medium- or heavy-duty vehicles (like larger trucks), and 13 emergency vehicles used by the Police Department. Most of the fleet (65%) still runs on gasoline; the rest are already hybrid or electric. Vehicles are based at two adjacent locations: the Corporation Yard and the Fairfax Police Department.

Municipal Microgrid Project:

With the completion of the Town's Fleet Electrification Plan, staff can use the expected electrical load and infrastructure need to guide planning of the Municipal Microgrid, since solar capacity planning and fleet charging demand are two sides of the same equation. Integrating select fleet chargers into the microgrid lets staff size generation to actual load and keep critical fleet vehicles powered during outages.

On February 13, 2026, the Town Council directed staff to investigate the feasibility of a microgrid project for Town buildings to build energy resilience, save money, and better serve the community. On August 5, 2026, Staff presented to Council research findings around infrastructure and financial models

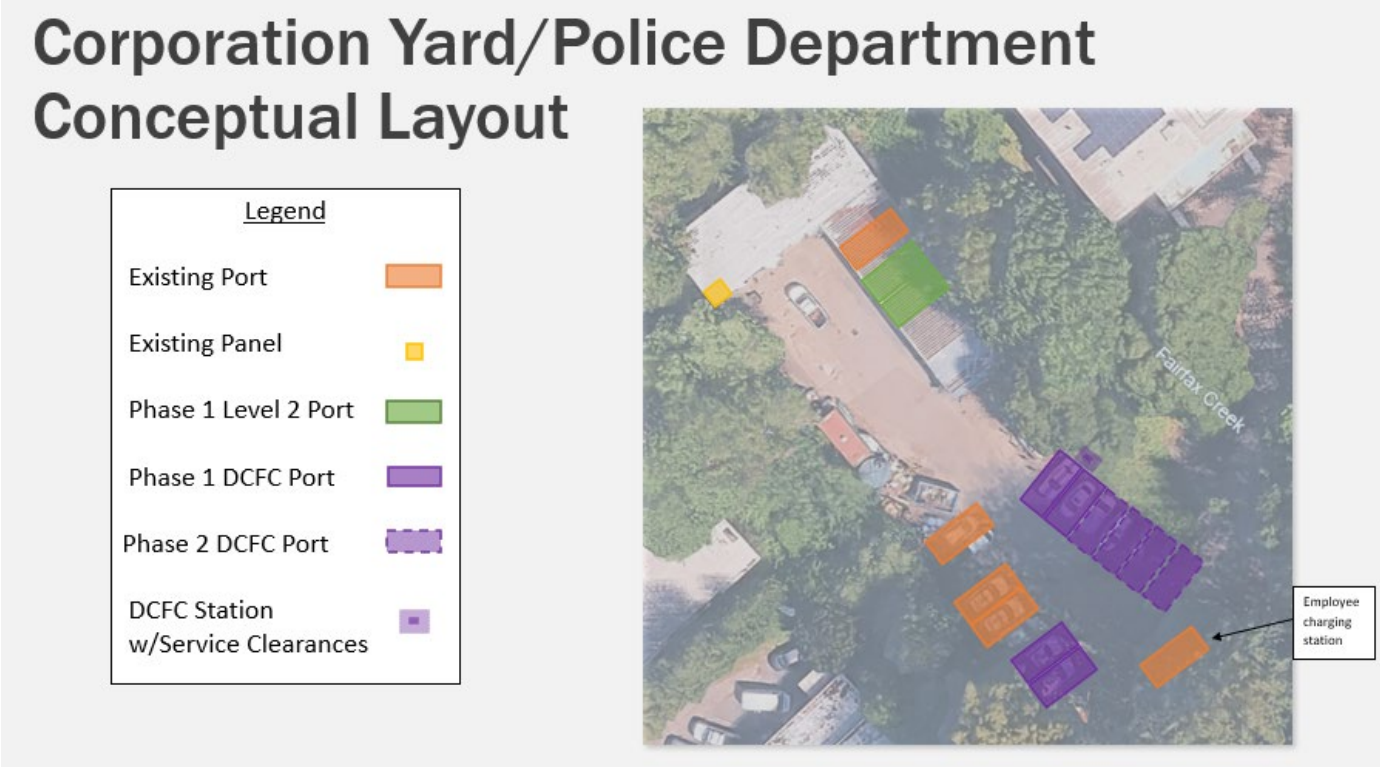
that could work for the Town and received direction from Council to pursue an RFP and move forward with the project. Since then, staff has been drafting an RFP based on local precedents and the project is moving forward. Once the RFP is ready to be reviewed by Council, staff will then present the detailed RFP before putting it out.

DISCUSSION

The Fleet Electrification Plan covers and recommends the following:

1. A replacement schedule: As old vehicles reach the end of their useful life, they will be replaced with electric versions instead of gas ones. Following this schedule, the Town could electrify 45% of its light-, medium-, and heavy-duty vehicles by 2030, and 100% by 2044. The Town must do so in order to comply with Fairfax's adopted EV policy (Adopted in November 2023) and California's Advanced Clean Fleets rule which requires local governments to gradually switch their medium- and heavy-duty vehicles (like large trucks) to zero-emission models.
2. New charging equipment: The Town currently has four charging ports and will need approximately 10 more to support a fully electric fleet, mostly fast chargers for the Police Department, since patrol vehicles need to recharge quickly and stay ready for emergencies. The estimated cost for this new charging equipment is about $343,400.
3. A phased approach: Rather than building everything at once, the Town would roll out vehicles and chargers in stages, an initial phase from 2026 to 2028, and a second phase from 2032 to 2043, so costs and construction would be spread out over time.
4. Ways to manage costs: Using software to schedule charging during off-peak hours (when electricity is less expensive) could save the Town an estimated $50,200 per year once the entire fleet is electrified, compared to charging without scheduling. Additionally, grant programs are available to offset costs. See Financial section for more details.

If the Town electrifies its whole fleet, it could cut its fleet-related carbon emissions by 100%, about 42 metric tons of CO_2 per year, since the Town's electricity already comes from a 100% renewable source (MCE Deep Green). This supports the Town's adopted Climate Action Plan and 2019 Climate Emergency Resolution goals.



FINANCIAL

Electric vehicles generally cost more to buy upfront than gas vehicles, though they cost less to fuel and maintain over time. Overall, the plan estimates it would cost the Town about $229,000 more, over the vehicles' lifetimes, to buy electric replacements instead of gas ones for the whole fleet - not counting any grants, rebates, or incentives, which could reduce that cost further. Including the roughly $343,400 for charging equipment, the Town's total added cost is estimated at about $572,400. However, the plan identifies up to $27,250 in near-term grants, including EV charger rebates through MCE, vehicle and charging rebates through the Transportation Authority of Marin (TAM), and point-of-sale vouchers through the state's HVIP and Clean Fuel Reward programs.

Beyond grants, the Town can pursue low-interest financing (like CalCAP or IBank Climate Financing) and consider leasing vehicles and chargers to reduce upfront costs. As the provider of fuel (electricity) for its own vehicles, the Town can claim credits from California's Low Carbon Fuel Standard (LCFS) program that are generated when it charges its electric fleet. The Town can do this in one of two ways: by registering directly with the California Air Resources Board (CARB) or by partnering with a company, an aggregator that specializes in handling this process- the more common option for small fleets. That aggregator manages the registration, reporting, and selling of the credits on the Town's behalf, in exchange for keeping a portion of the money earned.

The $572,400 total is not a single expense. It represents the added cost of choosing electric vehicles and charging equipment over gas vehicles, and it would be spread across the plan's two phases (2026–2028

and 2032–2043), since vehicles are replaced only as existing ones reach the end of their useful life. Averaged over the roughly 18-year timeline, this is about $31,800 per year.

Once the full fleet is electrified, charge management software and PG&E's BEV rate are estimated to save about $50,200 per year compared with unmanaged charging, which exceeds the average annual added cost. Near-term grants of up to $27,250, low-interest financing, leasing options, and Low Carbon Fuel Standard credits would reduce the net cost further. The investment also allows the Town to meet the state's Advanced Clean Fleets requirements and its adopted EV policy and would eliminate about 42 metric tons of fleet CO2 emissions per year.

GENERAL PLAN CONSISTENCY

The Circulation Element of the General Plan includes a Program C-7.1.1: Consider purchasing of electric or hybrid vehicles as part of the Town fleet.

CEQA AND CLIMATE ACTION PLAN CONSISTENCY

The Council's acceptance of the Fleet Electrification Plan and update on the Municipal Microgrid Project is not a "project" under the California Environmental Quality Act, because it does not involve an activity which has the potential to cause a direct or reasonably foreseeable indirect physical change in the environment (Cal. Pub. Res. Code § 21065). This report is consistent with the following measures of the adopted CAP:

- T-1: Zero Emission Vehicles: Purchase or lease EVs for Town fleet as vehicles are replaced, to be completed by 2030.

ATTACHMENTS

Fairfax Fleet Electrification Plan

FLEET ELECTRIFICATION PLAN

Town of Fairfax

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ACRONYMS & DEFINITIONS

ACF	Advanced Clean Fleets	**kWh**	Kilowatt hour
BAU	Business as Usual	**MCE**	Marin Clean Energy
BEB	Battery Electric Bus(es)	**MSRP**	Manufacturer's Suggested Retail Price
BEV	Battery Electric Vehicle (See *EV, FCEV, & PHEV*)	**$MTCO_2$**	Metric Tons of Carbon Dioxide
CaaS	Charging-as-a-Service	**NHTSA**	National Highway Traffic Safety Administration
CAP	Climate Action Plan	**NZEV**	Near-Zero Emission Vehicle
CARB	California Air Resource Board	**OEM**	Original Equipment Manufacturer
CEC	California Energy Commission	**O&M**	Operations and Maintenance
CNG	Compressed Natural Gas	**PG&E**	Pacific Gas & Electric Company
DCFC	Direct Current Fast Charge (DC Fast Charger)	**PHEV**	Plug-in Hybrid Electric Vehicle
EPA	Environmental Protection Agency	**TAM**	Transportation Authority of Marin
EV	Electric Vehicle	**TCO**	Total Cost of Ownership
EVSE	Electric Vehicle Supply Equipment (EV Charger)	**TOU**	Time-of-Use (Electrical Rates)
FCEV	Fuel Cell Electric Vehicle	**ULB**	Useful Life Benchmark
GHG	Greenhouse Gas	**V**	Volt
GVWR	Gross Vehicle Weight Rating	**VGI**	Vehicle-Grid Integration
ICE	Internal Combustion Engine	**VIN**	Vehicle Identification Number
kW	Kilowatt	**ZEV**	Zero-Emission Vehicle

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METROPOLITAN TRANSPORTATION COMMISSION

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INTRODUCTION

The Metropolitan Transportation Commission (MTC) is the transportation planning, coordination, and financing agency for the nine-county San Francisco Bay Area. Dedicated to supporting a transportation system that meets the needs of all residents, MTC works to increase safety, ensure equal access, and significantly reduce greenhouse gas emissions.

As part of its commitment to lowering electrification barriers for local public agencies, MTC's Public Fleet Electrification Planning Assistance Program supports the Town of Fairfax's transition to zero-emission vehicles (ZEVs) and the installation of electric vehicle charging infrastructure.

This Fleet Electrification Plan serves as the Town of Fairfax's primary roadmap for implementation and long-term decision making over the next 10 to 20 years. Specifically, it identifies:

- **Which vehicles** to replace and when, based on replacement cycles, regulatory requirements, and technology availability.
- **What infrastructure** is needed to support electric vehicles, including charging equipment types, site locations, and installation phasing.
- **How to operate and maintain** the electrified fleet and charging infrastructure to ensure reliable, cost-effective service.
- **What funding sources** are available to support vehicle purchases and infrastructure deployment.
- **How to track and report** on progress, costs, and emission reductions.

EXECUTIVE SUMMARY

The Town of Fairfax, located in Marin County, serves its community with approximately 20 municipal fleet vehicles. This Fleet Electrification Plan provides a comprehensive strategy to meet California's Advanced Clean Fleets (ACF) regulatory requirements while advancing the Town's climate and sustainability goals. The plan covers all medium- and heavy-duty vehicles subject to ACF, as well as light-duty and emergency response vehicles.

This plan evaluates fleet replacement requirements and charging infrastructure needs, outlines fleet electrification costs and benefits, and projects greenhouse gas (GHG) emissions reductions from the municipal transportation sector. Recommendations for vehicle electrification and recommendations for charger port quantities and power levels are informed by key vehicle utilization data from Town records and input from Public Works staff, including fleet inventory, vehicle usage, fuel type, duty cycles, domicile locations, and existing electrical service information.

This Fleet Electrification Plan positions the Town of Fairfax to meet state regulatory requirements, achieve long-term sustainability targets, and engage in upcoming EV charging infrastructure projects, while ensuring that its municipal fleet and long-term supporting infrastructure are ready to serve the community reliably and equitably during the transition to zero-emission transportation.

KEY FINDINGS

VEHICLE REPLACEMENT AND PROCUREMENT KEY FINDINGS

- The Town of Fairfax has 20 vehicles that were studied for electrification, consisting of 3 light-duty vehicles, 4 medium- or heavy-duty vehicles, and 13 emergency vehicles.
- At current vehicle costs, electrifying the whole fleet coming due for replacement from 2026 to 2044 will cost approximately $229k more over the lifespan of the vehicles than if the Town were to replace its current fleet with like-for-like vehicles. This cost estimate does not include any potential incentives, rebates, or credits, nor the cost of installing and maintaining EV chargers.
- Following the electrification schedule detailed in this report for the ZEV Purchase Schedule Fleet Electrification Timeline, the Town of Fairfax can electrify 45% of the light-, medium-, and heavy-duty vehicles by 2030 and 100% of its light, medium-, and heavy-duty vehicles by 2044.
- The Town can streamline and reduce the cost of electric vehicle procurement by using cooperative purchasing programs as well as California-focused tools like Drive EV Fleets. Coordinating procurement with charging deployment, evaluating total cost of ownership, and pursuing available funding and financing programs will help ensure a smooth and cost-effective transition.

CARBON REDUCTIONS FROM FLEET ELECTRIFICATION

- If the Town electrifies the whole fleet, including all light-, medium-, and heavy-duty vehicles, it can achieve carbon emissions reductions of 42 $MTCO_2e$ (100%) from baseline levels by 2044.

CHARGING INFRASTRUCTURE KEY FINDINGS

1. After accounting for the Town's existing 4 EV charging ports, 10 additional ports will be needed to support whole fleet electrification.
2. The Town's expected cost for EV charging infrastructure across all facilities to support all fleet vehicles is estimated at **$343,400**, covering equipment, installation, mobilization, and a 15% contingency. The Fairfax Police Department represents the largest single investment (~$304,200) due to the need for DC fast charging to support more demanding duty cycles and emergency response operations. Costs do not include utility-side upgrades, trenching, or Town overhead. Refer to **Table 1** for an overview of the total charging infrastructure needed to support full fleet electrification.
3. A phased approach aligns infrastructure deployment with the Town's Advanced Clean Fleets (ACF) compliance requirements, with Phase 1 targeting 2026-2028 commissioning and Phase 2 following by 2032-2043. Installing make-ready infrastructure during Phase 1 can reduce long-term costs.
4. Charge management software significantly reduces annual electricity costs by optimizing charging schedules and minimizing peak demand charges. Combined with PG&E's BEV rate, charge management software could save approximately **$50,200 per year** at full fleet electrification compared to unmanaged charging.
5. A preliminary electrical capacity assessment found that the Corporation Yard will require new or upgraded electrical service.

TABLE 1: SUMMARY OF INFRASTRUCTURE NEEDS

Facility	# Of Projected Town-Owned EVs	# Of Ports	Total EVSE Project Cost Estimates	Electrical Capacity Requirements
Corporation Yard	8	4 x Existing Chargepoint 7.2 kW[1,2] 2 x 12 kW	$39,200	New or upgraded service recommended.
Fairfax Police Department	12	8 x 40 kW	$304,200	
Total	**20 Vehicles**	**14 Ports**	**$343,400**	

[1] Two (2) Existing Chargepoint ports will move from the Police Department to the Corporation Yard.
[2] Vantage Vehicle can be plugged into a typical outlet. It is assumed that the Town will purchase the option for it to charge on the same chargers as the other vehicles.

POLICIES AND PLANS SUMMARY

TOWN OF FAIRFAX POLICIES

This section highlights the elements of the Town policies that relate directly to fleet electrification and zero-emission vehicle adoption. As outlined in the Town of Fairfax's Climate Action Plan 2030 (CAP) adopted in 2021 and the Climate Emergency Resolution adopted in 2019, the Town is focused on reducing greenhouse gas emissions in ways that promote equity while adapting to the impacts already affecting us today. The CAP sets goals to reduce emissions 100% below 2005 levels and achieve community-scale carbon neutrality by 2030. To help achieve this, the Town has a goal of purchasing or leasing electric vehicles (EVs) for the Town fleet, to be completed by 2030. For internal combustion engine vehicles (ICEVs), low-carbon fuel such as renewable diesel shall be used as a transition fuel until the vehicles are replaced with zero-emission vehicles (ZEVs).[3]

Adopted in 2023, the Town's Fleet Zero-Emissions Vehicle Policy strengthens its commitment to fleet electrification and meeting Advanced Clean Fleets requirements. This policy establishes a procurement hierarchy that prioritizes ZEVs first, followed by NZEVs, then ICEVs capacity of using an alternative fuel, and lastly ICEVs not capable of using an alternative fuel. The policy emphasizes right-sizing the fleet by downsizing vehicles where possible, including shifting to e-bikes if operational needs allow. When procuring vehicles, the Town prioritizes leasing or purchasing used vehicles before buying new vehicles. This policy also gives preference to electric vehicle and charging station models equipped with bidirectional charging when cost competitive. Cost-effectiveness is evaluated using a 20% cost differential threshold between ZEVs and ICEVs, with life-cycle costs and available incentives factored into the analysis. Exemptions can be approved by the Town's Fleet Advisory Group in cases where there is no ZEV or NZEV model available on the market, and where there are significant vehicle delivery lead times or a charging infrastructure delay of at least 6 months and there is an immediate need to replace the current vehicle. The policy also promotes efficient use of assets by encouraging exploring opportunities to share vehicles across departments or agencies before considering disposal.[4]

CALIFORNIA'S ADVANCED CLEAN FLEETS REGULATION

The California Air Resources Board (CARB) Advanced Clean Fleets (ACF) regulation took effect on January 1, 2024. Advanced Clean Fleets aims to accelerate a phased-in transition to zero-emission medium- and heavy-duty vehicles and applies to fleets owned by state and local government agencies.

State and Local Government Agencies, including City, County, special district, and State agency fleets, are required to ensure 50% of medium- and heavy-duty vehicle purchases are zero-emission beginning in 2024 and 100% of medium- and heavy-duty vehicle purchases are zero-emission starting in 2030, given recently approved amendments to the regulation.[5].

[3] https://townoffairfaxca.gov/documents/climate-action-plan_2030/
[4] https://storage.googleapis.com/proudcity/fairfaxca/uploads/2023/10/Item-3.-Reso-Adopt-Fleet-Zero-Emissions-Policy.pdf
[5] https://ww2.arb.ca.gov/news/carb-adds-flexibility-truck-fleet-requirements-amendments-help-owners-continue-zero-emission

State and local government fleets may purchase ZEVs and/or near-ZEVs (NZEVs) until 2035. Starting in 2035, only ZEVs will meet the requirements.[6] Only vehicles with a gross vehicle weight rating (GVWR) greater than 8,500 lb. are subject to ACF.

- **ZEV Purchase Schedule** (default): State and local government fleets will replace vehicles with ZEVs or NZEVs according to their business-as-usual replacement policy, ensuring 50% of new medium- and heavy-duty vehicle purchases are zero-emission beginning in 2024 and 100% of new medium- and heavy-duty vehicle purchases are zero-emission starting in 2030.
- **ZEV Milestones Option** (optional): State and local government fleets may elect to meet ZEV targets by complying with the ZEV Milestones Option. Instead of the ZEV Purchase Schedule, fleets may permanently opt into the ZEV Milestones Option at any point before 2030. Under the ZEV Milestones Option, fleets must meet ZEV targets as a percentage of the total fleet by January 1 of each year shown in **Table 2**, starting with vehicle types that are most suitable for electrification. The medium- and heavy-duty vehicle category is further split into Milestone Group 1, Milestone Group 2, and Milestone Group 3 vehicles. These Milestone Groups do not include any assets not subject to the regulation.[7]
    i. **Milestone Group 1:** Includes box trucks, vans, buses with two axles, yard tractors, and light-duty package delivery vehicles.
    ii. **Milestone Group 2:** Includes work trucks, day cab tractors, and buses with three axles.
    iii. **Milestone Group 3:** Includes sleeper cab tractors and specialty vehicles.

TABLE 2: ZEV FLEET MILESTONES OPTION

Percentage of vehicles that must be ZEVs	10%	25%	50%	75%	100%
Milestone Group 1: Box trucks, vans, buses with two axles, yard tractors, light-duty package delivery vehicles	2025	2028	2031	2033	2035 and beyond
Milestone Group 2: Work trucks, day cab tractors, pickup trucks, buses with three axles	2027	2030	2033	2036	2039 and beyond
Milestone Group 3: Sleeper cab tractors and specialty vehicles	2030	2033	2036	2039	2042 and beyond

[6] Near-Zero Emission Vehicle is defined by CARB as "a plug-in hybrid vehicle with a minimum all-electric range."
[7] https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-zev-milestones-option

ZEV EXEMPTIONS

There are flexibilities offered for fleets, including but not limited to the ZEV Purchase Exemption, Daily Usage Exemption, ZEV Infrastructure Delay, Vehicle Delivery Delay, Backup Vehicle Exemption, and Mutual Aid Exemption.[8] Additionally, there are some vehicle types excluded from ACF requirements, including but not limited to emergency vehicles, school buses, historical vehicles, and transit vehicles subject to the Innovative Clean Transit regulation.[9] While the Town of Fairfax Police Department vehicles are excluded from Advanced Clean Fleets, the Town may still electrify these vehicles on a case-by-case basis. It is important to note that implementation will need to be phased in to avoid compromising department operations.

Due to the lack of viable EV replacement options currently on the market for designated body configuration types, many larger vehicle body types are included on a list of vehicles exempt from the ACF regulations (Streamlined ZEV Purchase Exemption List).[10] The Streamlined ZEV Purchase Exemption List identifies medium- and heavy-duty vehicle weight classes and configurations where no ZEVs or NZEVs are available, allowing fleets to purchase ICE vehicles without submitting a ZEV Purchase Exemption application. This streamlined list will be updated as ZEV weight class and configurations become available or are discontinued.

At the time of this report, there are no Town fleet vehicles that Optony has identified as being on the Streamlined ZEV Purchase Exemption List. The Town may still apply for additional ZEV Purchase Exemptions for needed configurations not on the Streamlined ZEV Purchase Exemption List, subject to CARB review and approval. Examples of these larger vehicles which may be eligible for the ZEV Purchase Exemption include dump trucks, bucket trucks, or other heavy-duty specialty vehicles. However, the Town may still choose to transition exempted vehicles to low-emission technologies and is encouraged to do so where feasible.

Under the State and Local Government fleet requirements for the ZEV Purchase Schedule, the ZEV Purchase Exemption (either through the Streamlined ZEV Purchase Exemption List or the fleet-specific application process) would require that the ICE vehicle being replaced under the exemption will need to be at least 13 years old. If the Town is choosing to comply with the ZEV Milestones Option, the vehicle does not have to be a certain age, but due to the increased flexibility of the option, CARB would require that no other ICE vehicle in the fleet could be upgraded to ZEV before being qualified to apply for the ZEV Purchase Exemption.[11] These access requirements to the ZEV Purchase Exemption provision are important to note and be aware of ahead of time when choosing which compliance path fits best for the Town's fleet.

The Town may also consider applying for the Backup Vehicle exemption, Declared Emergency Response exemption, Mutual Aid Assistance exemption, or other exemptions or extensions, if eligible according to the Advanced Clean Fleets State and Local Government Fleet Exemptions.

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[8] https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-exemptions-and-extensions-overview
[9] https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-state-local-government-agency-fleet
[10] https://ww2.arb.ca.gov/applications/streamlined-zev-purchase-exemption-list
[11] Refer to California Code of Regulations Title 13 Section 2015.2(f)(5)

COMPLIANCE WITH ADVANCED CLEAN FLEETS

An annual report is required by ACF due in April each year, and any changes to the medium- or heavy-duty fleet vehicles must be reported within 30 days of the change. For more details on the ACF reporting requirements, refer to the

Data Collection & Reporting Plan.

If the Town is intending to purchase a medium- or heavy-duty vehicle, there are many options to remain in compliance:

1. The Town may be able to receive a ZEV Purchase Exemption either through the Streamlined ZEV Purchase Exemption List or through applying for an exemption as described in the **ZEV Exemptions** section.
2. The Town may downsize this vehicle to a gross vehicle weight rating less than 8,500 lb.
3. The Town may purchase plug-in hybrid vehicles to count towards compliance until 2035.
4. Otherwise, the Town will need to purchase zero emission vehicles according to the ZEV Purchase Schedule or ZEV Milestones Option.

EXISTING FLEET SUMMARY

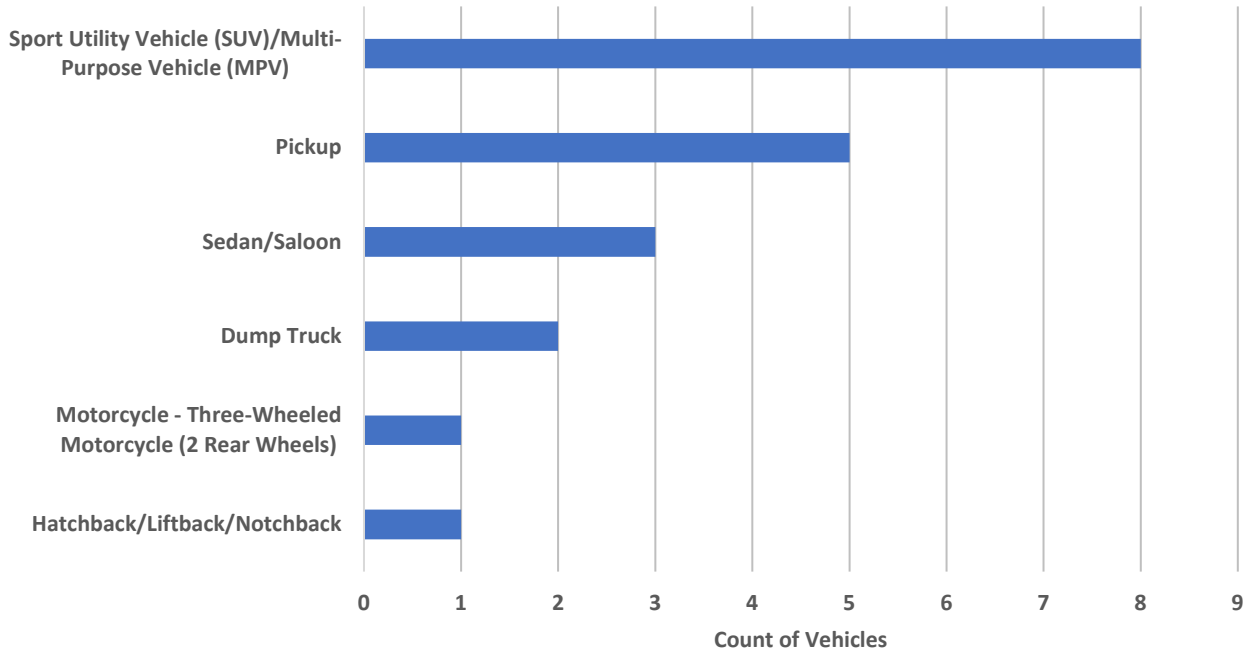
FLEET COMPOSITION AND CHARACTERISTICS

SUMMARY OF FLEET ASSETS

This section provides descriptive statistics to understand the current condition and composition of the Town of Fairfax's fleet. The Town's current fleet database included a total of 20 units, including light-, medium-, heavy-duty vehicles, all of which are included in the electrification analysis and are represented in the figures below. **Figure 1** depicts the breakdown of the fleet by vehicle type.

The Town's standard service life policy varies based on department, with the useful life for the Police Department vehicles as the earlier of 10 years or 100,000 miles, while an estimated 150,000 mile service life is assumed for all other vehicles.

FIGURE 1: CURRENT FLEET - COMPOSITION



In terms of the powertrain, the studied fleet consists majority of internal combustion engines (ICE) vehicles (65%), with some hybrid electric vehicles (HEVs) (20%) and battery electric vehicles (BEVs) (15%) currently in the fleet.

Table 3 summarizes the entirety of the Town's current fleet and includes the number of assets in each Town department, total annual mileage, and average annual vehicle mileage by department. Among the Town's various departments, the Police Department has the largest fleet with 13 vehicles, followed by Public Works with 6 vehicles.

TABLE 3: FLEET SUMMARY BY DEPARTMENT AND ANNUAL MILEAGE DRIVEN[12]

Department	Number of Assets	Total Annual Miles Driven	Annual Miles per Asset
Police Department	13	107,909	8,301
Public Works	6	17,121	2,853
Planning	1	1,380	1,380
Total	**20**	**126,410**	**-**

SUMMARY OF FLEET FACILITIES

The Town's fleet operates out of 2 facilities, with most of the fleet domiciling at the Fairfax Police Department and the rest of the fleet at the Corporation Yard. These facilities support vehicle domiciles, fueling operations, and charging infrastructure. A detailed breakdown of existing conditions at each facility is provided in **Appendix A: Fleet Vehicle and Infrastructure Inventory**.

As of September 2025, both domiciles already have dedicated charging stations for fleet vehicles, with a charging station at the Corporation Yard also open to staff use. However, the existing charging infrastructure will not be enough to support a fully electric fleet.

Fueling is currently supported through onsite an onsite tank at the Corporation Yard, which adequately serves the existing gasoline-powered fleet.

[12] Total and average annual usage are calculated or projected from lifetime vehicle usage or annual vehicle usage according to the available fleet inventory data.

FLEET ELECTRIFICATION OPPORTUNITIES AND CHALLENGES

FLEET CATEGORIES AND APPLICABILITY OF ADVANCED CLEAN FLEETS

Light-Duty Vehicles – Excluded from ACF

These vehicles, defined as those with a gross vehicle weight rating (GVWR) under 8,500 pounds, are not regulated under Advanced Clean Fleets (ACF). However, they represent the easiest and most cost-effective electrification opportunities due to wide market availability and declining vehicle costs.

Emergency Vehicles – Excluded from ACF

Police, fire, and other emergency response vehicles are also excluded from ACF. While excluded, they remain long-term candidates for electrification, though operational needs and technology limitations currently restrict near-term adoption.

Medium- and Heavy-Duty Vehicles – Subject to ACF

Vehicles above 8,500 pounds GVWR, including dump trucks and other heavy-duty fleet assets, are subject to ACF requirements. These vehicles present the most significant compliance obligations and will require phased planning, infrastructure investment, and ongoing monitoring of technology readiness.

LIGHT-DUTY VEHICLES (<8,500 LB GVWR)

Light duty vehicles represent the most immediate opportunity for electrification. These vehicles are widely available on the market today, making them easier to procure and deploy than heavier-duty options. Although the upfront purchase price is higher compared to internal combustion engine (ICE) vehicles, the cost gap has narrowed significantly and continues to shrink as the electric vehicle (EV) market matures.

- **Market readiness**: A broad range of light-duty EV models are commercially available, giving the Town flexibility in selecting vehicles that fit operational needs.
- **Cost considerations**: While initial purchase prices are slightly higher, the difference is often modest and is increasingly offset by lower fuel and maintenance costs.
- **Duty cycle benefits**: Vehicles with high annual mileage are strong candidates for electrification, since greater fuel savings can accelerate payback periods. Similarly, vehicles with long idle times can capture added benefits, as EVs are much more efficient than ICE vehicles while idling.
- **Charging compatibility**: Vehicles that can be parked overnight are especially suitable, as they can rely on lower-power, lower-cost charging instead of expensive high-speed chargers.

MEDIUM- AND HEAVY-DUTY VEHICLES

Medium- and heavy-duty vehicles present greater challenges for electrification, particularly those that serve as specialty vehicle assets.

- **Limited technology options**: Vehicles such as dump trucks currently have only a handful of all-electric options offered by OEMs or conversion companies. The initial purchase price of these limited heavy-duty EV options are higher, and low annual mileage of these vehicles can limit fuel savings, even with lower electricity costs compared to gasoline or diesel.

- **Operational constraints**: Questions remain about whether electric replacements can fully meet operational and outfitting requirements. Input and support from internal stakeholders will be necessary before moving forward with procurement.
- **Infrastructure needs**: Many heavy-duty vehicles will require DC fast charging to stay operational. These chargers are costly to install and may add significant complexity to facility upgrades.

EMERGENCY VEHICLES

For emergency or emergency support vehicles, it is important to note that implementation will need to be phased in to avoid compromising department operations. Emergency response vehicles often must address unique barriers to vehicle electrification. These barriers may include unfamiliarity with EVs, concerns about fueling opportunities, range anxiety or concerns about battery capacity, and extensive upfitting of vehicles.

- **Police vehicles** are often cost-effective options for electrification due to their high mileage and associated fuel and maintenance savings. Administrative vehicles are relatively straightforward to replace with light-duty EVs, but the unique operational needs of patrol and special unit vehicles pose challenges. Patrol vehicles may exceed the range of current EVs on the market today, and limited fast charging infrastructure may further constrain operations. Pursuit-rated EVs remain scarce at the time of reporting, and special unit vehicles need a diverse range of models to blend in with surrounding traffic, which early electrification could limit.

FACILITIES

High-Priority Sites

Facilities with higher volumes of overnight parking, such as the Corporation Yard, present the strongest opportunities for charging infrastructure deployment. Locations with open layouts may simplify installation and reduce costs, while facilities with on-site solar generation and battery energy storage systems can provide additional operational and financial benefits. Facilities that already have existing charging stations or underutilized electrical capacity could also support early deployment and phased expansion, helping to scale fleet electrification efficiently.

Lower-Priority Sites

Facilities that house primarily emergency vehicles, like the Fairfax Police Department, are lower priorities for near-term charging deployment. These vehicles are not required to be electrified under ACF, and their electrification may be delayed due to the operational challenges and market constraints described in the section above.

Key Challenges

- Space limitations: Some facilities have limited room for new charging infrastructure.
- Electrical capacity: Available capacity is uncertain at many sites, and upgrades may require coordination with utilities and long equipment lead times.
- Parking logistics: Sites without dedicated fleet parking face potential complications in logistics, security, and compliance with ADA and California Building Code requirements.
- Costs and utility rates: Even where existing services are sufficient, utility rates may not favor high-demand charging, requiring charge management systems to optimize costs.

Strategic Approach

Addressing these barriers will be critical to developing a phased, facility-by-facility charging strategy that aligns infrastructure investment with the Town's vehicle replacement schedule.

VEHICLE REPLACEMENT AND PROCUREMENT PLAN

FLEET ELECTRIFICATION TIMELINE

To perform this fleet electrification assessment, all **20 fleet vehicles** were studied in detail for electrification. These vehicles were categorized into sub-categories based on the vehicle body type in the context of California regulations as described below.

- **Light-Duty Vehicles:** There are 3 light-duty vehicles with a gross vehicle weight rating (GVWR) of less than 8,500 lb. that are not subject to the Advanced Clean Fleets regulation. The Town's fleet currently has 1 light-duty vehicle that is already electrified.
- **Medium- and Heavy-Duty Vehicles Subject to Advanced Clean Fleets:** The Town has 4 medium- or heavy-duty vehicles subject to Advanced Clean Fleets. This subcategory primarily includes medium- and heavy-duty pickup trucks, chassis cab vehicles, and trucks.
- **Emergency Vehicles:** There are 13 emergency vehicles identified in the Town's fleet in the Police Department, including Investigations, Traffic, Patrol, and Administrative vehicles. Authorized emergency response assets are not subject to the Advanced Clean Fleets regulation at this time, but there may be opportunities for fueling or operations and maintenance savings through electrification. It is important to note that implementation will need to be phased in to avoid compromising department operations. Specific considerations related to vehicle selection for this department are included under the **Electric Vehicle Selection**. The Town's fleet currently has 2 emergency vehicles that are already electrified.

In all electrification timeline scenarios shown in this report, all light-duty vehicles and emergency vehicles are shown to be electrified at their current estimated retirement year provided by the Town. Since these vehicles are not regulated under Advanced Clean Fleets, the Town can purchase these vehicles as internal combustion engine (ICE) vehicles at the end of their current service life and delay their electrification. The timing of electrification may also depend on the Town's budget and whether available EV models are capable of meeting operational needs where current EV offerings may not yet meet performance, range, or equipment standards.

The methodology used to develop electrification timelines is described in **Appendix B: Fleet Electrification Methodology**.

ZEV PURCHASE SCHEDULE

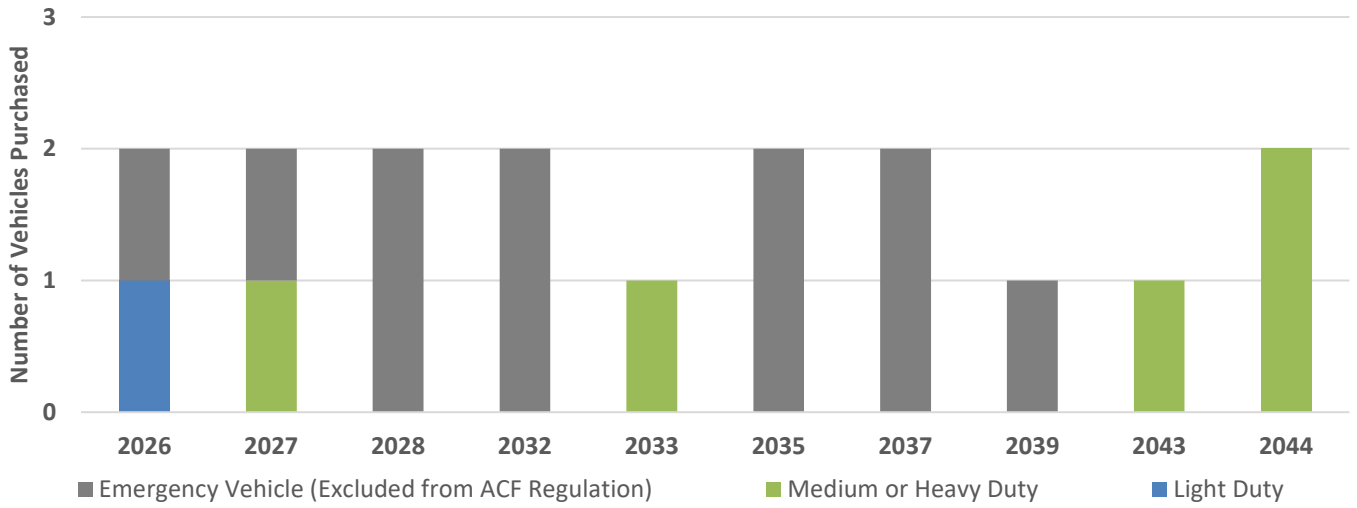
As explained in the **Policies and Plans Summary**, the CARB Advanced Clean Fleets (ACF) regulation requires that fleets following the default ZEV Purchase Schedule must ensure 50% of new medium- and heavy-duty vehicle purchases are zero-emission beginning in 2024 and 100% of new medium- and heavy-duty vehicle purchases are zero-emission starting in 2030. **Figure 2** depicts the electrification timeline and the number of vehicles to be replaced and electrified each year over the next 10-20 years, based on the Town's service life policy, the Town of Fairfax Climate Action Plan 2030, and the Town of Fairfax Fleet Zero-Emissions Vehicle Policy, and California regulation requirements. The ZEV Purchase Schedule is

based on the Town's replacement policy for Police Department vehicles, which are retired at the earlier of 100,000 miles or 10 years. For all other vehicles, a service life of the earlier of 150,000 miles or 25 years is assumed for planning purposes. It is also assumed that if the Town purchases ICE vehicles while maintaining compliance with ACF, new vehicles will be purchased that will last a full service life or will be electrified by 2045, whichever is earlier.

The first EV Option for the light-duty pickup trucks in the Public Works department has a GVWR over 8,500 lb. and is considered a medium-duty vehicle by the ACF regulation. Therefore, these vehicles are shown as Medium or Heavy Duty vehicles in **Figure 2**. Additionally, the Town has identified that a small low-speed vehicle will meet the operational needs of PW Truck #1, so that is shown as the electric vehicle replacement option.

It is important to note that the Town can accelerate or delay this timeline based on available budget.

FIGURE 2: ZEV PURCHASE SCHEDULE FLEET ELECTRIFICATION TIMELINE



The practical implementation of fleet electrification is subject to changing factors, including market availability of EVs, supply chain delivery times, funding opportunities, state and federal regulations, infrastructure construction, and utility power supply, among other factors, so the Town is encouraged to continue to work towards transitioning to a zero-emission fleet where feasible.

ZEV MILESTONES OPTION

To cover all bases, the Town's fleet was further assessed in context of the ZEV Milestones Option, which splits the medium- and heavy-duty vehicle category into Milestone Groups and requires fleets to meet ZEV targets as a percentage of the total fleet, as explained in the **Policies and Plans Summary**. The Town can opt into the ZEV Milestones option at any point between now and 2030. Otherwise, the Town will be required to follow the default ZEV Purchase Schedule.

To comply with the ZEV Milestones Option, any medium- or heavy-duty ICE vehicles that are purchased in the next few years would need to be replaced with an electric vehicle by 2039 or earlier to meet all the milestone targets. That could mean the potential new ICE vehicle purchases would have a service life of less than 12 years.

ELECTRIFICATION TIMELINE COMPARISON

Although the ZEV Milestones Option can provide greater flexibility for ICE vehicle purchases, for the Town of Fairfax it would require that the Town retire vehicles earlier than usual, and this compliance pathway requires annual fleet management tracking, calculations, and reporting to ensure compliance with the yearly milestone targets.

The ZEV Purchase Schedule timeline is recommended for the Town based on the electrification phasing timeline for medium- and heavy-duty vehicles according to the Town service life policy, Town of Fairfax Climate Action Plan 2030, and the Town of Fairfax Fleet Zero-Emissions Vehicle Policy, and California regulation requirements. This recommendation also considers the regulation access requirements to the ZEV Purchase Exemption provision, further explored in the **Policies and Plans Summary**, under the ZEV Milestones Option and the ZEV Purchase Schedule.

ELECTRIC VEHICLE PROCUREMENT PLAN

The following recommendations help the Town procure electric vehicles efficiently and in compliance with applicable regulations, while remaining flexible as vehicle needs, technologies, and requirements evolve. Leveraging cooperative agreements and experienced EV vendors can accelerate the Town's transition while reducing administrative complexity.

1 **Consider Vehicle Needs**
Develop clear, uniform specifications for each vehicle type and class to simplify procurement and ensure compatibility with fleet operations and charging infrastructure.

2 **Evaluate Total Cost of Ownership (TCO)**
Use TCO analyses, not just upfront cost, to compare EV options. Include fuel savings, maintenance reductions, and available rebates (e.g., HVIP, LCFS credits).

3 **Coordinate with Charging Infrastructure Deployment**
Procure vehicles in coordination with charging station installation to ensure operational readiness upon delivery.

4 **Use Templates and Procurement Tools**
Adopt templates for EV RFPs, purchase orders, and evaluation criteria. Leverage existing resources from CALSTART, Drive EV Fleets, and the Department of Energy's Clean Cities program.

5 **Look for Current Funding Opportunities**
Continuously monitor and apply for available federal, state, and regional incentives, grants, and rebates (e.g., California HVIP, CEC block grants). Incorporating available funding can significantly reduce total capital costs and improve project feasibility.

6 **Use Cooperative Purchasing Contracts When Feasible**
Cooperative purchasing programs provide pre-negotiated pricing and terms to reduce administrative burden and potentially increase savings. Start by identifying existing contracts through Sourcewell, California Department of General Services (DGS), the federal General Service Administration (GSA), or other cooperatives. Drive EV Fleets is a resource tailored to California public agencies to make it easier to navigate and use Sourcewell-awarded EV and EVSE contracts. **Appendix A**: Fleet Vehicle and Infrastructure Inventory shows the available procurement sources for each electric vehicle. Confirm with the Town's legal or procurement team if using these cooperative contracts is allowable under local procurement rules.

7 **Consider Leasing Options**
Leasing can reduce upfront capital costs, provide more flexibility in fast-evolving EV markets, and often includes maintenance and warranty support. Leasing options may be available through Sourcewell, GSA, or directly from vehicle manufacturers, dealers, and fleet management services.

8 **Explore Special Financing Options such as Green Bank Loans and State-Backed Programs**
Consider low-interest financing and credit-enhancing tools designed to support clean transportation projects. Two relevant California programs include CalCAP (California Capital Access Program) and IBank's Climate Financing products such as direct loans.

DATA SOURCES

As one of the first steps of this project, the Town's fleet data were gathered from various data sources, including the Town's fleet inventory, and a comprehensive database was compiled for further analysis. In addition to the Town fleet inventory, qualitative data such as vehicle duty cycles and emergency response requirements was collected through discussions with Town's Public Works, Sustainability, Police, and other Town staff. In all, the data collection efforts led to the creation of a Vehicle Replacement List, attached to this report as **Appendix A**: Fleet Vehicle and Infrastructure Inventory, which served as the basis for all further analyses.

ELECTRIC VEHICLE SELECTION

To balance the diverse composition of the Town's fleet, the types of electric vehicles currently available and the Town's objectives of reducing costs and carbon emissions, this analysis attempted to assign at least one potential EV option to each existing vehicle in the Town's fleet, while clearly defining which vehicles had viable options and which had more uncertainty surrounding the suitability of the available EV options. The following discussion provides additional information on the current and expected market availability of EV options for various vehicle sizes, giving context to the limitations of the analyses presented in this report and future opportunities that may enable the Town to determine a clearer path toward electrification of its medium- and heavy-duty vehicles. A summary of all vehicles, ICE and Electric, included in the analysis can be found in **Appendix A**: Fleet Vehicle and Infrastructure Inventory.

In order to assign EV alternatives to existing vehicles, each existing vehicle was assigned a label based on its GVWR and Body Type (e.g., MD Van). One ICE replacement possibility and up to three EV alternatives were assigned to each vehicle label for analysis and the selected replacements were applied to every vehicle with that label. Considering all the vehicle type and department or division specific considerations above, individual vehicles were updated manually to ensure that only relevant models were included in the comparison and a single model was designated as the primary option and used to inform that TCO and capital budget need calculations completed later in the analysis.

LIGHT-DUTY VEHICLE SELECTION

Sedans, SUVs & Vans

As of 2025, there is a range of battery-powered vehicles suitable for municipal fleets currently priced in the range of $30,000 to $45,000 with a range greater than 100 miles. The most common choice is the Nissan Leaf, considered as a

potential electric light-duty vehicle for the Town of Fairfax fleet. Other light-duty electric vehicles available for immediate fleet purchase include the Chevrolet Blazer EV; Ford Mustang Mach-E; Hyundai Ioniq 5 & Kona Electric; and Kia Niro. The EV models selected for inclusion in this analysis prioritized models and original equipment manufacturers (OEMs) with which the Town is familiar, which are easily purchased through existing procurement contracts and attempted to standardize across vehicle types in support of the Town's efforts to standardize its fleet at large around preferred OEMs.

While the Town's fleet does not currently have vans, the Ford E-Transit has an estimated 159 miles of range, with some units coupled with the extended range Fenton secondary battery, if more range is required. Ford is offering three different vehicle weights of the E-Transit, as well as chassis cab and cutaway options, which may make the E-Transit an appropriate option to replace some of the specialty body light- or medium-duty trucks in the Town's fleet.

Pickup Trucks

The Town fleet includes light-duty pickup trucks, such as the Ford Ranger, and medium- or heavy-duty pickup trucks, which span a range of size classes and duty requirements. Available electrification options for full-size pickup trucks include the Chevrolet Silverado EV WT and GMC Sierra EV, both of which were included in this analysis due to their suitability for municipal use. The Chevrolet Silverado EV WT trims are specially designed to be used as work trucks and have a towing capacity ranging from 8,500 pounds to 12,500 pounds, an estimated range of 280-490 miles, and an MSRP generally ranging from $50,000 to $75,000. Notably, this vehicle exceeds 8,500 pounds GVWR and is therefore classified as a medium-duty vehicle under Advanced Clean Fleets.

FIGURE 3: CHEVROLET SILVERADO EV

FIGURE 4: GMC SIERRA EV

While the Ford F-150 Lightning EV was another good option for fleets, Ford has stopped production. The next generation of this vehicle will be the Ford F-150 Lightning EREV, which is an extended range electric vehicle that will have an electric motor, batteries, and a gasoline generator. This vehicle is expected to have a range over 700 miles and more powerful towing capacity than its predecessor.[13] Since details, price, and release date have not been announced yet, it is not included in **Appendix A**: Fleet Vehicle and Infrastructure Inventory. If this vehicle has a GVWR over 8,500 pounds and meets the ACF requirements to be considered a near-zero-emissions

[13] https://www.fromtheroad.ford.com/us/en/articles/2025/next-gen-f-150-lightning-extended-range-electric-vehicle

vehicle (NZEV), then it will be a good option for fleets to meet the 50% ZEV or NZEV purchase requirements under the ZEV Purchase Schedule or to meet milestones under the ZEV Milestones Option.

For smaller pickup applications, emerging compact electric pickup platforms such as the Slate Auto Electric Truck or TELO MT1 may ultimately provide a closer functional and cost match, though these vehicles remain early-stage and are not yet widely available for fleet procurement. It is not recommended to use early- stage vehicle manufacturers for fleet vehicles. Other electric pickup offerings from manufacturers such as Rivian exist but are largely positioned toward the premium or specialty market, with higher price points that limit near- term applicability for municipal fleets.

In cases where a full-size pickup is not operationally necessary, a street-legal utility vehicle, such as the Club Car Carryall 710 LSV or Vantage Vehicle Electric Truck, may serve as a cost-effective alternative. These units are available in multiple rear body configurations and can support a range of light-duty tasks. They are limited to speeds of about 25 mph and ranges of roughly 30 miles, making them best suited for on-site or short-distance use.

MEDIUM- AND HEAVY-DUTY VEHICLES

Medium-duty and heavy-duty electric vehicle offerings are generally limited to OEM options or semi-custom, electrified or hybrid versions of commercially available vehicle platforms, such as the Ford and Isuzu chassis conversions. These proposed electric replacements or alternatives will require Town review and approval to ensure that the options can meet all of the operational needs of the current vehicles. Today's limited offerings will be augmented by increasingly numerous commercially available medium- and heavy-duty electrified vehicle platforms by manufacturers like Freightliner, International, Mack, Kenworth, Peterbilt, Rizon, and Volvo, among others. Many zero and near-zero-emission alternatives for diesel and gasoline fleet vehicles are expected to come to market before 2030. However, it can be difficult to accurately predict availability that far ahead because manufacturers typically only provide production details for the next two model years.

Medium- and Heavy-Duty Trucks & Chassis Cabs

At this time, the Town fleet has vehicles with a GVWR 8,500 lb. or higher, subject to Advanced Clean Fleets in the fleet that range from Ford F-250 pickups and F-450 specialty vehicles, operating primarily in the Public Works Department. Provided are a limited number of all-electric options are offered by OEMs and chassis conversion companies. Options can include the Ford F-150 Lightning with the Extended Range Battery, Ford E-Transit Chassis Cab BEV, Rizon e16M, Bollinger B4, Isuzu NRR EV, Mack MD Electric, and International eMV, among other options. The purchase price of the larger medium- and heavy-duty EV options ($100,000-$500,000) and low mileage of the existing vehicles precludes some of the EV options from being cost-effective, but the Town could decide to purchase these vehicles, likely using incentive or rebate programs to achieve emissions reductions.

The electric medium- and heavy-duty market is expected to continue developing as organizations plan for emissions reductions and respond to evolving state and local air quality and clean transportation requirements. It is expected that there will be increasing availability of electric replacement options compared to those currently identified in this study when it comes time for the Town's medium- and heavy-duty assets to be transitioned to zero or near-zero emission replacements. Overall, for the Town's heavy-duty specialty municipal fleet vehicle use cases, cost-effective EVs are likely still five-to-ten years away, even when accounting for incentives.

If full electrification of a medium- or heavy- duty specialty vehicle is not feasible at the time of replacement, the Town may consider electric power takeoff (ePTO) systems on ICE chassis as an interim emissions-reduction strategy. ePTO systems allow auxiliary equipment (e.g., hydraulics, booms, lifts) to operate electrically, reducing idling emissions and improving efficiency during stationary work. However, ePTO configurations do not meet the zero-emission vehicle requirements under the ACF regulation and would be considered ICE vehicle purchases. Therefore, the Town would need to confirm that the purchase would still align with its ACF compliance obligations as described in the **Policies and Plans Summary**.

POLICE DEPARTMENT

The Town of Fairfax is provided with a detailed analysis regarding Police Department fleet vehicles. The future electrification of the Police Department is recommended to be implemented according to the Police Department's timeline and preferences, ensuring emergency response operations can continue as normal. While police vehicles are often cost-effective options for electrification due to their consistent high mileage and potential for operations and maintenance or fuel savings, Police Departments often must address unique barriers to vehicle electrification. These

barriers may include unfamiliarity with EVs, concerns about fueling opportunities, range anxiety or concerns about battery capacity, and extensive upfitting of vehicles. While administrative vehicles in the Police Department may be replaced with standard light-duty electric vehicle options, the unique operational needs of patrol and special unit vehicles will require additional consideration.

Other Police Departments throughout the country, such as South Pasadena, California; Fremont, California; Westport, Connecticut; Bargersville, Indiana; and more, have deployed electric patrol vehicles. As of 2024, the South Pasadena Police Department has transitioned fully to electric vehicles, which are expected to save about $4,000 a year per vehicle on energy costs, on top of additional savings from maintenance.[14]

Meanwhile, the Fremont Police Department reports that their initial vehicle, a Tesla Model S, has behaved favorably in the role of a patrol vehicle despite not being pursuit-rated, with considerably less downtime than the Ford Explorer Utility Interceptor models which comprise the majority of their patrol vehicle fleet. Following this success, they have purchased and deployed additional EVs. While South Pasadena and Fremont's Tesla vehicles have had successful performance as patrol vehicles, at this time no Tesla models currently have an official pursuit rating from the Michigan State Police or LA Police's Department, the two entities in the Country in charge of testing vehicles for police use.[15] [16] Prior to deployment, Fremont Police Department had to receive approval from the Town's Risk Management department since the Tesla vehicle did not have an official pursuit rated designated.

In light of this, other potential models to consider are the Chevrolet Blazer EV Police Pursuit Vehicle (PPV) or the Ford Mustang Mach E GT Performance, which previously received an official pursuit designation in September 2023 from the Michigan State Police. The Chevrolet Blazer EV PPV is a purpose-built, pursuit-rated vehicle that can achieve a range of 250 miles on full charge, which could be highly suitable for enforcement operations. Similar to the Model Y, the Mach E is a crossover vehicle that should provide sufficient interior capacity, battery range, and performance at comparable pricing to Ford vehicles currently purchased. Additionally, the Ford F-150 Lightning Special Service Vehicle (SSV) is currently available to help with specialized needs of the department, though it is not pursuit rated.

As it is advantageous for special unit vehicles, such as those used by detectives or in undercover operations, to be a range of models, the analysis included a range of light-duty electric options matching the body type of the existing vehicles. However, it is understood that these vehicles must blend in with surrounding traffic and concerns exist that electrifying these vehicles ahead of the general market may limit this ability. Additionally, the lack of sufficient public fast charging infrastructure may limit their ability to perform during extended pursuits. As such, while a range of suitable or potential EV options may exist on the current market, piloting is recommended for the Town's Police Department to determine comfort and viability with specific models.

RANGE SUITABILITY

For every EV option assigned to an existing vehicle during the Vehicle Selection process, the **"EV Range Viability"** was calculated, comparing the range and battery capabilities of the EV option to the driving patterns of the existing vehicle.

[14] https://www.southpasadenaca.gov/News-articles/South-Pasadena-Launches-Nations-First-All-Electric-Police-Fleet
[15] 2024 Model Year Police Vehicle Evaluation – State of Michigan
[16] Los Angeles County Sheriff's Department 49th Annual Law Enforcement Vehicle Test and Evaluation Program

"EV Range Viability" is determined by doubling the average daily distance driven by each vehicle and confirming the EV replacement range exceeds the maximum daily distance. 100% of Town of Fairfax's vehicle options boast viable ranges based on the vehicle's historical driving, so EV range is not a major barrier to electrification for the Town's fleet. Any vehicles with EV alternatives falling below 100% of trips within range have Plug-in Hybrid Electric Vehicle (PHEV) options that would switch to gas once the battery was depleted, meaning that while the vehicle could not complete all trips on electric propulsion it would not become stranded on longer trips.

Accounting for Idling, Auxiliary Loads & Vehicle Weight Variations

EVs do not idle in the same way as ICE vehicles, but the equipment requiring idling (e.g., air conditioning) will still create a draw on the battery. A portion of the studied fleet is the Police Department vehicles, most of which idle for a large percentage of their daily operations. To account for idling vehicles, such as police vehicles, the daily kWh energy usage was adjusted to reflect the higher energy needs and was applied directly as a 25% reduction of the battery state-of-charge of the EV based on operations in other emergency response fleets.

CHARGING INFRASTRUCTURE PLAN

TOTAL CHARGING NEEDS

This Charging Infrastructure Plan provides an overview of the vehicle electrification timeline and total EV charging needs for all phases of construction, accounting for existing charging infrastructure. In addition, it identifies whether electrical distribution upgrades or a new electrical service will be necessary, based on data provided by the Town regarding the existing service and using the Pacific Gas & Electric Company (PG&E) Grid Resource Integration Portal, to accommodate the expected energy loads from the planned electric fleet.[17] Given the limited available capacity on the existing service at Town Hall and PD, it is expected that the Town will engage with the local utility, PG&E, to upgrade the existing service or install a new dedicated EV-charging service at each of these sites.

TABLE 4: SUMMARY OF INFRASTRUCTURE NEEDS

Facility	# Of Projected Town-Owned EVs	# Of Ports	Total EVSE Project Cost Estimates	Electrical Capacity Requirements
Corporation Yard	8	4 x Existing Chargepoint 7.2 kW[18,19] 2 x 12 kW	$39,200	New or upgraded service recommended.
Fairfax Police Department	12	8 x 40 kW	$304,200	
Total	20 Vehicles	14 Ports	$343,400	

The total fleet charging infrastructure needs by site are presented in **Table 4** above. While all fleet vehicles reside at the Corporation Yard, Police vehicles need dedicated charging infrastructure for emergency operational needs, so those vehicles are presented as a separate facility for calculations and comparison purposes. Recommended minimum charger types and power levels are identified for each vehicle in **Appendix A**: Fleet Vehicle and Infrastructure Inventory. This analysis ensures that infrastructure planning is aligned with future fleet operations and minimizes the risk of costly upgrades later. A detailed explanation of the data sources and

[17] https://grip.pge.com/
[18] Two (2) Existing Chargepoint ports will move from the Police Department to the Corporation Yard.
[19] Vantage Vehicle can be plugged into a typical outlet. It is assumed that the Town will purchase the option for it to charge on the same chargers as the other vehicles.

modeling process used, including methodology to determine the recommended charger power levels and port quantities needed at each facility, can be found in **Appendix C: EV Charging Needs Methodology**.

RECOMMENDED CHARGING EQUIPMENT AND SELECTION CRITERIA

To support electric vehicle infrastructure planning, **Appendix A: Fleet Vehicle and Infrastructure Inventory** includes a Charging Equipment tab that shows potential charger options currently available on the market. Charging equipment options were selected using a set of evaluation criteria intended to support long-term usability and flexibility with potential future implementation of advanced charging strategies, like managed charging and vehicle-grid integration (VGI), including:

- Compatibility with existing charging infrastructure where feasible
- Manufacturer longevity and demonstrated market stability
- Interoperability with a range of charging management software
- Availability of customer service and technical support

Multiple charger options are identified for each recommended charging application to provide flexibility based on agency preferences, existing manufacturer relationships, and available budget. **Appendix A: Fleet Vehicle and Infrastructure Inventory** summarizes charger types, power ranges, key technical specifications, estimated equipment costs, and optional procurement sources, including cooperative purchasing contracts and other agreements that may reduce procurement cost and timelines. Key technical specifications include industry-standard communications protocols such as Open Charge Point Protocol (OCPP) to enable charger network interoperability and management system flexibility, and chargers that are ISO 15118-Ready to support advanced vehicle–charger communication, including secure authentication and future vehicle-grid integration applications.

Interoperability considerations also include charging port connector types. The North American Charging Standard (NACS) supports both AC (Level 1/Level 2) and DC fast charging through a single connector, while the Combined Charging System (CCS) is primarily used for DC fast charging and uses a J1772 port for AC charging. While NACS is gaining adoption in some light-duty EVs, most medium- and heavy-duty EVs currently available, including the EVs recommended in this analysis, currently have CCS ports. Therefore, CCS-compatible equipment is generally recommended for current fleet needs. However, to support long-term flexibility, the Town may consider charging equipment that can accommodate multiple connector types or be adapted in the future. Adapters between connector types (e.g., J1772 to NACS) are also available and may provide additional flexibility, though their use may introduce operational considerations.

Charging equipment options are provided for planning purposes and represent viable examples. While other charging equipment options are available on the market, some options may not meet the evaluation criteria listed above. Charging equipment with power ratings equal to or greater than the recommended levels may also be suitable, provided they meet the Town's operational needs and performance requirements. The electric vehicle charger market continues to evolve rapidly, and equipment availability, specifications, pricing, and vendor offerings are subject to change. Final charger selection and pricing should be confirmed during procurement based on current market conditions and Town needs.

FLEET-SPECIFIC CONSIDERATIONS

The Town of Fairfax currently owns and operates various charging infrastructure makes and models, including Chargepoint charging stations, across its facilities. Given the Town's plans to continue installing municipal-owned charging infrastructure, the Town is provided with general technical considerations and recommendations for its future EVSE selection.

For police vehicles which domicile or park at the Police Department, this analysis carefully considers the operational needs and critical emergency response requirements, so that future electric fleet vehicles can continue to serve and protect their community without interruption. In **Table 5**, Police Department estimated charging needs are provided, however, these vehicles are excluded from electrification regulations at this time and not expected to be fully electrified in the near-term. Police vehicles typically have unique duty cycles and emergency response needs which will require different charging infrastructure availability, power ratings, and quantity. Emergency response vehicles, such as electric patrol or pursuit vehicles, often require higher powered ports or more frequent charging so that these units can be deployed quickly and fully charged in the event of an emergency.

For most sites, DCFCs should be typically reserved for facilities where fast charging is critical to emergency response operations or high-use assets, while Level 2 AC chargers are generally sufficient for most light-duty fleet vehicles. Consideration should also be given to the fact that vehicle batteries degrade more slowly when charged with Level 2 chargers compared to Level 3 DCFCs, making Level 2 chargers a preferable option for regular use. In cases where future charging needs are uncertain, the Town may choose to invest in a higher-capacity unit that can be de-rated for current use, with the option to increase output as demand grows. Furthermore, new EV charging stations should be validated by the Town's Charge Management System (CMS) provider before procurement to ensure seamless integration and operation.

EVSE PROCUREMENT PLAN

The following recommendations provide guidance to help the Town procure and deploy charging infrastructure in a cost-effective, timely, and operationally reliable manner. These practices are intended to support the Town's planned fleet electrification while allowing flexibility to adapt to changing vehicle needs, technologies, and regulatory requirements.

1

Reevaluate Charging Needs and Facility Requirements Over Time

Periodically revisit charging needs as electric vehicle procurement timelines shift, technologies evolve, operational patterns evolve, or regulatory requirements change. Regular reassessment helps ensure infrastructure investments remain aligned with actual fleet needs and avoid over- or under-building charging capacity.

2

Coordinate Early and Continuously with PG&E

Establish a formal relationship and enroll in PG&E's EV Advisory Services for ongoing coordination throughout design and procurement to confirm service capacity, identify required upgrades, and understand available programs and rate options. Inform PG&E about immediate and potential long-term charging project information so PG&E can plan their grid infrastructure accordingly. Utility coordination is critical to avoid delays, reduce upgrade costs, and align infrastructure deployment with vehicle procurement schedules.

3

Plan Procurement and Installation Timelines in Advance

Charging infrastructure projects often require significant lead time for design, utility approvals, equipment procurement, and construction. Depending on facility conditions and utility upgrade requirements, planning and installation can take approximately 6 to 24 months or longer, particularly if new service, transformer upgrades, or trenching are required. Plan procurement and installation well in advance of vehicle delivery and consider phased deployment to align with fleet electrification schedules and minimize operational disruption.

4

Evaluate Total Cost of Ownership and Operating Costs

Evaluate full lifecycle costs, including equipment, installation, utility upgrades, networking fees, maintenance, and electricity costs. Consider strategies such as managed charging and participation in Low Carbon Fuel Standard (LCFS) credit programs to reduce ongoing operating costs.

5

Use Templates and Procurement Tools

Adopt RFP templates, technical specifications, and evaluation criteria for charging infrastructure. Leverage existing resources from CALSTART and the Department of Energy's Alternative Fuels Data Center.

6

Look for Current Funding Opportunities

Continuously monitor and apply for available federal, state, and regional incentives, grants, and rebates (e.g., California HVIP, CEC block grants). Incorporating available funding can significantly reduce total capital costs and improve project feasibility.

7

Use Charging-as-a-Service (CaaS) and Vendor-Supported Models

The Town currently uses Chargepoint, which operates as a Charging-as-a-Service (CaaS) model. CaaS allows third-party providers to install, own, and maintain charging infrastructure in exchange for a recurring service fee. This can help reduce or eliminate upfront capital costs, simplify procurement, and ensure long-term performance by shifting maintenance and repair responsibilities to the vendor. CaaS is particularly useful when budget flexibility, guaranteed uptime, or rapid deployment are priorities. However, agencies should carefully review contract terms, as long-term service agreements may limit flexibility, particularly if the Town later wishes to change vendors, own the infrastructure outright, or adapt to evolving technology needs.

8

Alternatively, Use Cooperative Purchasing Contracts When Feasible

Charging equipment and related services are available through cooperative purchasing providers such as Sourcewell, the National Association of State Procurement Officials (NASPO) ValuePoint, and the Purchasing Cooperative of America (PCA), which offer pre-negotiated pricing and terms. These contracts can reduce procurement time and administrative effort while ensuring compliance with public agency purchasing requirements. **Appendix A**: Fleet Vehicle and Infrastructure Inventory shows the available procurement sources for each EVSE. Confirm with the Town's legal or procurement team if using these cooperative contracts is allowable under local procurement rules.

9

Explore Special Financing Options such as Green Bank Loans and State-Backed Programs

Consider low-interest financing and credit-enhancing tools designed to support clean transportation projects. Two relevant California programs include CalCAP (California Capital Access Program) and IBank's Climate Financing products such as direct loans.

PHASED CHARGING INFRASTRUCTURE NEEDS

Table 5 subdivides the charging infrastructure by facility into phased infrastructure needs in the immediate-term (Phase 1) and the long-term (Phase 2), and includes vehicle types and duty cycles for reference. The phasing plan assumes the Town elects to follow the ZEV Purchase Schedule for compliance with California Air Resources Board's Advanced Clean Fleets. The phased approach to charging infrastructure is recommended to ensure that the Town has sufficient charging to provide for their future EVs throughout the gradual transition to electrification. However, if the Town chooses to accelerate the fleet electrification timeline, then the timing for installing charging needs may need to be adjusted in accordance with the revised electrification timing so that all future electric vehicles have sufficient charging.

Two scenarios are shown for the Police Department. Option 1 is preferred and assumes all vehicles share the same DCFC stations, which allows non-patrol vehicles to charge while patrol vehicles are on shift, reducing the total number of ports needed. Option 2 is shown for reference and assumes patrol vehicles are on dedicated DCFC stations and all other vehicles

are on Level 2 stations, so there is less overlap between charging groups and more total ports are required. All other tables, cost estimates, and facility assessments in this plan reflect Option 1 unless otherwise noted.

In the table, the Install Year reflects when charging facilities will be ready to serve vehicles. To avoid delays in the electrification timeline, infrastructure should be commissioned approximately one year before the relevant vehicle purchases, allowing time for installation and testing. Since the Town requires upgraded electrical service, lengthy review processes and construction times should be considered during the planning process. For details on the timeframe for infrastructure upgrades and details on each facility, including general charging infrastructure layout and facility capacity assessments, see **Appendix D: Fleet Facility Assessment**.

A primary challenge in defining charging needs is determining the minimum number of ports required at each location to meet daily energy demands while balancing operational considerations such as overnight dwell time. Costs can be minimized by installing all EV charging stations within a single phase of installation or alternatively by installing make-ready electrical infrastructure upfront, avoiding the need for future capacity upgrades or additional retrofits as the fleet transitions. Through this program, the Town has already taken steps toward electrical infrastructure design and facility capacity assessments, though further evaluation may be required at project sites to confirm facility-specific needs during the design process.

TABLE 5: SUMMARY OF INFRASTRUCTURE NEEDS BY FACILITY AND CONSTRUCTION PHASE

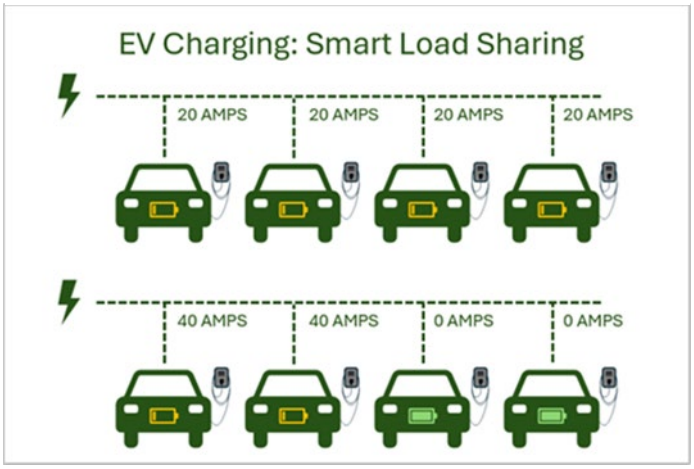
		Corporation Yard	Police Department (Option 1)	Police Department (Option 2)
Vehicle Types		Light- and medium- duty vehicles	Light-duty vehicles, including patrol vehicles required for emergencies	Light-duty vehicles, including patrol vehicles required for emergencies
Duty Cycle(s)		6:00am-3:00pm	Admin vehicles: 1 shift a day, some take home Patrol vehicles: 24/7, 3 shifts a day, hot-seated	Admin vehicles: 1 shift a day, some take home Patrol vehicles: 24/7, 3 shifts a day, hot-seated
Existing Charging Infrastructure		2 x Existing Level 2	2 x Existing Level 2	2 x Existing Level 2
Phase 1	**# of Projected EVs**	5	5	5
	# of Ports	2 x 12 kW	4 x 40 kW	4 x 12 kW
	Install Year	2028	2026	2026
	Phase 1 Estimated Cost	$39,200±	$152,100±	$71,600±
Phase 2	**# of Projected EVs**	8	12	12
	# of Ports	2 x Level 2 (existing PD)[21]	4 x 40 kW	6 x 40 kW
	Install Year	2043	2032	2032
	Phase 2 Estimated Cost	$-	$152,100±	$239,700±
Total	**# of Projected EVs**	**12[20]**	**12[20]**	**12[20]**
	# of Ports	**4 x Existing Level 2[21,22]** **2 x 12 kW**	**8 x 40 kW**	**4 x 12 kW** **6 x 40 kW**
	Total Estimated Cost	**$39,200±**	**$304,200±**	**$311,300±**

[20] Corporation Yard includes Police GO-4 Interceptor EV that can only charge on Level 1 and Level 2 chargers.
[21] Two (2) Existing Chargepoint ports will move from the Police Department to the Corporation Yard in Phase 2.
[22] Vantage Vehicle can be plugged into a typical outlet. It is assumed that the Town will purchase the option for it to charge on the same chargers as the other vehicles.

OPERATIONAL CONSIDERATIONS OF VEHICLE TO PORT RATIOS

It is common for recommendations to indicate a vehicle to port ratio greater than 1:1. Implementing vehicle to charger ratios higher than 1:1 minimizes EVSE hardware and installation costs but has operational considerations, as not every vehicle can be plugged in at the same time. This challenge can be managed in a variety of ways ranging from staff training to software solutions. During standard operations vehicles often do not need to be charged every night. All vehicles in the fleet have battery capacities that exceed their average projected daily need, allowing them to rotate charger use.

FIGURE 5: EV CHARGERS LOAD SHARE EXAMPLE



The recommendations provided above are for "fully powered" ports, meaning charging ports that have sufficient circuit capacity to provide a power output at their nameplate capacity. In some cases, it may be advantageous for the Town to add additional charging ports, without taking the capital-intensive step of expanding the recommended power capacity, to enable more vehicles to be plugged in at once and leverage software to balance charging across ports.

EV charging management software would allow the Town to balance the charging load between multiple ports, as shown in **Figure 6**, without overloading the existing power capacity. Load management can be controlled to ensure first-in, first-out charging, equally distributed charging, or priority ranking, depending on what is most beneficial for the Town. The Town can refer to Department of Energy resources for further information on load management.[23]

[23] https://www.energy.gov/femp/managed-ev-charging-federal-fleets

OPERATIONS AND MAINTENANCE PLAN

OPERATIONS AND MAINTENANCE REQUIREMENTS

The Town should adopt a proactive operations and maintenance (O&M) approach to ensure the long-term reliability, safety, and cost-effectiveness of its electrified fleet and chargers. While EVs generally require less routine maintenance than their ICE counterparts, they still demand routine attention to tires, brakes, battery systems, and vehicle diagnostics. Similarly, the EVSE requires cable management, software updates, and hardware servicing to ensure reliable operation.

Routine O&M costs for electric vehicles have been factored into the vehicle's total cost of ownership (TCO). Annual O&M costs for the charging infrastructure are estimated at $400 per charger, assuming a useful equipment life of approximately 10 years.[24] These costs may be covered through a Charging-as-a-Service (CaaS) contract with an EV service provider; however, if the Town pursues a direct purchase these costs should be accounted for during project planning.

MAINTENANCE RESPONSIBILITIES AND TRAINING

Maintenance responsibilities will be shared between Town staff, manufacturers, and external vendors. In the near term, complex electric vehicle repairs and charger diagnostics will likely be addressed by manufacturers or trusted local EV shops. As internal capacity grows, the Town may shift toward in-house maintenance by providing staff with specialized training for high-voltage systems and digital management tools. These training programs, typically consisting of several 8-16-hour courses, are available through community colleges, OEMs, or state-sponsored workforce development initiatives.

The Town can also take advantage of manufacturer warranties. Vehicle battery issues are typically covered by a standard 8-year/100,000-mile battery warranty for packs that retain less than 70% of their original capacity. For charging stations, warranties between 1 and 3 years in length, depending on the charger level, are common.

ELECTRIC VEHICLE MAINTENANCE

The transition to an electric fleet will fundamentally shift the Town's maintenance workflows. As shown in **Figure 7**, EVs require significantly different service intervals compared to ICE vehicles. According to a 2021 vehicle cost study by Argonne National Lab, the elimination of ICE components, such as engine oil, exhaust systems, and automatic transmissions, drastically reduces the labor intensity of routine maintenance.[25]

While EVs are generally heavier than ICE equivalents, necessitating more frequent tire rotation and potentially faster tire replacement, these costs are offset by the benefits of regenerative breaking. This technology allows EVs to decelerate using the motor, which significantly minimizes wear on traditional brake pads and rotors.

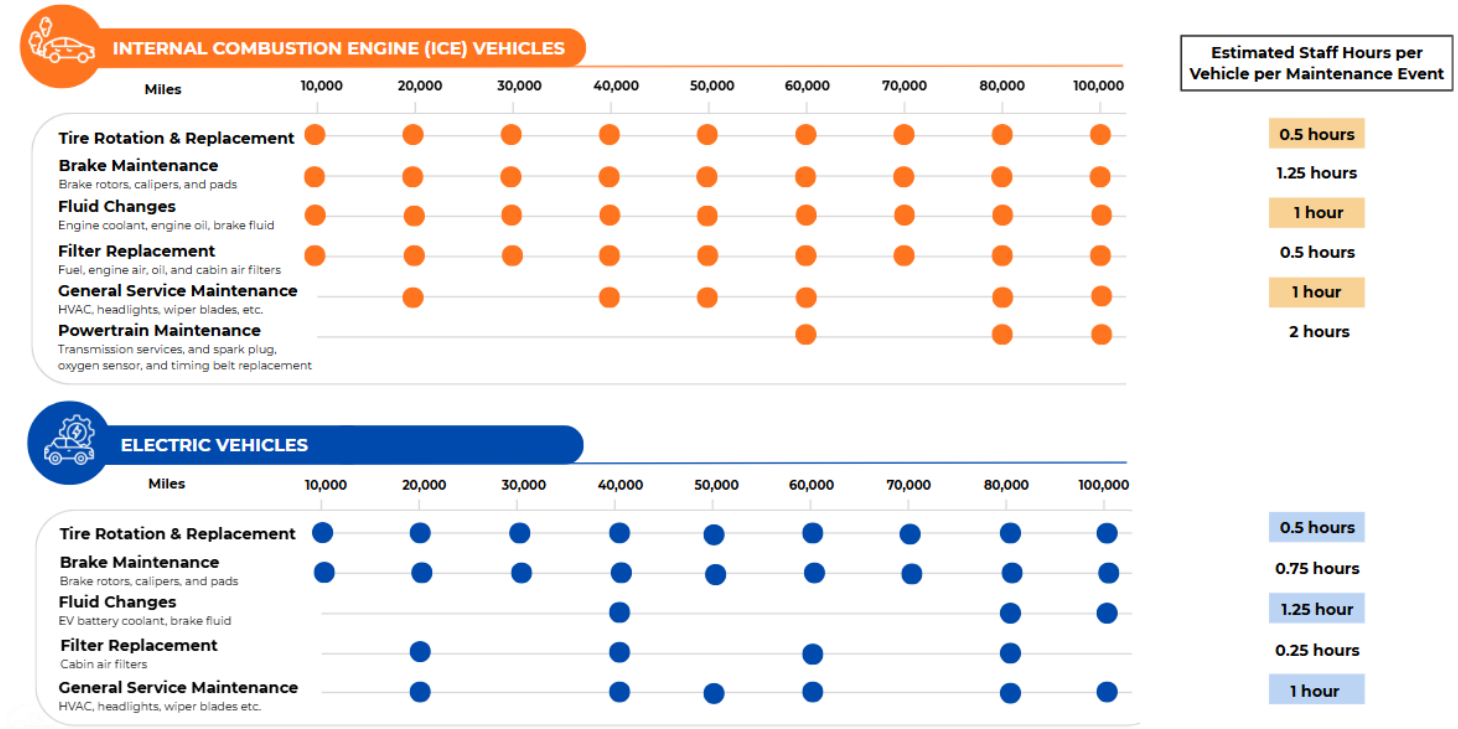
[24] https://afdc.energy.gov/fuels/electricity-infrastructure-maintenance-and-operation
[25] https://publications.anl.gov/anlpubs/2021/05/167399.pdf

Hourly labor estimates for each task were derived from A-Class Auto Mobile Repair estimates.[26] Based on the average hours needed to complete each task and the frequency of service, Town staff can expect a substantial labor dividend from electrification:

- **Vehicle Labor Comparison**: Maintaining a single ICE vehicle typically requires approximately 40 labor hours over 100,000 miles of driving. In contrast, the EV equivalent only requires approximately 20 hours for a similar distance.
- **Financial Impact**: Assuming staff are paid $40 an hour, which is consistent with publicly available salary information for Marin County, the marginal labor savings of maintaining an EV is $800 per 100,000 miles driven.[27]

The figure below does not contain an exhaustive list of all duties required to ensure that vehicles meet all safety and performance standards. It is important to review all manufacturer provided documents for vehicle maintenance for each new asset brought on to the fleet. The inspection and repair schedule established by the Town should consider the specific use cases of each vehicle, including their average daily distance, the typical terrain traversed, and the weight of any loads regularly carried.

FIGURE 6: FLEET MAINTENANCE TIMELINE COMPARISON



[26] https://a-classauto.net/blog/how-long-will-car-maintenance-take/#Electric_cars_EVs
[27] https://transparentcalifornia.com/salaries/search/?q=Vehicle%20Equipment%20Mechanic%20Ii&y=2024

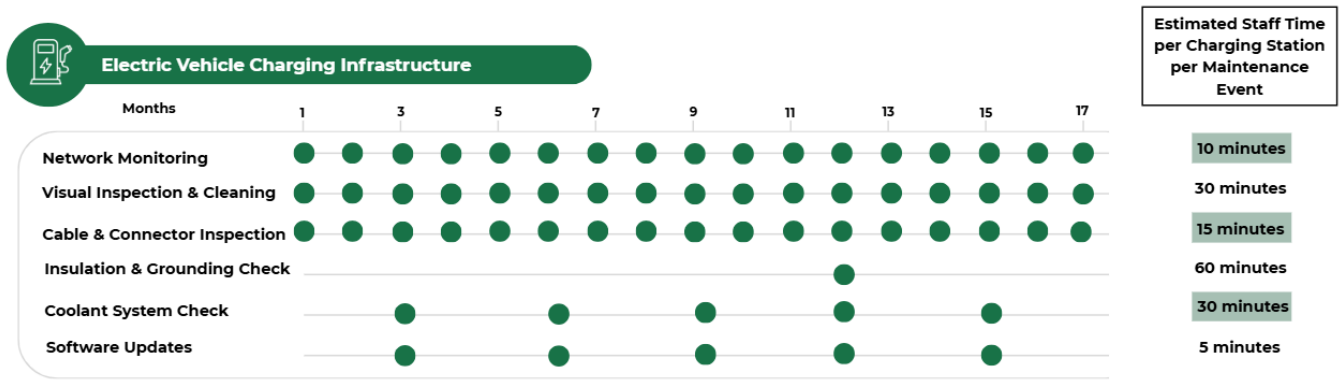
CHARGING INFRASTRUCTURE (EVSE) MAINTENANCE

In addition to vehicle care, staff must perform routine upkeep on charging infrastructure. While these checks occur quite frequently, as shown in **Figure 8**, they take relatively little time to complete and can be absorbed by the time saved on vehicle maintenance.

- **Routine Tasks**: Upkeep consists primarily of visual inspections for physical damage and cleanings to remove dirt, moisture, and corrosion from ports and cables.
- **Software and Safety**: Software updates should largely be automated through the charging network, though technicians must verify successful processing. DCFC may need to be inspected more often than Level 2 chargers, due to their greater output. The maintenance schedule below comes from the FieldEx EV Charging Station Maintenance Checklist.[28] For safety, all hardware inspections must strictly follow lockout/tagout procedures to de-energize equipment before servicing.
- **Projected EVSE Labor Costs**: Technicians are expected to spend approximately 20 hours servicing a single charger every 17 months. This will add up to 140 total hours for a charger with a 10-year lifespan, and approximately $5,600 in labor costs per unit.

The figure below does not contain an exhaustive list of all duties required to ensure that chargers meet all safety and performance standards. It is important to review all manufacturer provided documents for charger maintenance for each new asset brought on to the fleet.

FIGURE 7: EVSE MAINTENANCE TIMELINE



To ensure high reliability and minimize equipment downtime, the Town should utilize networked charging stations with remote monitoring capabilities. These systems enable real-time diagnostics and automated alerts, providing centralized oversight of charger uptime and performance.

The Town should develop a standardized process for service issue reporting, escalation, and resolution tracking to support reliability goals. Providing staff with a clearly communicated way to quickly flag charger malfunctions, such as through a brief online form or text to a facilities number visible on the charger, can minimize the risk of downed or

[28] https://www.fieldex.com/en/checklist/ev-charging-station-maintenance-checklist

underperforming chargers going unreported. This process should include appropriate escalation protocol based on the severity of the issue raised, with priority placed on restoring function to fully downed chargers.

These systems will also help the Town comply with state requirements and incentives, such as the CEC EV Charger Data and Reliability Standards and the Low Carbon Fuel Standard (LCFS) as described in the **Financing Plan** and

Data Collection & Reporting Plan, if the Town chooses to participate. Refer to the **Projected Infrastructure Costs** section for information on charging network subscription costs.

PLAN EVOLUTION

This operations and maintenance plan is a living document intended to evolve alongside the Town's fleet and infrastructure buildout. As new technologies, regulatory requirements, and funding opportunities emerge, best practices should be updated to maintain the high performance and cost-efficiency of the Town's zero-emission fleet.

CHARGING STRATEGIES AND RESILIENCY

In addition to installing sufficient charging infrastructure to meet fleet electrification needs, implementing appropriate charging strategies and operational practices is critical to ensuring reliable fleet operations, minimizing costs, and supporting long-term scalability. Charging strategies influence how and when vehicles are charged, how electrical demand is managed, and how infrastructure investments can be optimized over time.

This section outlines recommended operational strategies to support efficient and resilient fleet charging, including charge management practices, shared charging opportunities, and integration with distributed energy resources (DER) to enhance energy reliability. These strategies are intended to help the Town minimize operating costs, maximize infrastructure utilization, and maintain continuity of operations as fleet electrification expands.

BEST PRACTICES

These practices apply for both managed and unmanaged chargers and can reduce charging costs and competition for EV charging ports.

1 **Delay charging until ~20% state of charge**

Avoid topping up the entire fleet daily. Most vehicles don't need to charge every night, and spreading charging events reduces demand during peak hours. Police and emergency vehicles may be an exception.

2 **Prioritize overnight charging at lower power**

Reduces load spikes and aligns with off-peak pricing windows, lowering both demand charges and energy costs.

3 **Unplug vehicles when charging is complete**

Frees up ports for other vehicles. Simple operational habit that improves station utilization without additional infrastructure.

4 **Avoid hot seating police patrol vehicles**

Back-to-back high-power charging creates demand spikes that are costly on rate structures with demand charges. Stagger patrol vehicle charging where operationally feasible.

5 **Place high-powered chargers near emergency vehicles**

Mission-critical units need fast turnaround. Reserve DCFC access for emergency response; use Level 2 for overnight and long-dwell vehicles.

6 **Use charge management software**

This can help track charger uptime, utilization trends, and identify opportunities for low-impact scheduling or operational improvements.

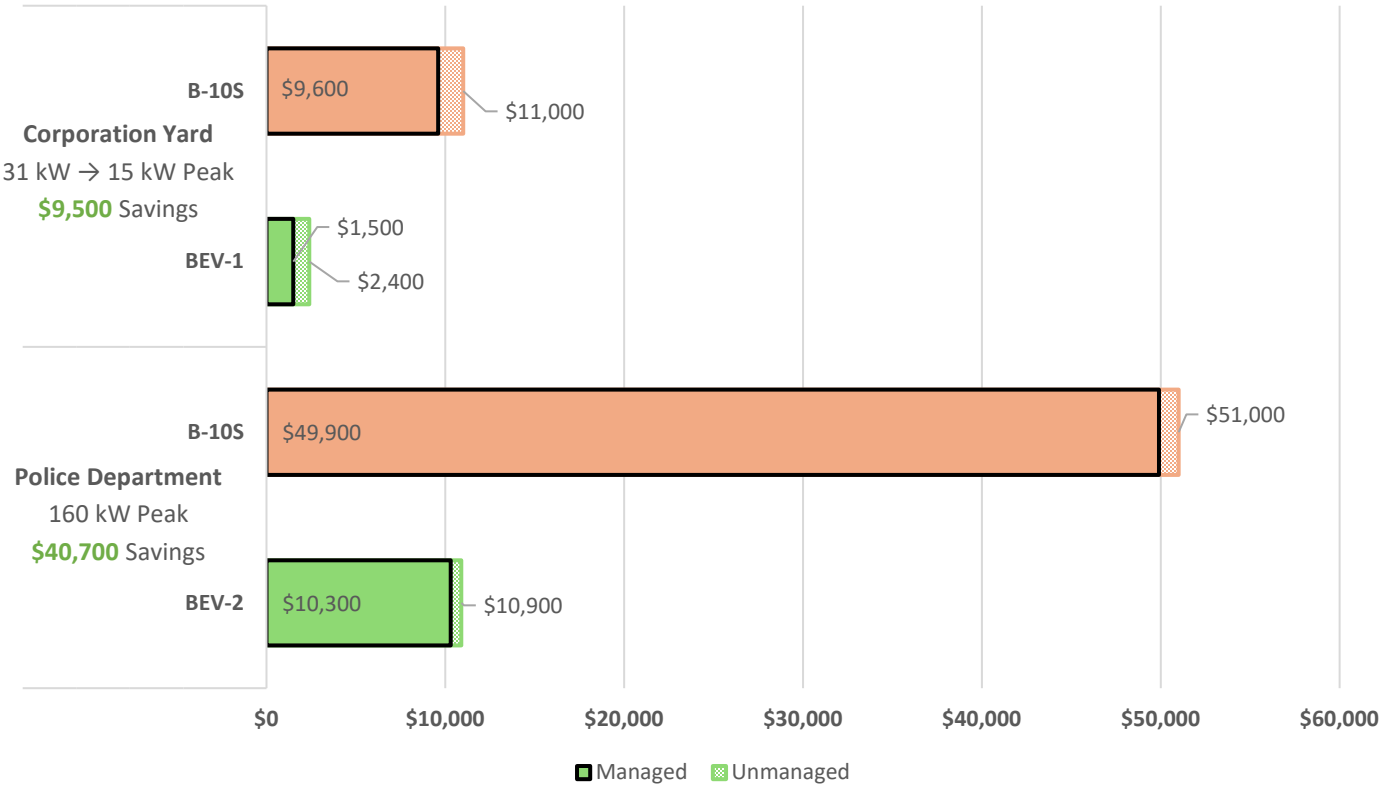
CHARGE MANAGEMENT SAVINGS

The Town may choose to pursue charge management, also known as load management, at their facilities to reduce peak coincident load and potentially reduce energy costs, though this is highly dependent on rate structure. Load management is the use of software to control charging load at an EV charging station, or group of stations. Load management works by deferring or reducing the power of vehicle charging to keep the total load under a certain kilowatt threshold. This can be done to produce two major benefits: 1) reducing load to avoid a service upgrade and 2) reducing demand or energy charges on the facility's electrical bill.

Load management can be done in a *static* or *dynamic* manner; the difference is the load the software accounts for when balancing EV charging. In static load management, software balances just the load on the EV chargers, without accounting for the rest of the facility. In dynamic load management, the load management software adjusts the EV load to avoid pushing the entire facility meter's load over a certain threshold. Dynamic load management generally produces greater energy savings and would be necessary if intending to install charging stations on a switchboard that would otherwise not be able to support the added load.

A high-level analysis comparing unmanaged and managed charging across different PG&E rate tariffs is summarized in **Figure 9** below. In both cases, vehicles were assumed to follow standard duty cycles. In the managed scenario, charge management was used to both delay the start of charging until off-peak hours and lower the peak load on the chargers. All simulations assume that EV charging is served by a dedicated meter, and that the Police Department vehicles may be on a separate meter than the Public Works and Planning vehicles.

FIGURE 8: SUMMARY OF ANNUAL UTILITY COSTS WITH LOAD MANAGEMENT



Savings potential varies significantly across PG&E rate tariffs. B-10 incorporates both time-of-use energy charges, demand charges, and a standard customer fee. Load management will produce many savings in rate structures that do not include demand charges or time-of-use charges. Load management may produce savings in energy charges at facilities with a time-of-use-rate by pushing the load off into a lower-price time-of-use bracket. The greatest savings potential may be found with rates that include demand charges, where lowering the peak load can substantially impact the overall energy bill.

PG&E's BEV-1 and BEV-2 are special rates designed for use on dedicated meters with only EV charging, and they are the most cost-effective tariffs in this comparison. They feature no demand charges, use a monthly subscription fee based on the total amount of power the customer expects to use during that month, and include a steep time-of-use charge that benefits from pushing load off-peak using software. BEV-1 is intended for lower-demand facilities (≤100 kW), and BEV-2 is intended for higher-demand facilities. Because unmanaged EV charging tends to create high, concentrated peaks, especially with many vehicles operating on similar schedules, BEV-1 and BEV-2 show substantial savings even without load management due to the lack of demand charges.

At facilities serving only emergency response vehicles, operational readiness was prioritized over charge management strategies. As a result, there are limited or no savings from load management.

Facility load profiles showing weekly average maximum loads are available in **Appendix D**: Fleet Facility Assessment.

SHARED CHARGING OPPORTUNITIES

As the Town deploys EV charging infrastructure to support municipal fleet operations, there may be opportunities to maximize infrastructure utilization by sharing charging stations across multiple users, including municipal departments, employee vehicles, or the public where appropriate.

Fleet vehicles are often parked for extended periods, particularly overnight or during standard working hours, which may leave charging stations unused for portions of the day. When operationally feasible, these periods of availability could present opportunities for shared use, improving overall infrastructure efficiency and reducing the need for redundant installations.

Potential shared charging applications include:

- **Facility sharing with another municipality:** Charging stations installed at municipal facilities may also present opportunities for coordination with nearby public agencies, such as San Anselmo, which is less than 5 miles away. Where operationally feasible, shared charging infrastructure could allow both agencies to support fleet electrification without each installing redundant infrastructure. This approach may be particularly beneficial at facilities located near jurisdictional boundaries or at sites with excess charging capacity during certain periods. For example, since the Fairfax Corporation Yard has limited space for charging infrastructure, the Public Works vehicles could charge at the San Anselmo Corporation Yard, and the Police vehicles could stay at the Fairfax Corporation Yard. Any shared charging arrangement would require coordination on access controls, scheduling,

cost recovery, and operational priorities to ensure that the Town's fleet charging needs remain the primary priority.

- **Employee charging:** The Town already allows employees to use charging stations at the Corporation Yard, and continuing or expanding this program can support employee adoption of electric vehicles while maintaining priority access for fleet vehicles.

- **Public charging:** At other highly visible or publicly accessible locations, such as parking areas around Town Hall, the Town could evaluate the feasibility of providing public charging infrastructure that fleet vehicles can use, and the public would be able to access when the when fleet vehicles do not require charging. This approach supports community electrification goals and provide potential revenue opportunities, though it would require appropriate access controls, billing systems, and operational policies.

- **Use of existing public charging infrastructure:** Fleet vehicles may also utilize publicly available charging stations operated by the Town or private providers when vehicles are away from their home facilities or when fleet chargers are unavailable. While public charging is generally more expensive than charging at a Town facility and may not be suitable for routine operations, it can provide flexibility for occasional charging needs, longer trips, or operational contingencies.

Any shared charging implementation should prioritize fleet operational readiness. Charging management software can support shared charging by reserving charging capacity for fleet vehicles, scheduling access windows, and ensuring critical vehicles receive priority charging.

Shared charging may be most appropriate at locations with predictable fleet schedules, excess charging capacity, or community-facing facilities. The Town can evaluate shared charging opportunities on a facility-by-facility basis as infrastructure is deployed.

RESILIENCY OPPORTUNITIES

The Town currently has onsite solar generation at the Pavilion, which also provides some power to the Town Hall and Fire Station, and resiliency planning for an all-electric fleet will require additional consideration as electrification expands.

As the Town transitions to an all-electric fleet, planning for power outages becomes increasingly important. Without backup power infrastructure in place, a grid outage could limit the Town's ability to charge and deploy vehicles. To address this, the Town may want to evaluate additional onsite solar paired with battery storage as options for providing backup power to priority charging stations during outages. The number of chargers that can be supported on backup power will depend on the capacity of whichever backup system is installed, and should be confirmed during the infrastructure design process.

Since the Town already has a backup diesel generator at the Town Hall campus, it may be worth exploring whether that generator could support priority EV charging stations during emergencies or extended outages. If the Town determines that the existing generators or potential future solar generation paired with battery storage are insufficient to meet fleet needs during an extended outage, fleet-dedicated backup generators are another option worth evaluating. Generators can be configured to support priority charging stations and critical facility loads, providing an additional layer of resiliency beyond what solar and storage systems can offer.

The same battery storage systems that support resiliency can also help manage energy costs during normal operations by shifting charging load away from peak utility rate periods. Scheduling EV charging during periods of high solar generation can further reduce costs by drawing from onsite power rather than the grid. Balancing cost savings and backup readiness should be key considerations when configuring the charge management system.

When grid power is available, the high-power charging infrastructure recommended for the Police Department allows vehicles, including Public Works vehicles, to be rapidly recharged if necessary for operational needs or emergency scenarios.

As technology advances, the Town could also evaluate vehicle-grid integration (VGI) capabilities for select fleet vehicles that have predictable duty cycles and long dwell times. VGI enables fleet batteries to function as distributed energy resources, supporting applications such as vehicle-to-grid (V2G) power export and vehicle-to-building (V2B) energy use during peak events or emergencies. Beyond storage and VGI, additional resilience levers include charge management, automated load shedding, and participation in future utility demand response or grid services programs. As funding and resources allow, these resiliency strategies could help the Town maintain continuity of operations, reduce susceptibility to outages and peak energy costs, and incrementally build a flexible, resilient energy system that aligns with the Town’s broader municipal electrification and sustainability goals.

DATA COLLECTION & REPORTING PLAN

To effectively measure the long-term impact of the fleet electrification program, the Town should track a set of core performance metrics covering environmental, financial, and operational aspects. This data-driven approach allows for the continuous analysis of fuel and maintenance savings, vehicle utilization, and progress toward the Town's zero-emission milestone. By establishing clear data collection protocols, the Town can ensure that cross-referencing among datasets remains accurate and consistent.

DATA COLLECTION SOURCES AND METHODOLOGY

The Town should gather data from four primary integrated sources to support these metrics:

- **Charge Management Systems (CMS):** Beyond load management, the CMS tracks real-time energy consumption (kWh), charge session durations, and equipment alerts and faults. It serves as a critical tool for generating comprehensive reports and sending immediate alerts for hardware errors.
- **Fleet Management Systems (FMS) & Telematics**: FMS centralizes vehicle tracking, mileage, and maintenance records. While most systems require manual entry, the Town may opt to utilize telematics to automate data collection in real-time, significantly reducing labor required for physical logging. Fleet management logs should include asset IDs, vehicle make and model, VIN, license plate, odometer, initial cost, maintenance and associated costs, and other items as required to be reported for ACF.
- **Utility Billing Records**: Monthly utility bills can be used to conduct detailed financial analyses and serve as a verification tool for energy consumption data displayed in the CMS.
- **Maintenance Logs**: Staff should maintain frequent updates to logs including asset IDs, repair descriptions, and associated costs to accurately track the labor dividend realized through EV adoption.

DATA COLLECTION SCHEDULE

The Town should compile key metrics monthly to allow for timely flagging of any concerns or issues, such as under- or over-charging, equipment outages, or staff noncompliance. If not automatically provided by software, staff should calculate charging station uptime with a goal of 97% uptime.

Table 6 outlines recommended data collection frequencies based on the Town's available technology. To ensure consistency in manual tracking, staff should establish a fixed monthly schedule, such as the last Friday of each month, and utilize calendar reminders to reinforce reporting habits and data integrity. While monthly tracking is preferred for most metrics, data must be recorded at least quarterly to identify and address potential issues before they escalate.

TABLE 6: DATA COLLECTION SCHEDULE

Data	Frequency	Data Source / Action Required	
		Automated (CMS, Telematic)	Manual (no CMS, no Telematics)
Charging Costs	Monthly	Automatic report from CMS. Compare total energy usage with utility bill.	Review and log utility bill.
Charge Sessions	Monthly	Automatic report from CMS.	Not tracked.
Energy Consumption	Monthly	Automatic report from CMS.	Review and log utility bill.
Charger Outages	Immediate	Alerts and automatic logging from CMS.	Log outages.
Vehicle Mileage	Monthly	Automatically logged with telematics.	Log odometer readings from vehicles.
Charger Uptime	Monthly	Automatic report generation.	Manual calculation based on time duration of outages.
Fleet Alterations	Monthly	Log any changes to fleet (purchases, decommissions, electrifications)	Log any changes to fleet (purchases, decommissions, electrifications)
Fleet Purchasing Plans	Quarterly	Review medium- and heavy-duty vehicle previous and planned purchases for the calendar year to ensure compliance with ACF.	Review medium- and heavy-duty vehicle previous and planned purchases for the calendar year to ensure compliance with ACF.
Maintenance Costs	Annually	Enter all maintenance receipts into the program immediately. Generate a report annually.	Log all maintenance receipts immediately. Review annually.
GHG Emissions Reduction	Annually	Automatic report from CMS.	Manual calculation using vehicle mileage data.

REPORTING SCHEDULE

The reporting schedule is based on national standard developed by Joint Office of Energy and Transportation as well as requirements from current legislation and known best practices.[29] Monthly compilation of data, as described in the **Data Collection Schedule**, will ensure efficient development of quarterly, semi-annual, and annual reports.

Quarterly Internal Summaries

Regular internal reviews are essential for maximizing charger efficiency and maintaining operational readiness. Each quarterly report should include:

- **Port-Level Analysis:** A summary of activity at each charging port to identify specific hardware showing frequent errors or failing to meet the Town's uptime goals.
- **System Data:** Aggregated performance metrics across all charging locations, including total energy consumption and system-wide uptime.
- **Maintenance & Reliability Log:** A section dedicated to detailing all recorded errors and outages, specific maintenance actions, associated costs, as well as analysis of recurring technical issues.

Annual Performance Summary

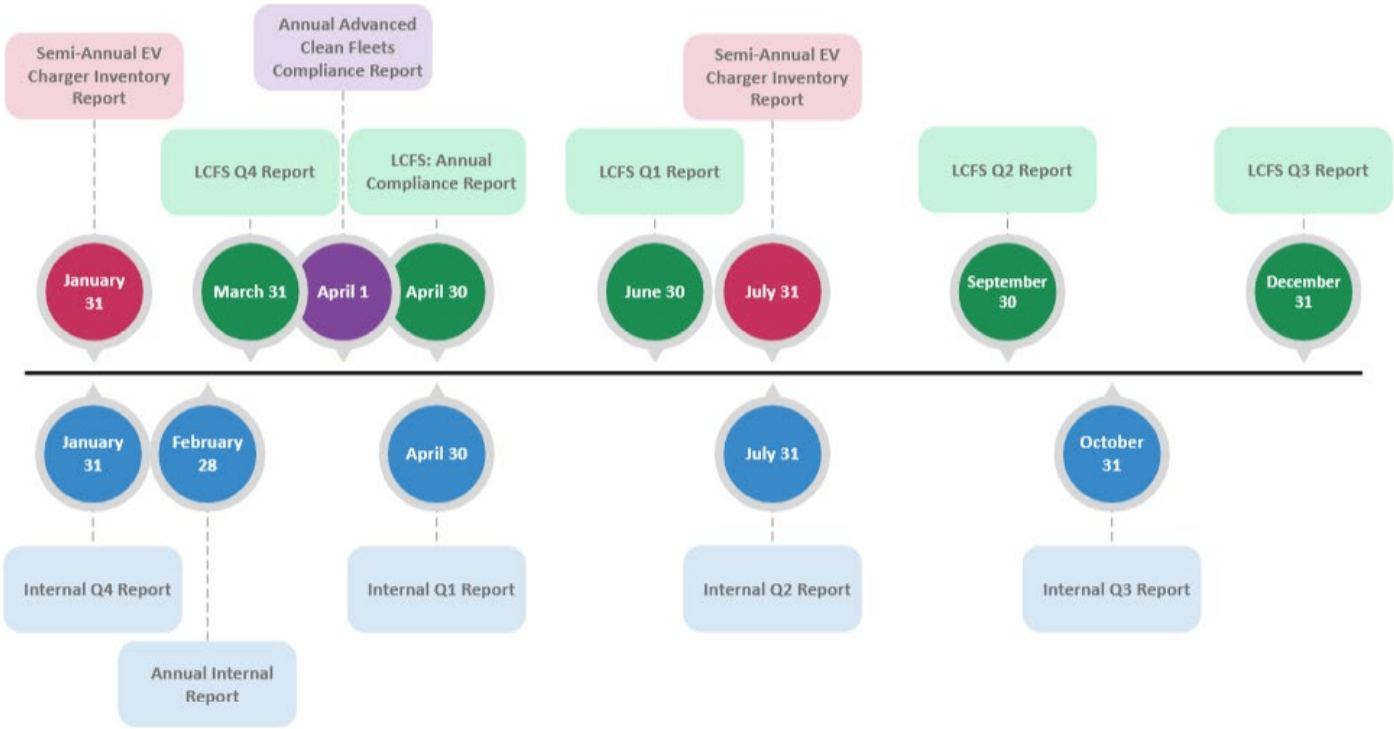
While there are several external reports required by the state, the Town should generate an internal Annual Performance Summary to conduct a high-level analysis of the fleet's transition. This report should expand on the quarterly data to provide a comprehensive look at:

- **Lifetime Metrics:** Year-long totals for energy consumed, miles driven, and total greenhouse gas emissions reductions.
- **Strategic Recommendations:** A dedicated section for recommended operational or budget adjustments to ensure the electrification program remains cost-effective and aligned with the Town's goals.

Figure 10 summarizes the reporting schedule for internal reports and required reporting to external entities, as detailed in the following subsections.

[29] https://driveelectric.gov/files/ev-chart-data-guidance.pdf

FIGURE 9: REPORTING SCHEDULE



ADVANCED CLEAN FLEETS REPORTING

To stay in compliance with ACF, the Town must submit an annual compliance report on Truck Regulation Upload, Compliance, and Reporting System (TRUCRS) by **April 1** each year until 2045. The compliance report consists of state or local government agency information and information about each medium- and heavy-duty fleet vehicle subject to ACF.[30] Additionally, changes to a fleet much be reported **within 30 days** of any vehicle addition, vehicle removal, vehicle conversion to zero emission vehicle, and if a backup vehicle has exceeded the allowable mileage.[31]

EV CHARGER DATA AND RELIABILITY STANDARD REPORTING

In accordance with AB 2061, the California Energy Commission (CEC) requires semi-annual reporting for all EV charging stations installed on or after January 1, 2024. Because the Town does not operate publicly funded, publicly accessible DC fast chargers, it is currently exempt from submitting Uptime Reports. However, the Town must submit semi-annual EV charger Inventory Reports detailing infrastructure specifications.[32]

- **First Report Due**: January 31, 2027 (covering July-December 2026)
- **Second Report Due**: July 31, 2027 (covering January-June 2027)
- **Future Schedule**: Submissions will continue on this same semi-annual timeline.

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[30] https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-state-local-government-agency-fleet
[31] https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/ac/acffro11.pdf
[32] https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program/ev-charger-data-and-reliability-0

The Town should verify whether its networked charging provider is enrolled as the reporting agent and if they will provide the required reports to the CEC; if not, the Town must act as the primary recordkeeping and reporting agent for these submissions.

LCFS REPORTING (OPTIONAL)

As described in the **Financing Plan**, the LCFS program offers a market-based opportunity to offset energy costs by earning and monetizing credits. To participate and maintain compliance, the Town must utilize the LCFS Reporting Tool and Credit Banking and Transfer System (LRT-CBTS) to submit the following:

- **Quarterly Fuel Transaction Reports**: These reports log the total energy expended by chargers (kWh) and are due three months after the end of each quarter (e.g., June 30 for Q1 and September 30 for Q2).
- **Annual Compliance Report:** Due every April 30, this report reconciles quarterly data with the assumed carbon intensity of the equipment for the preceding calendar year.

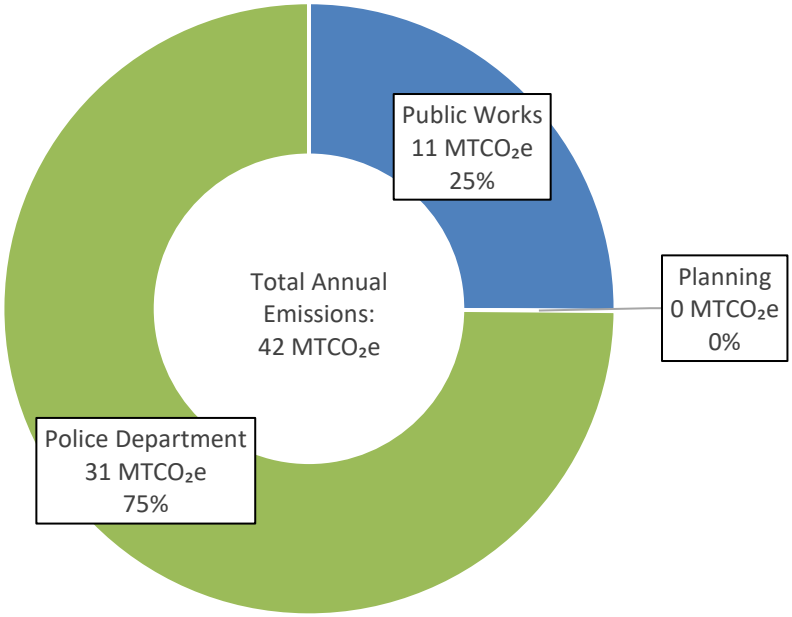
IMPACT AND COST ASSESSMENT

CARBON EMISSIONS REDUCTION

The Town's municipal fleet currently generates approximately 42 metric tons of carbon dioxide equivalent ($MTCO_2e$) annually. This baseline calculation is derived from 2025 odometer readings and accounts for the Town's enrollment in Marin Clean Energy (MCE) Deep Green service. Because this service provides 100% renewable electricity, there are no upstream carbon emissions associated with electric vehicle charging, meaning every mile shifted from fossil fuels to electricity results in a 100% tailpipe emission reduction.

As illustrated in **Figure 11**, emissions are heavily concentrated within the Police Department, which reflects both its large vehicle count and heavier use of vehicles.

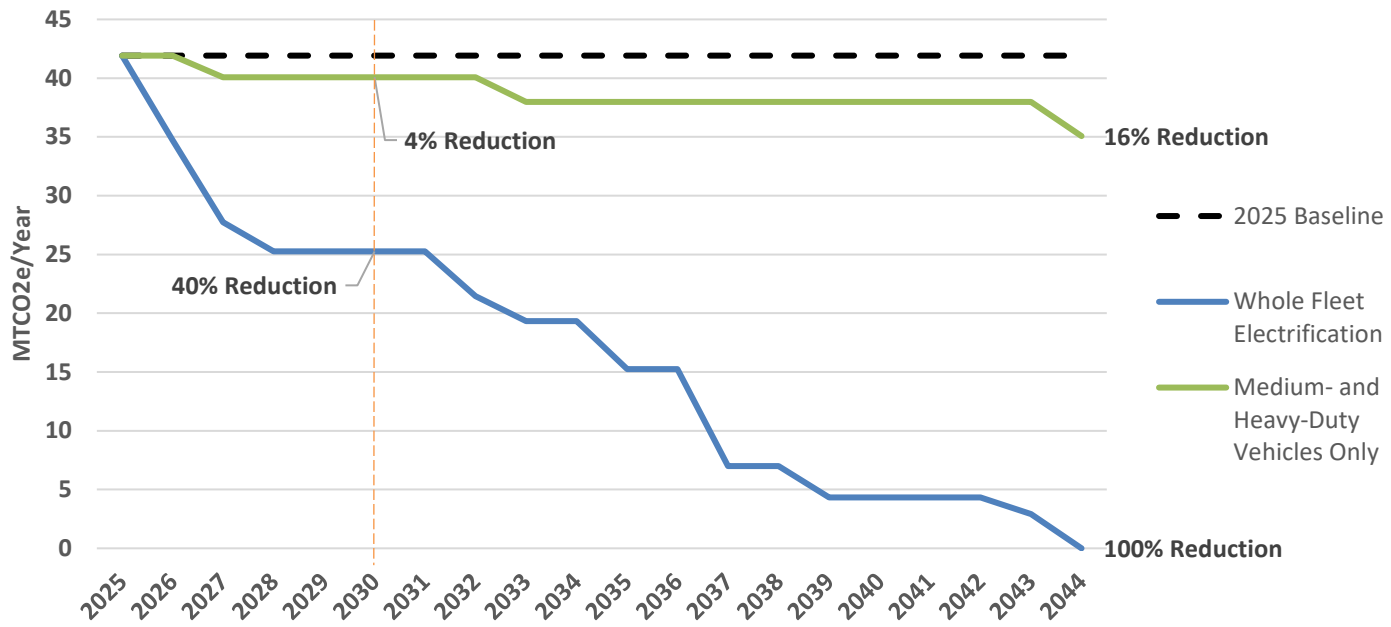
FIGURE 10: ANNUAL CARBON EMISSIONS OF VEHICLE FLEET BY DEPARTMENT



The transition to a zero-emission fleet provides a path to reaching the goals set in the Town's CAP as described in the **Policies and Plans Summary**. **Figure 12** projects carbon reductions under two primary scenarios:

- **Medium- and Heavy-Duty Vehicles Only:** Focuses exclusively on vehicles subject to ACF regulatory requirements. This scenario does not include light-duty vehicles or emergency response vehicles excluded from ACF.
- **Whole Fleet Electrification:** Achieves a 100% reduction by 2044 by considering all municipal assets, including the light-duty and emergency response vehicles which are not required to be electrified under ACF.

FIGURE 11: EMISSION REDUCTION SCENARIOS



While full fleet electrification yields the maximum environmental benefit, the Town's immediate progress is constrained by the current market availability of specialized medium- and heavy-duty ZEVs. Strategically addressing these technology and budget challenges during the planning and procurement process will be essential.

VEHICLE TOTAL COST OF OWNERSHIP

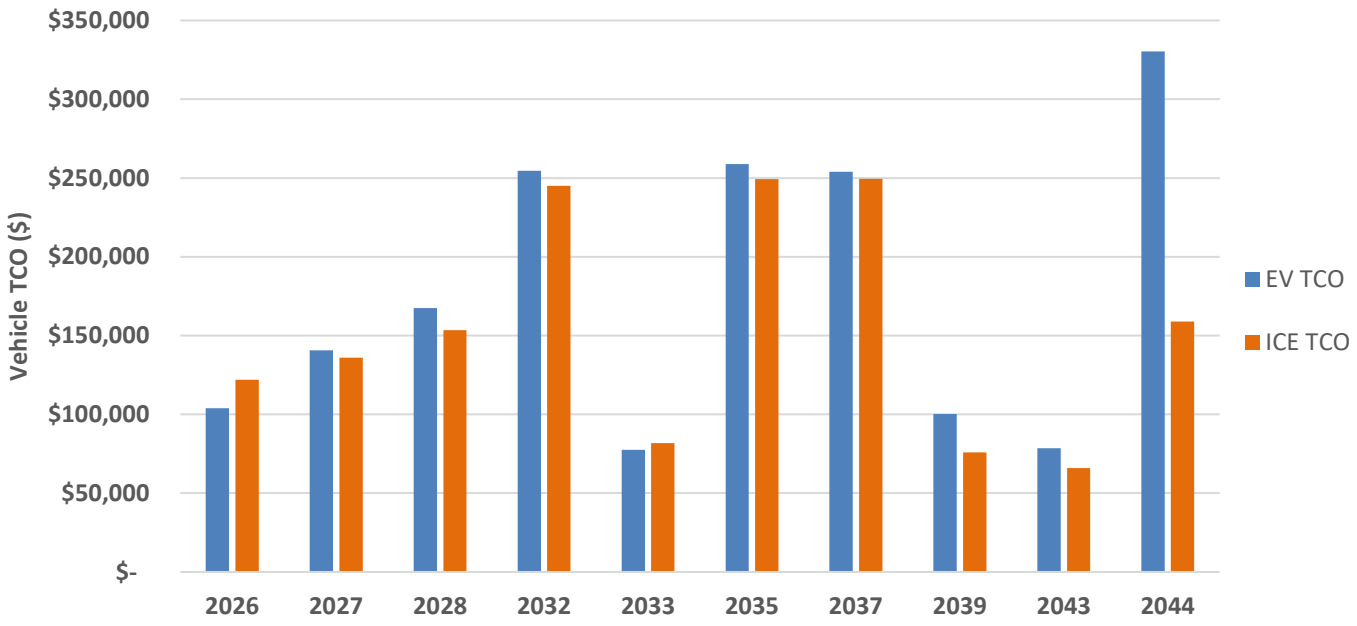
Figure 13 summarizes the total cost of ownership (TCO) excluding incentives for all expected vehicle electrification purchases by year. This analysis considers the electrification of all the medium- and heavy-duty vehicles as required by the Advanced Clean Fleets regulation, as well as the light-duty and emergency vehicles which are not required for electrification under Advanced Clean Fleets.

The total cost of ownership includes the purchase price of the vehicle, lifetime fueling costs, and lifetime operations and maintenance costs. As further discussed in **Appendix B: Fleet Electrification Methodology**, the TCO calculations do not account for resale value of the vehicle, the cost of upfitting specialty vehicles, or the cost of Electric Vehicle Supply Equipment (EVSE). The TCO estimates represent the cost for the Town prior to any financing opportunities or incentive, rebate, or credit programs. TCO calculations in the long-term do not include any assumptions for reduced purchase prices of EV models over the next 10 years, which are likely to change the financial outlook. There are a few uncertain factors that could impact these savings estimates. For instance, if purchased EVs last longer than current ICE vehicles, the estimated savings will increase, or if purchased EVs last less than current ICE vehicles, the estimated savings will decrease.

The figure shows vehicle purchases by purchase year, but the costs displayed include operating costs expected over the lifetime of the new vehicle stretching from the purchase date through the end of its lifespan. For example, an EV purchased in 2026 with a 10-year life span realizes annual savings for the Town through 2036, compared to the alternative scenario of purchasing an ICE vehicle. Those savings are aggregated in the figures below. Dollar amounts are provided in nominal dollars.

Although the results in this section do not include incentives for vehicle purchases, it is likely that there will be incentives, rebates, or credits available to help reduce the TCO for fleet electrification. Detailed information about funding and financing will be provided in a separate report.

FIGURE 12: TCO OF VEHICLE PURCHASES – WHOLE FLEET ELECTRIFICATION



When considering the electrification of the entire fleet, the total cost of ownership of transitioning from current business-as-usual vehicles to electric replacements is estimated to cost the Town $229k in marginal costs. Electrification of Public Works is expected to lead to the highest relative increase in the marginal total cost of ownership for fleet vehicles. The significant marginal costs for the Town are primarily due to the current vehicle purchase cost differences between ICE vehicles and EVs, particularly for specialty Public Works vehicles. The higher purchase price of EVs is typically larger than the cost savings from the fuel and maintenance cost difference, causing the EV TCO to typically be larger than the ICE TCO.

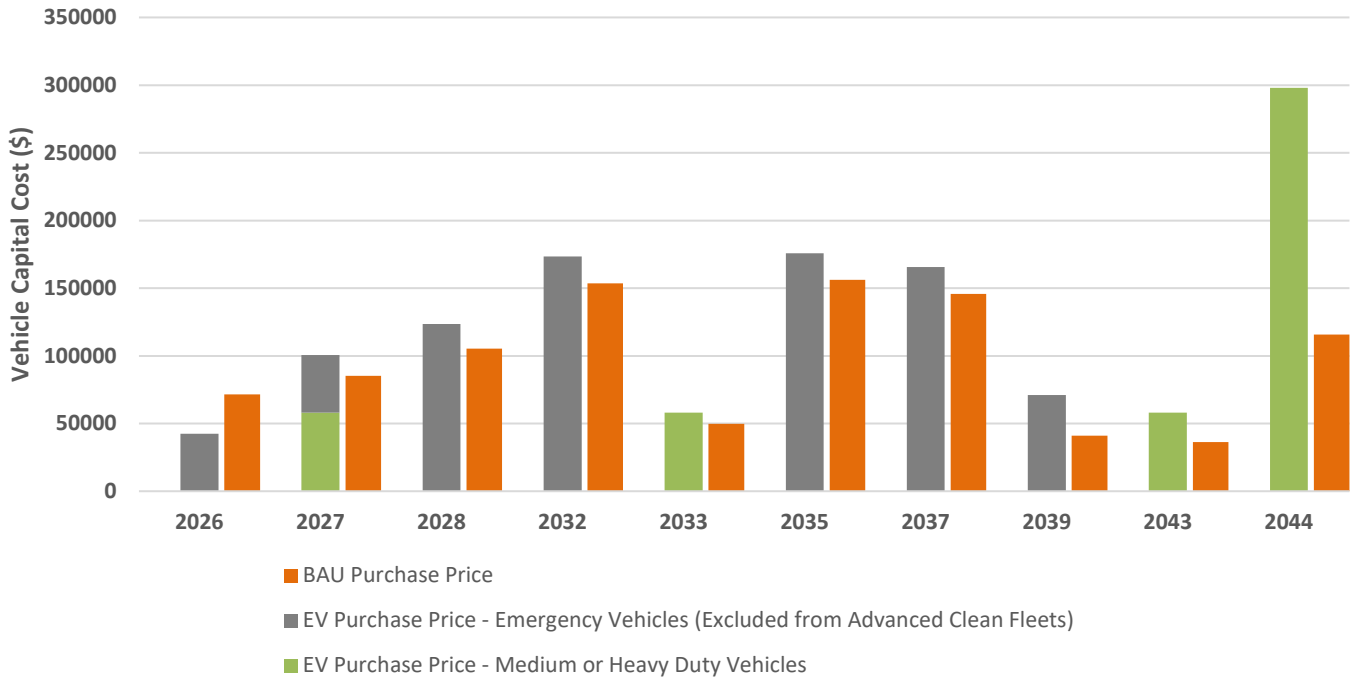
Potential Rightsizing Opportunities: There may be assets in the Town's fleet that are opportunities for downsizing or rightsizing. For instance, 1 vehicle (PW truck #4 dump truck) identified in the Town's fleet that may travel on average less than 1,000 miles per year according to the odometer reading and model year of the vehicle provided by the Town. However, the Town is encouraged to review the specific operational needs of this vehicle to determine whether it is a valid downsizing or rightsizing opportunity, candidate for electrification, or whether it qualifies for the Advanced Clean Fleets Backup Vehicle Exemption. The Town may be able to identify underutilized assets that could be replaced with smaller, more fuel-efficient models, allocated to other operations, or consolidated with existing vehicles in the fleet.

Overall, falling MSRPs of long-range EVs, lower fuel costs and lower maintenance costs combine to enable some EVs to provide cost savings to the Town's fleet. This is particularly true for vehicles with high mileage, where high fuel and maintenance costs may represent additional room for cost savings. However, in program areas where vehicles have low usage, EVs are unlikely to show TCO savings under current costs.

ESTIMATED CAPITAL BUDGET NEEDS FOR VEHICLE REPLACEMENT

Despite the potential for TCO savings resulting from vehicle electrification, in most cases, based on current market prices, replacing an existing vehicle with an electric option will require higher upfront capital costs than replacing the same vehicle with a business-as-usual (BAU) like-for-like option. **Figure 14** includes the estimated annual capital budget needed to purchase EVs for the Town's fleet in accordance with the ZEV Purchase Schedule Fleet Electrification Timeline.

FIGURE 13: ESTIMATED CAPITAL BUDGET NEEDS – WHOLE FLEET ELECTRIFICATION



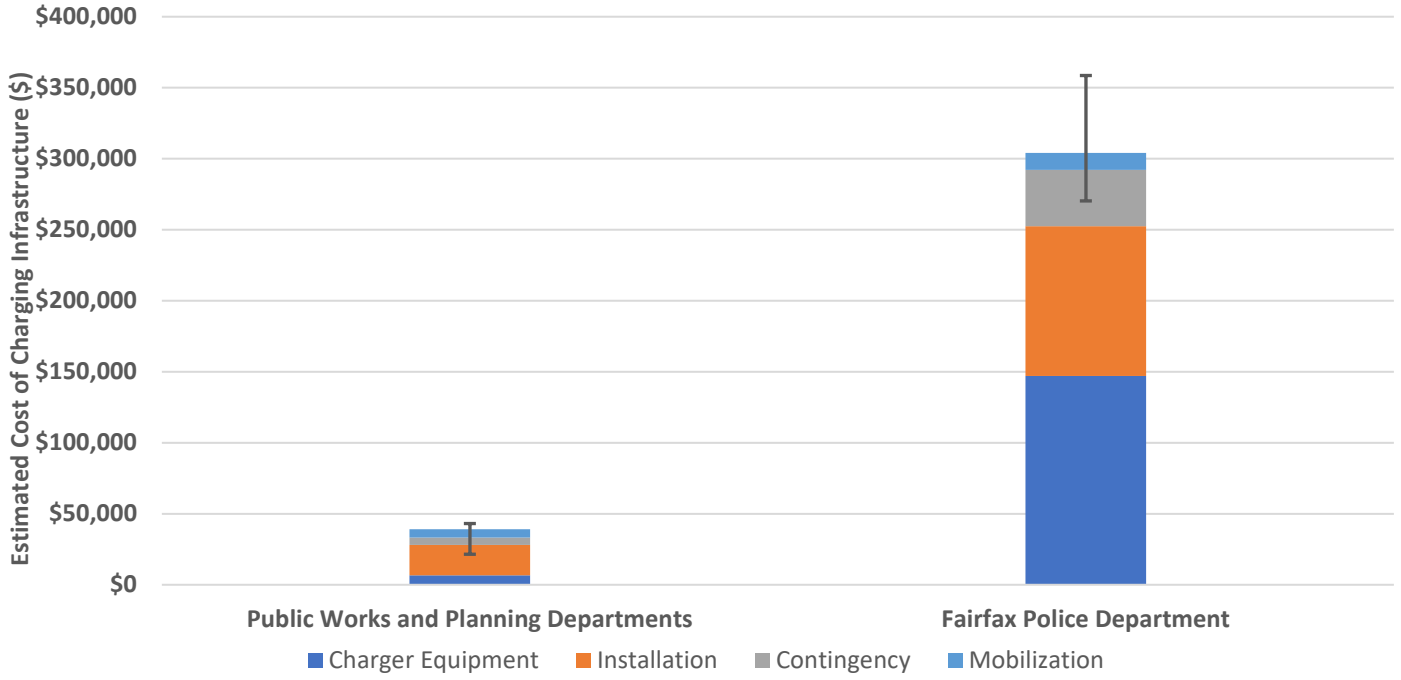
It is important to note that the budget needs included in **Figure 14** include some EV options that may not yet be in full production or which are chassis conversions requiring custom building, both of which increase purchase costs. Alternative electric replacement options are likely to continue to come onto the market over the next 10-20 years. It should be expected that capital budget requirements for models that require customization will fall between now and when the Town is required to make replacement decisions in later years.

PROJECTED INFRASTRUCTURE COSTS

This section presents projected electric vehicle infrastructure costs for each facility based on build out to meet full electrification needs. The costs listed are total estimates for the given sites if all infrastructure is installed at once, and may not be reflective of project-specific costs if the Town pursues phased implementation of the required charging infrastructure. **Figure 5** summarizes the estimated costs by component across Town departments for base infrastructure needs, not including inflation estimates, along with a 15% contingency. Costs include all charging station hardware and installation costs, but do not include costs for procurement management, trenching estimates, nor estimated overhead for Public Works staff. Cost estimates are subject to change given changing market conditions and project parameters. Range bars reflect potential cost variations depending on installation method, and whether hired electrical contractors or Town employees complete the work.

The Town has enrolled in the PG&E EV Advisory Services program and may pursue EV Power Ready program applications to support EV charging infrastructure at the Corporation Yard.

FIGURE 14: ESTIMATED EV CHARGING INFRASTRUCTURE COSTS



Beyond the costs shown in the figure above, conduit, wiring and trenching, and additional electrical infrastructure upgrades to building equipment can add substantial costs if charging infrastructure connects to existing building meters or requires new electrical service. Charge management software may be an option for the Town to control the power draw across charging stations, ensuring total draw never exceeds building capacity for sites without sufficient electrical capacity on the existing service.

Over the next 10–20 years, the Town's fleet electrification timeline should align with the Town's phased charging infrastructure plan to ensure all future electric vehicles have sufficient charging capacity in place. The Town is

recommended to continue preparing for fleet electrification by prioritizing infrastructure installation at high-priority domiciles and pursuing available funding and financing opportunities to reduce costs. Implementation should focus on design and engineering assessments at locations requiring new electrical service or significant capacity upgrades so that construction timelines remain aligned with vehicle procurement schedules.

MAKE-READY COST

Make-ready infrastructure refers to the electrical and civil infrastructure required to support future charger installation, excluding the charging station hardware itself. This typically includes trenching, conduit routing, stub-ups or junction boxes at future charger locations, electrical equipment upsizing, and concrete pads.

Installing conduit and stub-ups to future charging locations during initial construction can significantly reduce future installation costs by avoiding the need to reopen pavement, disrupt operations, and remobilize contractors. Though there may be a higher upfront cost during the initial phase, installing appropriately sized electrical service, switchgear, and distribution equipment during the initial phase can avoid costly electrical upgrades later.

Make-ready costs vary depending on facility conditions, trenching distance, electrical capacity requirements, and whether utility service upgrades are required. Typical make-ready costs may range from $5,000 to $15,000 per charging port, subject to change based on facility conditions and charging station selection.

OPERATIONS AND MAINTENANCE COSTS

If the charging infrastructure is purchased directly, the Town of Fairfax would pay an initial purchase price for the equipment and installation of their chargers at the start of each construction phase, and then annual operations and maintenance costs for the remaining lifetime of the chargers. Operations and maintenance requirements are detailed in the **Operations and Maintenance Plan**.

Estimated annual operations and maintenance costs:

- Level 2 charging stations: $400 per station according to the Alternative Fuels Data Center.[33]
- DCFC stations: $400-$1,200 per station depending on the warranty, due to the complexity of these charging stations compared to Level 2 charging stations.
- Network connectivity: $100 to $500 per port depending on the provider and contract terms.

EV chargers are assumed to have a useful life of approximately 10 years, with the most likely damaging factor to be external causes (e.g., vandalism, severe weather, etc.). Since the Town has procured charging infrastructure through a CaaS model, these maintenance and networking costs are typically included with the CaaS contract.

[33] https://afdc.energy.gov/fuels/electricity-infrastructure-maintenance-and-operation

FINANCIAL AND ENVIRONMENTAL IMPACT SUMMARY

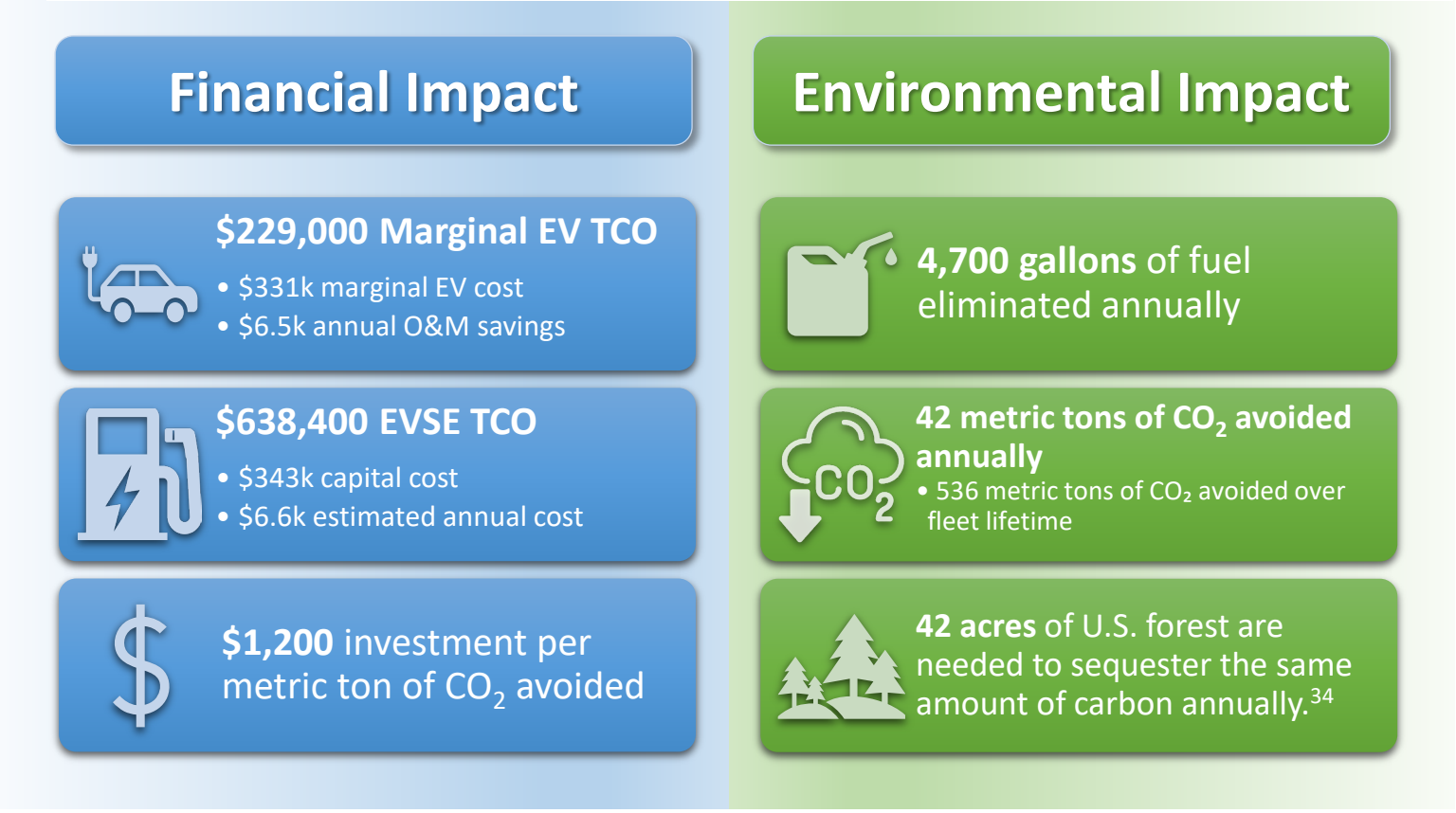
While transitioning the municipal fleet requires an upfront capital investment, the shift delivers measurable, long-term environmental and operational benefits in return. **Figure 15** summarizes the total cost of ownership and quantifies the environmental impact of the transition to show the overall cost of carbon reduction for the Town.

Transitioning the whole fleet is estimated to result in a marginal TCO of $299,000. This figure represents the lifetime cost difference between electric models and their ICE equivalents.

The infrastructure component of this transition includes a projected EVSE TCO of $145,000, which accounts for approximately $115,100 in upfront capital and installation costs plus $3,000 in estimated annual operations and maintenance. *It is important to note that this EVSE TCO calculation only reflects the costs associated with the new infrastructure identified in this plan and does not account for the ongoing annual maintenance or networking costs of the Town's existing charging stations.*

When viewed as an environmental investment, the Town is projected to spend approximately $1,000 for every metric ton of CO_2 avoided. This investment will eliminate roughly 3,000 gallons of fossil fuel consumption annually, resulting in a 42 $MTCO_2e$ annual reduction in tailpipe emissions due to the Town's enrollment in MCE Deep Green.

FIGURE 15: FINANCIAL AND ENVIRONMENTAL IMPACT SUMMARY



[34] https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator-calculations-and-references

FINANCING PLAN

The electric vehicle (EV) and electric vehicle supply equipment (EVSE) funding opportunities presented in this document are provided as preliminary estimates and are subject to change over time. While the Town of Fairfax may potentially meet the eligibility criteria for these programs, it is important to note that eligibility and funding are not guaranteed. The availability of funding and specific program requirements may vary based on external factors and government policies. Therefore, the Town is advised to conduct further research and engage with relevant authorities to determine the most current and accurate information regarding funding opportunities. Funding estimates listed in this document are limited to currently available vehicle electrification or electric vehicle charging funding sources, although the Town should note that there may be alternative formula allocation funds or future funding opportunities available. Some anticipated future funding opportunities are listed below for reference. The estimates are provided for informational purposes only and should not be considered as a definitive commitment of funding.

SUMMARY OF RESULTS

- The Town may receive up to $27,250 in total EV and EVSE funding.
- The Town may incur around $572,400 in total marginal costs, given $229,000 from whole fleet electrification and $343,400 in total installation costs from EV charging infrastructure, but estimated EV and EVSE incentive, rebate, and funding opportunities could reduce this number to around $545,150.

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TABLE 7: SUMMARY OF FUNDING OPPORTUNITIES

PROGRAM	FUNDING BREAKDOWN	ITEMS FUNDED	TOTAL FUNDING AVAILABLE
MCE EV Charging Rebate Marin Clean Energy	EV charger rebates for $4,000-$4,500 per Level 2 port up to 20 per site. Projects located in a State-designated Priority Population may be eligible for an additional $500 per port.	2 additional Level 2 ports to be installed at the Corporation Yard.	Up to $10,000 (EVSE funds)
California Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) CALSTART	EV incentives for HVIP eligible vehicles, up to a maximum of 30 vehicles per year. Funding is available first-come, first-serve. HVIP to be applied at the point of purchase.	No vehicles electrified through 2030 on the ZEV Purchase Schedule Fleet Electrification Timeline are identified as eligible for incentives.	Up to $- (EV funds)
California Clean Fuel Reward (CCFR) California Air Resources Board	Medium- and heavy-duty EV point-of-sale discount. Funds are available on a first-come, first-served basis from a participating retailer.	Through 2030, 1 vehicle may be eligible for incentives.	Up to $7,500 (EV funds)
TAM – EV Fleet Rebate Program Transportation Authority of Marin	EV rebates for the replacement of up to 10 ICE vehicles each year. New purchased or leased light-duty battery electric vehicles are eligible for $750-$2,500 in rebates per vehicle depending on vehicle type.	Through 2030, 5 light-duty vehicles may be eligible for incentives. Medium- and heavy-duty vehicles will be considered on a case-by-case basis.	$9,750 (EV funds)
TAM – EV Supply Equipment Grant Program Transportation Authority of Marin	EV charger rebates for employee-only or publicly accessible Level 1 and 2 stations at public agencies. Recipients are provided with funds up to $3,000 per Level 2 charger.	There are no projects identified in this study applicable to this funding criteria.	$- (EVSE funds)
TOTAL			**Up to $27,250[35] in EV & EVSE Funds**

[35] HVIP and CCFR cannot be stacked together for the same vehicle, except for Class 8 EVs. Where both apply, only the higher-value incentive is included in the total.

MCE EV Charging Rebate

Details: Workplaces that will offer EV charging to employees and/or fleet, commuter parking lots, such as a park & ride or ferry terminal, and multifamily property of four or more units that will offer EV charging to residents are all eligible for EV charging rebates. The total rebate amount will depend on your MCE rate structure with Deep Green customers receiving the most at $875 per Level 1 port and $4,500 per Level 2 port. For both rate structures, rebates are capped at 40 Level 1 ports per site and 20 Level 2 ports. Projects located in a State-designated Priority Population, like the Town Hall, may be eligible for an additional $500 per port. Rebates will be awarded until funds have been exhausted on a first-come, first-serve basis.

How to Apply: Applicants can submit an Interest Form on the website. MCE will then provide technical assistance if needed as well as a customized EV Charging Planning Report and the Rebate Reservation Form. Once the project scope is finalized, an MCE-approved hardware and software vendor can be selected and installation can begin.

Learn More: https://mcecleanenergy.org/ev-charging/

Hybrid and Zero-Emission Truck & Bus Voucher Incentive Project (HVIP)

Details: Hybrid and Zero-Emission Truck & Bus Voucher Incentive Project (HVIP) provides point-of-sale vouchers for ZEV and NZEV trucks and buses, ranging from $7,500 to $240,000, for a maximum of 30 vehicles per applicant per year. The Town may be eligible to receive HVIP vouchers for electric vehicle replacements or purchases. Furthermore, Class 2b pickup trucks are now eligible for rebates for local governments.

Through 2030, the Town's fleet electrification timeline does not include the electrification of vehicles eligible for HVIP funding. Some vehicles, such as the Rizon e16M, would qualify for higher value HVIP incentives (e.g., $60,000-$85,000), but these purchases fall later in the timeline. Moving up the electrification of these vehicles could allow the Town to take advantage of these incentives while funding remains available. However, it is not guaranteed these funds will be available in the future when the Town is ready to purchase these vehicles. Vouchers will be available until funds are exhausted.

Innovate Small E-Fleets: The Town may qualify for additional funds through the Innovative Small E-Fleets (ISEF) program. Since fleets can only use a maximum of 5 ISEF vouchers total for all time, the incentive was not quantified. The ISEF voucher amount is greater than the HVIP Base Vehicle Incentive, up to double the HVIP Base Vehicle Incentive depending on the vehicle class. The maximum funding available per voucher is capped at 90% of the vehicle MSRP. Eligibility for the ISEF program includes public fleets with 20 or fewer vehicles that have a GVWR greater than 8,500 lbs. Only rentals, short-term leases, truck-as-a service, and other innovative solutions are eligible under this program. Long-term leases (at least 36 months) and straight purchases are not eligible, as they are processed through the standard HVIP.

How to Apply: Fleets do not directly apply for HVIP vouchers. Instead, fleets must purchase a vehicle from an HVIP-approved dealer, which is responsible for securing the voucher from HVIP after purchase. The incentive amount will be included at point-of-sale, at which point the dealer will submit a voucher request to HVIP. Refer to the following link: https://californiahvip.org/purchasers/

Learn More: https://californiahvip.org/im/

CARB California Clean Fuel Reward

Details: Starting June 26th, 2026, the California Clean Fuel Reward (CCFR) will provide point-of-sale price reductions, ranging from $7,500 to $240,000, for a new purchase or lease of a battery-electric medium- and heavy-duty vehicle including drayage trucks, electric semis, box trucks, delivery vans, and other fleet vehicles. This reward can be applied to all eligible vehicles in a transaction and there is no limit on how many awards an agency or business can receive. The CCFR can be stacked with the Carl Moyer program, but only Class 8 vehicle rewards can be stacked with HVIP incentives, making this a good alternative for Class 2b – Class 7 vehicles if HVIP funds run out or if the vehicles are not eligible for HVIP. This program can also be stacked with other state, local, regional, and other incentives as allowed by those programs as well as the California Electrical Distribution Utilities (EDUs) financing programs and CARB's Truck Loan Assistance Program. However, the combined total of all stacked funds cannot exceed 90% of the total cost of the vehicles, not accounting for taxes and fees.

Rebates will be awarded until funds have been exhausted on a first-come, first-serve basis. There is $250 million in funding available in 2026 with more than $1 billion in total funds anticipated from now through 2030.

How to Apply: Customers can visit an eligible Participating Retailer who will verify their program eligibility and gather and submit the required documents. Customers can then begin the process of procuring vehicles through the retailer at the reduced vehicle price. The retailer will then submit proof to the CCFR program who will supply them with a reimbursement.

Learn More: More information on how to participate and Participating Retailers is expected to be released at this site soon: https://cleanfuelreward.com/site/home

TAM EV Fleet Rebate Program

Details: The Transportation Authority of Marin (TAM) is offering EV rebates for Marin County public agencies replacing ICE fleet vehicles with zero-emission or near-zero-emission options either through a new purchase or lease. Agencies can receive rebates for up to 10 qualifying vehicles each year. Award amounts for vehicles range from $750 per zero emission motorcycle up to $2,500 per new light-duty battery electric ZEV. Used light-duty fuel cell and battery ZEVs are eligible for $1,000 per vehicle, while new E-bikes, plug-in hybrid vehicles, and other vehicles are eligible for up to $1,500 per vehicle.

Potential funds are available on a case-by-case basis for medium- and heavy-duty vehicles to meet local match requirements for other grant programs. Rebates will be awarded until funds have been exhausted on a first-come, first-serve basis each year.

How to Apply: Applicants can submit a Reservation Request for vehicles to EVRebate@tam.ca.gov including the quantity, make/model, and estimated purchase month as well as a description of the ICE vehicles to be retired. A signed Letter of Intent will then be requested and once that is approved, vehicles may be purchased. Vehicle information must then be sent to TAM for rebate processing. More information on the application process can be found at https://www.tam.ca.gov/wp-content/uploads/2024/01/TAM-Fleet-Rebate-Program-FINAL-2023.pdf.

Learn More: https://www.tam.ca.gov/alt-fuel-electric-vehicle-program/

TAM EV Supply Equipment Grant Program

Details: The Transportation Authority of Marin is offering EV charger rebates for employee-only or publicly accessible Level 1 and 2 stations at Marin County public locations. Recipients are provided with matching funds of 88.25% of the complete installation up to $1,500 per Level 1 charger and 100% of complete installation up to $3,000 per Level 2 charger. There is also the potential for agencies to receive funds for Level 3 charging equipment and other innovative charging pilots on a case-by-case basis.

Rebates will be awarded until funds have been exhausted on a first-come, first-serve basis.

How to Apply: Applicants can submit a reservation request with TAM as a part of the MCE EV Charging Rebate Reservation Form. Alternatively, applicants can submit a Reservation Request to DMcGill@tam.ca.gov including the quantity and estimated installation date. A signed Letter of Intent will then be requested and once that is approved, chargers may be purchased and installed. Supporting documents showing completion must then be sent to TAM for rebate processing. More information on the application process can be found at https://www.tam.ca.gov/wp-content/uploads/2024/01/TAM-EVSE-Rebate-Program-FINAL.pdf.

Learn More: https://www.tam.ca.gov/alt-fuel-electric-vehicle-program/

BAAQMD Programs

Details: Currently, BAAQMD funding programs for public fleets are closed or the Town is not eligible, however the Town should check the funding page to stay up-to-date on the status of their other programs.

Learn More: https://www.baaqmd.gov/en/Funding-and-Incentives/Public-Agencies
https://www.baaqmd.gov/en/Funding-and-Incentives/Apply-for-Funding

Low Carbon Fuel Standard Program

Details: Another opportunity is the statewide Low Carbon Fuel Standard (LCFS) program which provides a market-based mechanism for ongoing operational incentives to off-set energy costs. The Town can earn credits based on the number of kilowatt hours dispensed by Town-owned EVI and monetize those to reduce operational costs. Given the rate calculated in the Credit Value Calculator, which will depend on the replacement vehicle type (e.g., electric motorcycle, light-duty EV, medium-duty EV, etc.), the Town can estimate the dollar amount of credits potentially eligible to be received for the gallons of gasoline or diesel fuel offset.

One important consideration when pursuing LCFS credits is how charging equipment contracts are structured. Many vendors offer discounts on equipment, network agreements, or maintenance contracts in exchange for the LCFS credits the chargers generate. Before signing any vendor contracts, the Town should confirm whether credits are being assigned to the vendor and negotiate to ensure any discounts offered are roughly equivalent to the value of those credits.

If the Town prefers to retain its credits, another option is to work with an aggregator, which pools and sells credits on behalf of entities and returns the revenue to them. The amount of revenue depends on the current LCFS credit market price and the terms of the agreement with the aggregator.

How to Apply: Register and report using the LCFS Reporting Tool and Credit Bank & Transfer System (LRT-CBTS)

Learn More: https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard

Leasing and Financing Options

Details: The Town may consider leasing electric vehicles as an alternative to straight purchasing. Leasing can reduce upfront capital costs, provide more flexibility in fast-evolving EV markets, and often includes maintenance and warranty support. Leasing options for light-, medium-, and heavy-duty vehicles may be available through Sourcewell, GSA, or directly from OEMs, dealers, and fleet management services.

Additionally, the Town may consider low-interest financing and credit-enhancing tools designed to support clean transportation projects. Two relevant California financing options include CalCAP (California Capital Access Program) for ZEVs, and IBank's Climate Financing products such as direct loans and loan guarantees.

Learn More: CalCAP: https://www.treasurer.ca.gov/cpcfa/calcap/zero-emission/general_info.asp

IBank's climate financing products: https://ibank.ca.gov/climate-financing/our-products/

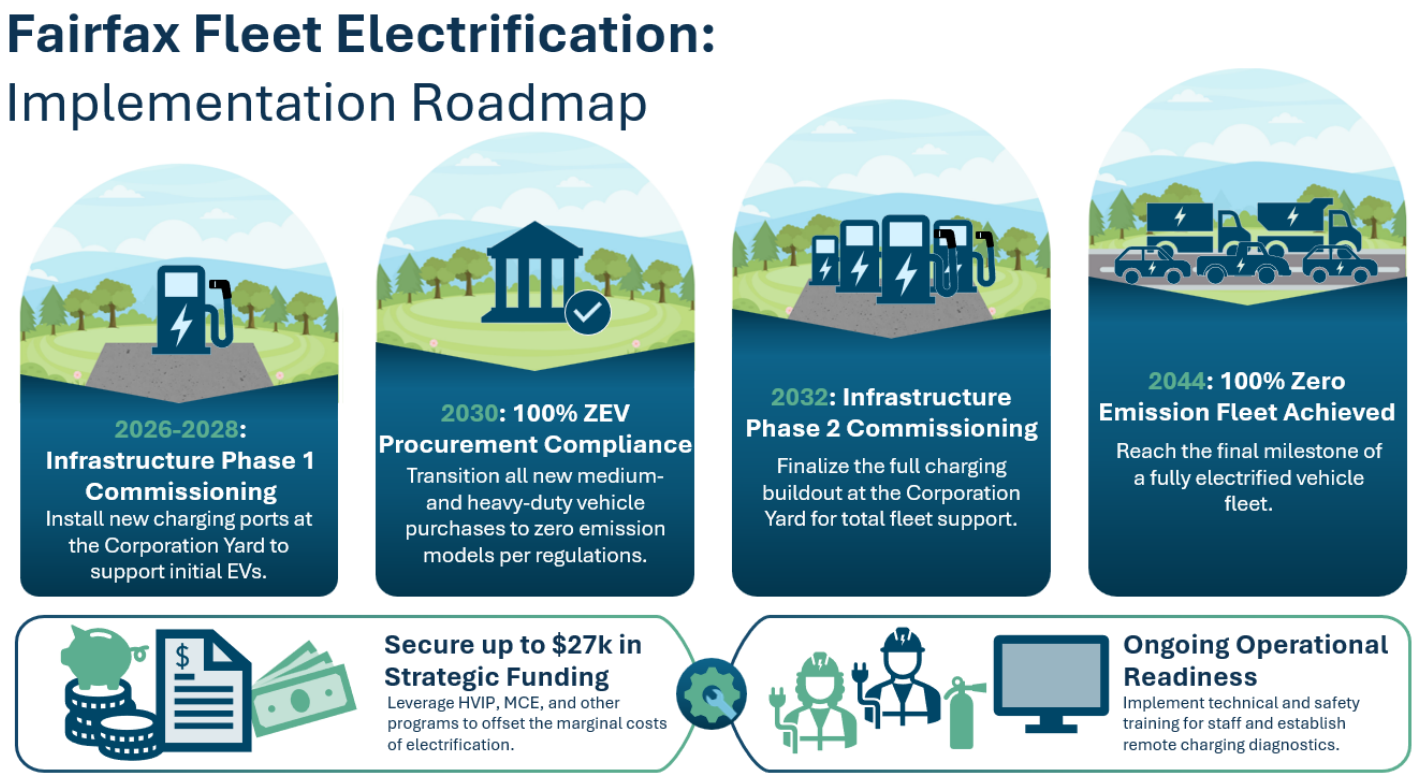
THE PATH FORWARD

The immediate priority is to initiate infrastructure deployment at the Corporation Yard, which serves as the primary domicile for all of the Town's municipal vehicles. The phased buildout at the Corporation Yard is essential to ensure operational readiness for the Town's medium- and heavy-duty transition. These sites will serve as the backbone of the electrified fleet, reliably charging while minimizing disruptions to daily operations.

This Fleet Electrification Plan provides a strategic roadmap for the Town's transition over the next 10 to 20 years. However, successful implementation will require ongoing flexibility and cross-departmental coordination to ensure that vehicle procurement remains aligned with technology maturity and infrastructure deployment.

The recommendations in this plan support the goals of the CAP to reduce emissions and transition to a 100% ZEV fleet. Given the scale of investment required, the Town's fleet is projected to reach full electrification by 2044, meaning fleet transition alone will not achieve carbon neutrality by 2030. Fleet electrification represents one component of the Town's overall climate strategy, and continued investment, paired with available funding opportunities, will help accelerate this timeline where feasible. Moving forward, the Town should continue to monitor the market for new EVs to ensure replacements meet all operational duty cycles. While specific vehicle models and market options will evolve, the projected energy requirements established in this plan provide a baseline for long-term fiscal and infrastructure planning.

To maximize cost-effectiveness, the Town should aggressively pursue state, federal, and regional funding opportunities, which have the potential to reduce the Town's marginal costs substantially. Leveraging these external programs, combined with technical assistance, will be critical to achieving the Town's milestone of a 100% zero-emission fleet by 2044.



APPENDIX A: FLEET VEHICLE AND INFRASTRUCTURE INVENTORY

The Town of Fairfax's Fleet Vehicle and Infrastructure Inventory has been provided as an Excel attachment. The tabs of the spreadsheet are as follows:

- **Fleet Vehicle Inventory** presents Town-provided data, projected electrification timeline, TCO estimates, representative electric replacement options, greenhouse gas (GHG) emissions estimates, optional procurement sources, each vehicle replacement's estimated annual electricity needs, recommended charger type and power level, and more results from the Vehicle Replacement and Procurement Plan and Charging Infrastructure Plan analyses.
- **Facility Inventory** provides a breakdown of Town-provided existing conditions at each domicile facility.
- **TCO Variables** contains the assumptions and economic parameters included in the analysis.
- **Charging Equipment** presents the existing and future charging infrastructure at each domicile. The information includes charger types, power ranges, key technical specifications, estimated equipment costs, and optional procurement sources.

APPENDIX B: FLEET ELECTRIFICATION METHODOLOGY

FLEET ELECTRIFICATION METHODOLOGY

After the initial assessment of the fleet and identification of the studied vehicles, the next step in the analysis was to analyze the data to identify specific electrification opportunities. The fleet electrification methodology consisted of the following major steps:

- **Step 1 - Electrification Timeline**: An electrification timeline was established based on expected replacement years for each vehicle provided by the Town. The electrification timeline presented is in compliance with California's Advanced Clean Fleets Regulation.
- **Step 2 - Electric Vehicle Selection**: Identification and selection of electrification options, either for complete replacement of vehicles based on the availability of equivalent EVs, or other electrification options such as partial electrification, or powertrain replacement.
- **Step 3 – Range Suitability:** Analysis of miles driven by existing vehicles to determine whether each proposed EV has a sufficient battery range to meet existing driving needs.
- **Step 4 - Total Cost of Ownership Analysis for a Fully Electrified Fleet**: A calculation of the total cost of ownership (TCO) that compares the conventional ICE vehicle replacement with potential EV models, comparing a combination of capital costs (vehicle purchase price) and operating costs over the expected lifespan of the vehicle for each replacement option.

While the Fleet Electrification Methodology is presented as a linear process, in order to have the highest confidence in its procurement decisions and to adapt to an evolving market, it is recommended that Step 2 and Step 3 (above) are completed each year as the vehicles in the electrification timeline come up for replacement and the Town begins implementing fleet electrification.

TCO METHODOLOGY

Total cost of ownership (TCO) refers to a calculation of adding capital and operating costs of an asset to determine the total cost of that asset over its lifespan. As part of the analysis, the TCO for two different scenarios of vehicle replacement was calculated: (1) an existing vehicle is replaced with an equivalent ICE vehicle and (2) that same existing vehicle is replaced with the equivalent, or nearly equivalent, EV determined during the vehicle selection process. Given the age of some of the Town's vehicles, the changing availability of vehicle models in the market and to simplify the analysis, a representative ICE vehicle replacement for each vehicle body type (e.g., Ford Explorer for SUV) was used as the equivalent ICE replacement vehicle to create the scenarios in the TCO analysis. The "Representative ICE Replacement" was determined in collaboration with the Town's fleet staff. For heavy-duty vehicles, the ICE replacement vehicle was deemed to be identical to the existing model. *It is important to note that the replacement ICE vehicle choice presented here is used to represent the approximate cost of replacing an existing vehicle with a new ICE vehicle and may not perfectly reflect the Town's actual procurement choice to replace an existing vehicle.*

For both scenarios, the TCO is the sum of the following cost components:

- **Total purchase price**: The sum of the Manufacturer Suggested Retail Price (MSRP) and, if provided, any auxiliary equipment. Any available incentives or rebates were not included in the base TCO analysis but the impacts of these incentives or rebates on the cost of electrification can be observed through a separate report that will be provided to the Town. For heavy-duty vehicles, the purchase price for the ICE replacement vehicle was calculated using the purchase price of the existing vehicle when available.
- **Annual fuel cost**: This was calculated based on the estimated annual mileage of the studied vehicle. All fuel prices used for these calculations can be found on the TCO Variables tab of **Appendix A**: Fleet Vehicle and Infrastructure Inventory. For this calculation, the gasoline prices are based on data provided by the Town, and diesel prices are based on average diesel prices in the area as of September 2025. Annual fuel cost for EVs was calculated using the cost of electricity at the domicile facility of the ICE vehicle being replaced, according to the electricity rate tariffs from Pacific Gas & Electric (PG&E) and invoices provided by the Town and does not include costs from any potential increase in demand charges.
- **Annual operations and maintenance (O&M) cost**: The Town provided estimated annual maintenance costs for
- some vehicles in the fleet. Where the maintenance costs were not provided, an average cost of $0.15 per mile was used for ICE vehicles based on data from the American Public Works Association, ranging from $0.10 for light duty vehicles to $0.20 for heavy duty vehicles. For the TCO comparison, EV O&M costs are an average of 60% of the ICE vehicle O&M costs, based on the DOE Office of Energy Efficiency and Renewable Energy data.[36]

The TCO calculations did not include the cost of Electric Vehicle Supply Equipment (EVSE), as that is likely to be funded through a different budget pool and is being addressed in subsequent deliverables. All components included in the TCO calculations were calculated over the expected lifespan of the existing vehicle. All components included in the TCO calculations were calculated over the expected lifespan of the existing vehicle. The expected lifespan was based on the Town's replacement policy for Police Department vehicles, which are retired at the earlier of 100,000 miles or 10 years. For all other vehicles, a service life of the earlier of 150,000 miles or 25 years was assumed for planning purposes.

Resale Value

The resale value of the vehicle at the end of its lifecycle was not considered in the TCO analysis and was set to zero for both ICE vehicles and EVs. Due to the relatively short amount of time that EVs have been on the market, there is not enough robust data on the resale value of an EV in use for the lifecycle in years as reflected in the Town's service life policy. However, it is expected that as the EV market grows and technology continues to improve, resale values are expected to become more competitive with EVs as compared to ICE vehicles.

[36] https://www.energy.gov/eere/vehicles/articles/fotw-1190-june-14-2021-battery-electric-vehicles-have-lower-scheduled

APPENDIX C: EV CHARGING NEEDS METHODOLOGY

The EV Charging Needs Methodology section details the modeling process used to determine the total charging needs for the Town fleet. The figure below outlines the general approach used in the detailed EVSE analysis. Each step in this approach is further discussed in the following sections.

EVSE NEEDS ANALYSIS APPROACH

When determining the required charging infrastructure to support fleet electrification, there are two primary constraints that must be solved. First, charging ports must have power high enough to charge vehicles during their dwell time. Appropriate port ratings (kW) may vary by vehicle type or use case. Second, there must be enough charging ports to provide sufficient energy to every vehicle parked at each domicile facility. Solving for both constraints enable facility-specific recommendations of charging infrastructure needs to be made for every domicile facility based on the energy needs and operating patterns of the vehicles at a given facility, enabling a fleet to cost-effectively plan for implementation.

To support long-term charging infrastructure planning and anticipated future fleet needs, the analysis evaluates a full vehicle electrification scenario to inform cost-effective phasing decisions. While it is likely that, due to expected expansion of medium- and heavy-duty electric vehicle options, the Town may not purchase the exact electric models identified as representative replacements, the required energy needs calculated is expected to remain reflective of future needs. Thus, leveraging an aggressive vehicle electrification scenario ensures that charging infrastructure recommendations are sufficient to support all possible vehicle electrification and avoid the need for expensive retrofits.

FIGURE 16: EVSE ANALYSIS APPROACH

Aggregation of Energy Needs by Facility	• Based on each vehicle's annual mileage and antipated electric vehicle replacement option from the preliminary vehicle analysis for the fleet electrification, calculate annual expected EV charging needs (kWh) by domicile facility
Duty Cycle Analysis	• Analyze fueling transaction reports, telematic data and/or qualitative data on vehicle operations to determine accurate vehicle duty cycles, minimum dwell times and probabilistic distributions of charging times
Identify Required Port Ratings	• Based on duty cycle analysis, calculate required minimum port ratings (kW) for each facility, or a mix of port ratings depending on vehicle type
Load Modeling	• Leverage probablistic charging distributions to model 10-year load growth from vehicle electrification down to the 15-min interval (only completed for priority sites)
Charging Infrastructure Needs Identification & Cost Estimate	• Determine amount (# of ports) of charging infrastructure required to support future load and estimate cost of required infrastructure
Energy Cost Simulation	• Calculate annual energy costs associated with operation of required infrastructure and EV load growth based on relevant electrical rates and determine the levelized cost of charging on a per kWh basis

DATA SOURCES

Two primary data sources were used to assess the dwell times, identify required port ratings, and calculate charging probabilities for Town of Fairfax's fleet.

- **Mileage Data:** A record of current mileage data from existing fleet vehicles, including all existing hybrids and internal combustion engine vehicles, was analyzed to inform required port ratings and provide insight into when vehicles currently fuel. Town-provided annual fueling data was used when possible. Vehicles without annual fueling data used miles per gallon estimates provided by EPA, which was converted to estimated annual fueling consumption.
- **Staff Interviews:** Interviews with Town Public Works and Police Department staff were used to supplemental qualitative information on how vehicles operate, providing key insights into vehicle dwell times and use-cases.

Mileage data and staff interviews were leveraged in different ways to analyze vehicle duty cycles to identify dwell times and combined with expected per vehicle energy needs to identify required port ratings for each facility. Duty cycles for Town of Fairfax's vehicles may vary by department, but assumptions for hourly operations and weekly schedules were provided by the Town on a vehicle-by-vehicle basis. For Town of Fairfax's domiciles, average dwell times between shifts were used based on standard operations or generalized assumptions (e.g., Police patrol operations), assuming vehicles parked at the end of their shift and charge until the start of their next shift. These factors were taken into account in the charging needs analysis.

LOAD MODELING & OVERALL INFRASTRUCTURE NEEDS

After determining port ratings, the number of required ports must be calculated. On facilities with a small number of vehicles this was determined by adding charging ports and manually calculating the minimum number of ports that could provide the required daily energy in the expected dwell time. For larger sites, a sophisticated probabilistic load modeling technique was used, as described below.

CHARGING PROBABILITIES AND VEHICLE SCHEDULES

To enable accurate modeling of load growth over time and identification of total charging infrastructure needs to be installed across sites with many vehicles, a site-specific, annual, probabilistic method was used. Different levels of charging were used as a basis for the analysis: existing chargers, low-power (7.2 kW), mid-power (12 kW), and high-power (40 kW+).

For the analysis, vehicles were assigned to these categories and assumed to primarily charge at charging stations of the assigned power level. Power level assignment was based on the length of time to charge vehicles on each charge level, or assigned manually based on use case (e.g., patrol vehicles to high-powered chargers). Each category of vehicles was then assigned a duty cycle of charge windows, representing periods of the day during which vehicles were likely to charge. For a typical Town vehicle, it will operate 6:00AM – 3:30PM Monday through Friday, sometimes weekends and night hours, and will return to charge at the end of its shift. Some Town emergency response vehicles might have more narrow use cases and will be given smaller windows to charge, accounting for their more restrictive 24/7 operational schedules (e.g., Police). Direct current fast charging stations (DCFC) may be available to support Town Police operations at the Police Department, and the Town is encouraged to utilize public charging as necessary for Police or other high utilization vehicles. A combination of Level 2 and Level 3 charging stations are recommended in this analysis and are anticipated to be sufficient for the Town's overnight charging needs.

For the analysis, each day is broken into 15-minute intervals, and it is generally assumed that each individual 15-minute interval has a roughly even probability of seeing a charging event. Vehicle energy needs are averaged across each category to produce a representative vehicle, which is assumed to mimic each vehicle's need on the aggregate. The varied duty cycles and charging schedules are incorporated into the simulated charging needs analysis to more accurately reflect the unique service demands and operational requirements of each department.

LOAD PROFILE BUILDER

To simulate the electric load profiles from charging of a future electric vehicle fleet, time-dependent load profiles were modeled. The Load Profile Builder leverages the charge windows and energy needs discussed above to produce a vector of 35,040 numbers for each charge power level, which represents the load on each power level of chargers for that facility over the course of an entire year.[37] It takes the following major inputs:

- Number of EVs at each facility[38]
- The total annual amount of electrical energy needed to fuel all EVs domiciled at each facility
- Maximum number of ports available
- The power rating of each port, as determined for each facility, with different port ratings for different sub-classes of fleet vehicles, as appropriate[39]
- The facility's time-of-use structure, if available
- Whether the load profile should be built to allow unrestricted charging according to driver behavior and ignore TOU pricing impacts; or manage charging to avoid highest TOU cost impacts
- The dwell times at which overnight or weekend charging treatment should be assumed based on standard vehicle operating behavior

These choices are given to the load profile builder as inputs in a control panel of a spreadsheet-based simulator. Over the course of a non-leap year, there are 35,040 charging intervals. For each charging power level (as based on inputs given above) the load profile builder creates a vector of 35,040 intervals indicating the load on each group of chargers for that 15-minute interval. The load profile builder then takes the sum of all charging in all intervals across all ports, producing a total facility-wide annual load profile. The user is given this annual total along with an error signal which compares the total delivered energy to the required annual energy as determined in the fixed inputs. If the total amount of energy delivered is below the amount needed, the number of chargers can be increased to absorb the need. The load profile builder also indicates the number of vehicle conflict incidents over the simulated year (vehicle returned to port only to find no available chargers in its power level), which in conjunction with the maximum coincident ports may be used to estimate enough chargers.

TOTAL PORT NEEDS

Over the next 10-20 years, the Town's fleet electrification timeline should be aligned with the Town's charging infrastructure plan, to ensure all future electric vehicles have sufficient charging available. From the simulations of annual

[37] 365 days per year x 24 hours per day x 4 intervals per hour (with each interval at 15 minutes).
[38] This determines the maximum number of vehicles charging at any given time, since the number of ports active is assumed to be less than or equal to the number of vehicles.
[39] Example: Police patrol have a different dwell times and behavior from Town administrative vehicles and would require higher powered ports.

charging completed for each facility, the total port needs for each power rating can be identified by analyzing the maximum number of coincident ports in use. To account for variations in vehicle charging needs, a safety factor of around 20% was applied to the maximum coincident port number to determine the final recommended port counts. In this report, the total port needs were provided for all Town domiciles, assuming full electrification of the Town's fleet vehicles.

APPENDIX D: FLEET FACILITY ASSESSMENT

The Town of Fairfax's Charging Infrastructure Plan assessed municipal fleet vehicles at all domicile facilities. When evaluating each facility for potential charging station locations, there are a few important items to consider. The existing transformer location, and location of a potential new transformer will help determine where charging stations should be placed. Whenever feasible, charging stations should be placed close to major electrical equipment, such as transformers and distribution panels, and buildings whenever possible to reduce the amount of trenching required at the facility, which will reduce construction costs.

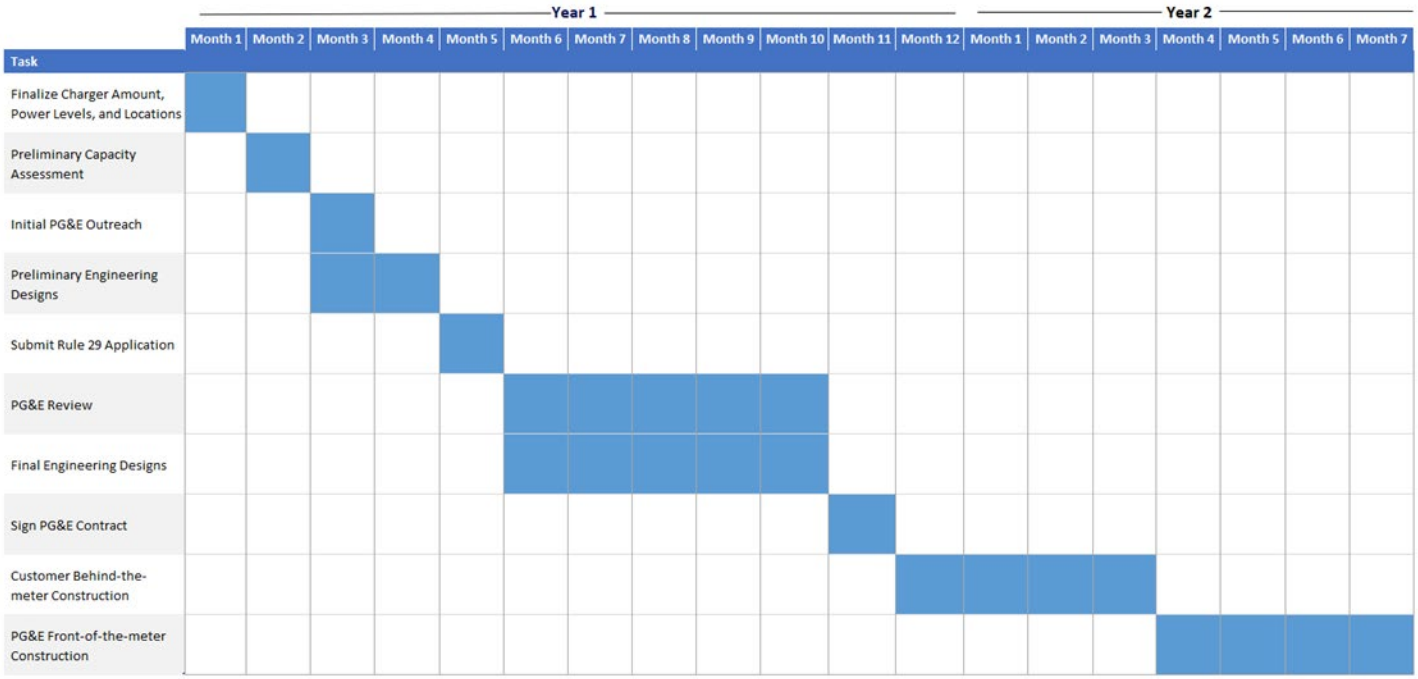
Information on the existing conditions of each facility was collected through discussions with Town staff and building drawings and interval data provided by the Town. For facilities with limited existing electrical capacity information, an electrical assessment is recommended verify the availably capacity. PG&E may be able to assist through their EV Advisory Services program.

For the Town's other facilities which may not have sufficient capacity available on the existing service, the Town is encouraged to engage with PG&E through their EV Advisory Services program to discuss new service or service upgrade options for these locations. Through PG&E, the Town may utilize the EV Power Ready Program (also called Rule 29), where PG&E will design, install, own, and maintain all electrical equipment up to the meter, and the Town would be responsible for covering the charging stations as well as the distribution/service infrastructure behind the meter. PG&E will only provide one EV service extension per premises through the program, where premises is generally defined as a single enterprise on an undivided parcel of land.[40] In practice, this means the Town has one opportunity to use EV Power Ready at each site, so the timing and sizing of the application is an important decision. If the Town pursues the program earlier in the phasing plan, the electrical service should be sized to accommodate the full buildout across all phases. Alternatively, the Town may choose to wait and apply later, though any charging stations installed on the existing service in the interim would not benefit from the cost-effective PG&E BEV rate unless they are eventually moved to the new dedicated service.

Figure 17 illustrates the necessary steps and time required to install charging infrastructure at a Town site when upgraded electrical service capacity is obtained through the EV Power Ready Program. The installation process can take around 19 months from the time charger amounts, power levels, and locations are determined by the Town to PG&E's completion of front-of-the-meter construction. However, timelines can vary depending on many factors including the length of PG&E's review process and equipment lead times. The Town is encouraged to engage PG&E as early as possible in this process, typically after the preliminary capacity assessment, during the preliminary engineering designs, to minimize project wait times during PG&E's review.

[40] https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_RULES_29.pdf

FIGURE 17: ESTIMATED PROJECT TIMELINE THROUGH EV POWER READY



CORPORATION YARD/POLICE DEPARTMENT

A summary of facility information for the Corporation Yard/Police Department (142/144 Bolinas Rd) is shown below in **Table 8**. This information was collected as described in the right column. **Figure 18** shows the potential layout for the charging stations with locations for new charging stations.

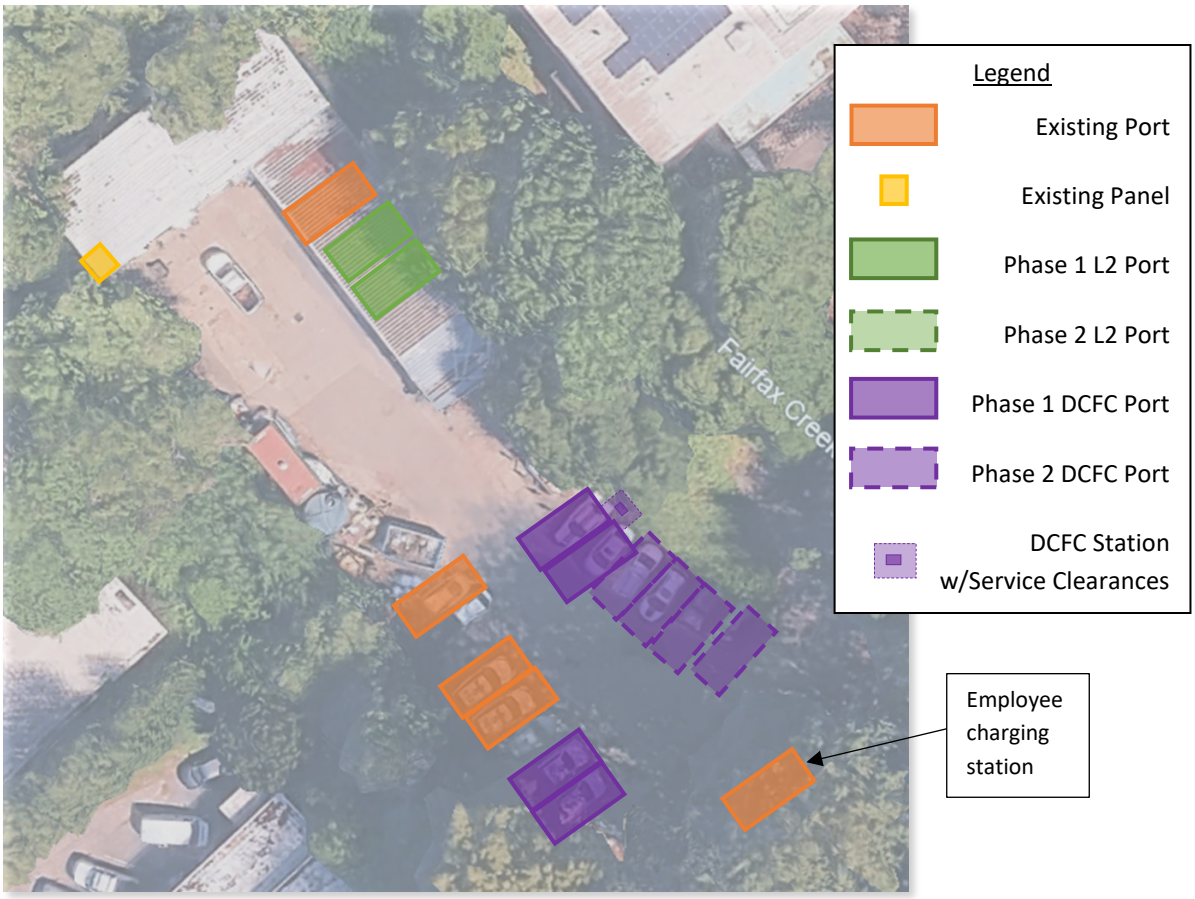
All Public Works and Police Department vehicles domicile at the Corporation Yard. However, the Police Department requires their own charging infrastructure to ensure reliable charging during emergency operations. To accommodate this, their charging needs were calculated and shown separately, but their facility information remains identical. While there appears to be enough capacity on the existing service for the Corporation Yard Level 2 chargers, the existing service is not sufficient for the DCFC for the Police vehicles. Therefore, new or upgraded service is recommended at this site.

Alternatively, as a temporary short-term solution, the Town could install Phase 1 of the Corporation Yard charging infrastructure (2 x Level 2 ports) in 2026, and the Police and Public Works vehicles could share charging infrastructure temporarily until 2028 while the new or upgraded service is installed for the Police DCFC. The Town may also consider relocating the Police Department vehicles to another location due to the limited available space at the Corporation Yard for DCFC stations.

TABLE 8: CORPORATION YARD FACILITY INFORMATION

Parking Capacity	**20 fleet parking spots**	
Vehicle Duty Cycles	**6:00am – 3:00pm Monday-Friday PD Admin vehicles: 1 shift a day, some take home Patrol vehicles: 24/7, 2 shifts a day, hot-seated**	
Existing Electrical Service	**120/240 V**	
Existing Electrical Service Size	**200 A**	*Taken from metered panel information from LUmbertis EV charger plans*
Peak Demand	**19.32 kW**	*Taken from provided PG&E Interval Data from 06/2023-12/2025*
Capacity of Distributed Energy Resources (DER)	**-**	
Available Electrical Capacity on Existing Service	**32A Available**	
Existing Charging Infrastructure (# of ports)	**4x Chargepoint 7.2 kW (Level 2)**	
Phase 1 Charging Infrastructure Needs (# of ports)	**2026: 4 x 40 kW (DCFC) 2028: 2 x 12 kW (Level 2)**	
Phase 2 Charging Infrastructure Needs (# of ports)	**2032: 4 x 40 kW (DCFC) 2043: 2 x 7.2 kW (existing PD Level 2)**	
Source of future charging infrastructure electricity (new/existing electrical service)	**Existing service will suffice for the Level 2 chargers. New service is required for the DCFC.**	*Confirm with electrical contractor prior to installation.*
Available Utility Electrical Capacity	**LHC: 585 kW (San Rafael), Voltage: 12 kW, Phase Count: 3**	*As shown on PG&E's GRIP Tool. Available capacity is subject to change.*

FIGURE 18: CORPORATION YARD/POLICE DEPARTMENT CONCEPTUAL LAYOUT



FLEET FACILITY LOAD PROFILES

Figures 19-20 show the maximum load distribution of an average week for each domicile facility after all vehicles have been electrified. The load distribution is shown both with and without charge management strategies. The fluctuation Monday through Friday increases slightly throughout the given week due to probabilistic assignments, but all weekdays have equal likelihood of charging probability. These load distributions were simulated by Optony's Load Profile Builder as described in **Appendix C**: EV Charging Needs Methodology. The Corporation Yard Load Profile includes existing facility loads using the provided interval data for this facility.

FIGURE 19: CORPORATION YARD LOAD PROFILE

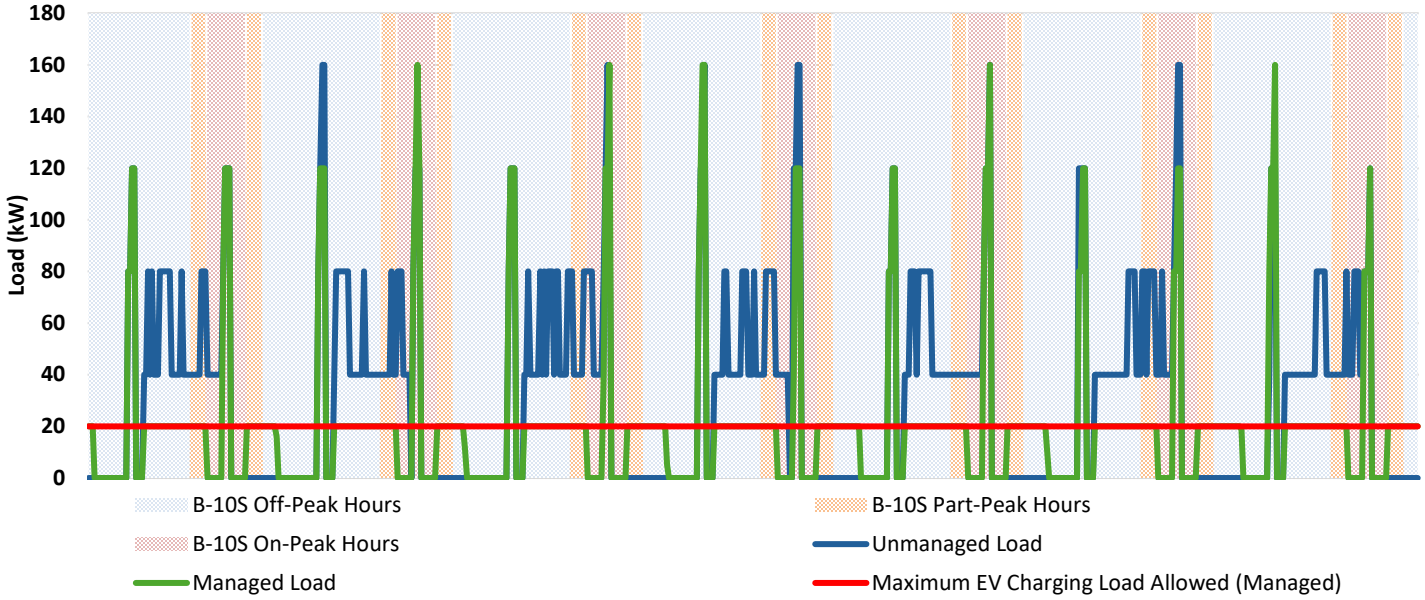



FIGURE 20: POLICE DEPARTMENT LOAD PROFILE