

Energy Assessment  
Related Bristol Specific Plan Project  
Santa Ana, California

Prepared by:



**Kimley-Horn and Associates, Inc.**  
1100 W. Town and Country Road, Suite 700  
Orange, California 92868  
*Contact: Mr. Ace Malisos*  
714.939.1030

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# 1 INTRODUCTION

This report documents the results on the Energy Assessment to evaluate potential short- and long-term energy consumption impacts of the Related Bristol Specific Plan Project (Project or proposed Project). The assessment evaluates the potential construction and operational energy consumption associated with the Project and determine the level of impact the Project would have on the environment.

This analysis has been undertaken to analyze whether the proposed Project would result in any new or substantially more severe significant environmental impacts as compared to the conclusions discussed in the certified final Santa Ana General Plan Update Program Environmental Impact Report (General Plan EIR) (State Clearinghouse No. 2020029087). The purpose of this analysis is to document whether any new energy-related impacts would occur from the Project (described below) compared to what was identified in the General Plan EIR pursuant to State California Environmental Quality Act (CEQA) Guidelines Section 15162 (et seq.).

## 1.1 Project Location

The project site is in the south portion of the City of Santa Ana (City). The approximately 41.13-gross-acre project site is bordered by MacArthur Boulevard to the north, Sunflower Avenue to the south, and Bristol Street to the east. The west side of the site is bordered by Plaza Drive between MacArthur Boulevard and Callen’s Common and by existing development between Callen’s Common and Sunflower Avenue to the west.

Vehicular access to the project site, which is currently developed as a predominately commercial shopping center, is provided from Bristol Street, Callen’s Common, MacArthur Boulevard, Sunflower Avenue, and Plaza Drive.

Regional access to the project site is provided from Interstate 405 (I-405) from the onramp/offramp at Bristol Street approximately 0.5 mile to the south and from State Route 55 (SR-55) from the onramp/offramp at MacArthur Boulevard approximately 1.25 miles to the east. The site is approximately 1.5 miles northwest of John Wayne Airport; see **Exhibit 1: Regional Vicinity Map** and **Exhibit 2: Site Vicinity Map**.

## 1.2 Project Description

The Project would demolish the existing shopping center (approximately 465,063 square feet [sf]) and related infrastructure to allow for a mixed-use development. As shown in **Table 1: Land Use Summary**, the Project proposes 3,750 multi-family residential units; 350,000 sf of commercial uses; a 250-key hotel; a senior living/continuum of care use with 200 units; and approximately 13 acres of common open space. Parking would be provided by above- and below-ground parking structures providing shared parking; refer to **Exhibit 3: Conceptual Site Plan**.

Land Use	Proposed Development	Existing Development
Residential	3,750 du	0
Senior Living/Continuum of Care	200 units	0
Hotel	250 keys	0
Commercial	350,000 gsf	465,063 sf
Open Space (Common)	13.1 acres	0

du = dwelling unit; gsf = gross square feet; sf = square feet

The Project would be constructed in three phases. Construction of the Project may be progressively implemented in stages, provided that vehicular access, public facilities, and infrastructure are constructed to adequately serve the development. The project site would be graded and excavated in phases. The total export is expected to be approximately 1,340,325 cubic yards (cy) with an import of approximately 10,000 cy. Phase 1 export is approximately 640,550 cy and import is approximately 5,000 cy. Phase 2 export is approximately 214,906 cy and import is approximately 2,000 cy. Phase 3 export is approximately 484,869 cy and import is approximately 3,000 cy. It is anticipated that dewatering will be required due to high groundwater levels in the area. In addition to export and import associated with grading and excavation, all of the existing buildings, pavement, and improvements will be demolished with each phase of construction and exported from the project site.

The Project is anticipated to be implemented over a period of approximately nine years with demolition and construction activities anticipated to commence in the first quarter of 2026 and construction completed in the third quarter of 2036. Construction of Phase 1 is expected to commence in the first quarter of 2026 with completion in the first quarter of 2030 or approximately 42 months. Land uses in the Phase 2 and Phase 3 areas would be operational while Phase 1 is under construction. Phase 2 is expected to commence in the second quarter of 2030 with completion in the fourth quarter of 2032 or approximately 44 months. Phase 3 is expected to commence in the first quarter of 2033 with completion in the second quarter of 2036 or approximately 40 months.

The Phase 1 area is located south of Callen's Common and extends to Sunflower Avenue. Phase 2 and Phase 3 are located north of Callen's Common and extend to MacArthur Boulevard. The Phase 2 area is approximately one-third of the northern portion of the project site and is bordered by MacArthur Boulevard to the north, Callen's Common to the south, Bristol Street to the east, and Phase 3 of the proposed project to the west. The Phase 3 area is bordered by MacArthur Boulevard to the north, Callen's Common to the south, Phase 2 to the east, and Plaza Drive to the west.

Phase 1 includes the demolition of all on-site buildings and infrastructure on the southern portion of the project site bordered by Callen's Common to the north. Subsurface excavation would occur to allow for the construction of up to two levels of subterranean parking. Phase 1 assumes the construction of 1,375 multi-family residential units, 250,000 sf of retail uses, a 250-key hotel, a 200-unit senior living/continuum of care building, and a public open space area, as well as associated landscape improvements and infrastructure upgrades. All existing on-site development north of Callen's Common will remain operational during Phase 1.

Phase 2 includes the demolition of all on-site buildings and infrastructure within the Phase 2 area of the site. Subsurface excavation would occur to allow for the construction of up to two levels of subterranean parking. No subterranean parking would be located under the Bristol Central Park (described below). Phase 2 assumes the construction of 856 multi-family residential units, 65,000 sf of retail uses, public open space areas, as well as associated landscape improvements and infrastructure upgrades.

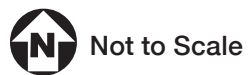
Phase 3 includes the demolition on-site buildings and infrastructure within the Phase 3 area of the site. Subsurface excavation would occur to allow for the construction of one level of subterranean parking. No subterranean parking would be located under the Bristol Central Park (described below). Phase 3 assumes the construction of 1,519 multi-family residential units, 35,000 sf of retail uses, public open space areas, as well as associated landscape improvements and infrastructure upgrades; refer to **Table 2: Conceptual Phasing**.

<b>Use</b>	<b>Mixed-Use/ Village Core District</b>	<b>Mixed-Use/ Residential District</b>		<b>Total</b>
	<b>Phase 1</b>	<b>Phase 2</b>	<b>Phase 3</b>	
Residential (units)	1,375	856	1,519	3,750
Commercial (gsf)	250,000	65,000	35,000	350,000
Hospitality (keys)	250	--	--	250
Senior/Continuum of Care (units)	200	--	--	200

gsf = gross square feet

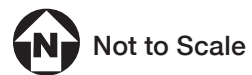


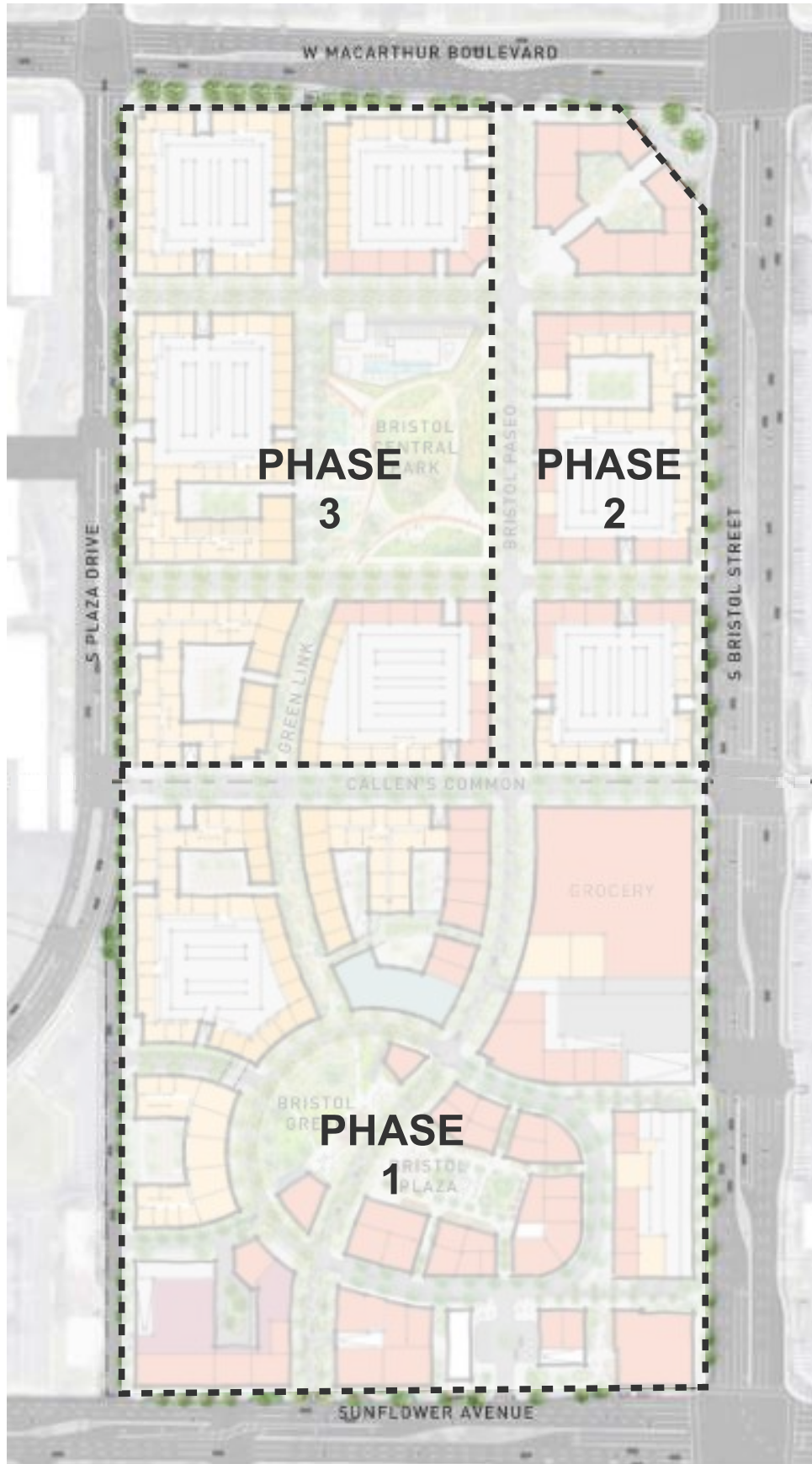
**EXHIBIT 1:** Regional Vicinity Map  
Related Bristol  
City of Santa Ana



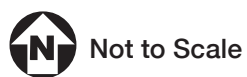


**EXHIBIT 2:** Site Vicinity Map  
Related Bristol  
City of Santa Ana





**EXHIBIT 3:** Conceptual Site Plan  
Related Bristol  
City of Santa Ana





## 2 ENVIRONMENTAL SETTING

### 2.1 Energy Conservation

In 1975, largely in response to the oil crisis of the 1970s, the California State Legislature adopted Assembly Bill 1575 (AB 1575), which created the California Energy Commission (CEC). The statutory mission of the CEC is to forecast future energy needs, license thermal power plants of 50 megawatts or larger, develop energy technologies and renewable energy resources, plan for and direct State responses to energy emergencies, and, perhaps most importantly, promote energy efficiency through the adoption and enforcement of appliance and building energy efficiency standards. AB 1575 also amended Public Resources Code Section 21100(b)(3) to require Environmental Impact Reports (EIRs) to consider the wasteful, inefficient, and unnecessary consumption of energy caused by a project. Thereafter, the State Resources Agency created Appendix F, *Energy Conservation*, in the California Environmental Quality Act Guidelines (CEQA Guidelines). CEQA Guidelines Appendix F is an advisory document that assists EIR preparers in determining whether a project will result in the inefficient, wasteful, and unnecessary consumption of energy.

In addition, the California Natural Resources Agency finalized updates to the CEQA Guidelines in December 2018. CEQA Guidelines Section 15126.2(b) treats “wasteful, inefficient, or unnecessary” energy consumption as a significant environmental impact. As a result, energy thresholds have been incorporated into Appendix G of the CEQA Guidelines. This technical memorandum has been prepared to assess energy impacts in accordance with Appendix G of the CEQA Guidelines.

### 2.2 Energy Consumption

Energy consumption is analyzed in this technical memorandum due to the potential direct and indirect environmental impacts associated with the Project. Such impacts include the depletion of nonrenewable resources and emissions of pollutants during both construction and long-term operational phases.

**Electrical Service.** Southern California Edison (SCE) provides electrical services to the City of Santa Ana (City) through State-regulated public utility contracts. Over the past 15 years, electricity generation in California has undergone a transition. Historically, California has relied heavily on oil- and gas-fired plants to generate electricity. Spurred by regulatory measures and tax incentives, California’s electrical system has become more reliant on renewable energy sources; including cogeneration, wind energy, solar energy, geothermal energy, biomass conversion, transformation plants, and small hydroelectric plants. Unlike petroleum production, electricity generation is not usually tied to the location of the fuel source and can be delivered great distances via the electrical grid. The generating capacity of a unit of electricity is expressed in megawatts (MW). Net generation refers to the gross amount of energy produced by a unit, minus the amount of energy the unit consumes. Generation is typically measured in megawatt-hours (MWh), kilowatt-hours (kWh), or gigawatt-hours (GWh).

**Natural Gas Services.** Southern California Gas Company (SoCalGas) provides natural gas services to the City of Santa Ana and Orange County (County). Natural gas is a hydrocarbon fuel found in reservoirs beneath the Earth’s surface and is composed primarily of methane (CH<sub>4</sub>). It is used for space and water heating, process heating and electricity generation, and as transportation fuel. Use of natural gas to generate electricity is expected to increase in coming years because it is a relatively clean alternative to other fossil fuels (e.g., oil and coal). In California and throughout the western United States, many new electrical generation plants fired by natural gas are being brought online. Thus, there is great interest in

importing liquefied natural gas from other parts of the world. California’s natural gas-fired electric generation increased by 2 percent in 2021, accounting for 50 percent of in-state generation.<sup>1</sup>

The City’s ongoing development review process includes a review and comment opportunity for privately owned utility companies and to provide input on all development proposals. The input facilitates a detailed review of projects by service purveyors to assess the potential demands for utility services on a project-by-project basis. The ability of utility providers to provide services concurrently with each project is evaluated during the development review process. Utility companies are bound by contract to update energy systems to meet any additional demand.

**Energy Usage.** Energy usage is typically quantified using the British Thermal Unit (BTU). Total energy usage in California was 6,922.8 trillion BTUs in 2020 (the most recent year for which this specific data is available).<sup>2</sup> Of California’s total energy usage, the breakdown by sector is 34.0 percent transportation, 24.6 percent industrial, 19.6 percent commercial, and 21.8 percent residential.<sup>3</sup> Electricity and natural gas in California are generally consumed by stationary users such as residences, commercial, and industrial facilities, whereas petroleum consumption is generally accounted for by transportation-related energy use. In 2022, taxable gasoline sales (including aviation gasoline) in California accounted for 13,919,678,835 gallons of gasoline.<sup>4</sup>

The electricity consumption attributable to the County from 2011 to 2021 is shown in **Table 3: Electricity Consumption in Orange County 2011-2021**. As indicated in **Table 3**, energy consumption in the County fluctuates between 2011 and 2014 and then steadily decreased after 2014.

Year	Electricity Consumption (in millions of kilowatt hours)
2011	19,925
2012	20,400
2013	20,280
2014	20,749
2015	20,739
2016	20,242
2017	20,204
2018	20,029
2019	19,857
2020	19,733
2021	18,932

Source: California Energy Commission, *Electricity Consumption by County*, <http://www.ecdms.energy.ca.gov/>, accessed January 26, 2023.

<sup>1</sup> California Energy Commission, *2020 Total System Electric Generation*, <https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2021-total-system-electric-generation>, accessed January 25, 2023.

<sup>2</sup> U.S. Energy Information Administration, *Table F33: Total energy consumption, price, and expenditure estimates, 2020*, [https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep\\_fuel/html/fuel\\_te.html&sid=CA](https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_fuel/html/fuel_te.html&sid=CA), accessed January 25, 2023.

<sup>3</sup> U.S. Energy Information Administration, *California State Profile and Energy Estimates, California Energy Consumption by End-Use Sector, 2020*, <https://www.eia.gov/state/?sid=CA#tabs-2>, accessed January 25, 2023.

<sup>4</sup> California Department of Tax and Fee Administration, *January 2022 – Motor Vehicle Fuel 10 Year Reports*, <https://www.cdtfa.ca.gov/taxes-and-fees/spftrpts.htm>, accessed January 25, 2023.

The natural gas consumption attributable to the County from 2011 to 2021 is shown in **Table 4: Natural Gas Consumption in Orange County 2011-2021**. Natural gas consumption in the County fluctuated with increases and decreases occurring annually.

Year	Natural Gas Consumption (in millions of therms)
2011	639
2012	613
2013	636
2014	545
2015	544
2016	570
2017	576
2018	575
2019	623
2020	595
2021	580

Source: California Energy Commission, *Natural Gas Consumption by County*, <http://www.ecdms.energy.ca.gov/>, accessed January 26, 2023.

Automotive fuel consumption in the County from 2012 to 2022 is identified in **Table 5: Automotive Fuel Consumption in Orange County 2012-2022**. As shown in **Table 5**, on-road automotive fuel consumption in the County increased between 2012 and 2017 and fluctuated from 2018 to 2022. Heavy-duty vehicle fuel consumption steadily increased between 2012 and 2022 with a slight decrease in 2018, 2019, and 2020.

Year	On-Road Automotive Fuel Consumption (gallons)	Heavy-Duty Vehicle/Diesel Fuel Consumption (gallons)
2012	1,114,400,407	107,315,713
2013	1,117,555,370	113,057,847
2014	1,138,328,996	114,856,769
2015	1,165,317,948	117,232,528
2016	1,198,453,055	125,015,099
2017	1,200,683,279	128,632,254
2018	1,192,663,234	125,691,618
2019	1,214,386,012	126,227,616
2020	1,053,930,328	126,407,863
2021	1,191,375,139	131,231,200
2022	1,181,099,783	133,110,300

Source: California Air Resources Board, EMFAC2021.

### 3 REGULATORY SETTING

#### 3.1 State of California

##### **California's Energy Efficiency Standards for Residential and Non-Residential Buildings (Title 24)**

Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the California Energy Commission) in June 1977 and are updated every three years (Title 24, Part 6, of the California Code of Regulations). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. On June 10, 2015, the CEC adopted the 2016 Building Energy Efficiency Standards, which went into effect on January 1, 2017. On May 9, 2018, the CEC adopted the 2019 Building Energy Efficiency Standards, which took effect on January 1, 2020. The 2022 version of Title 24 was adopted by the California Energy Commission (CEC) and became effective on January 1, 2023.

The 2016 Standards improved upon the previous 2013 Standards for new construction of and additions and alterations to residential and nonresidential buildings. Under the 2016 Standards, residential buildings are 28 percent more energy efficient and nonresidential buildings are 5 percent more energy efficient than under the 2013 Standards. Buildings that are constructed in accordance with the 2013 Building Energy Efficiency Standards are 25 percent (residential) to 30 percent (nonresidential) more energy efficient than the prior 2008 standards as a result of better windows, insulation, lighting, ventilation systems, and other features.

The 2019 Standards improve upon the 2016 Standards. Under the 2019 Title 24 standards, residential buildings are about 7 percent more energy efficient, and when the required rooftop solar is factored in for low-rise residential construction, residential buildings that meet 2019 Title 24 standards use about 53 percent less energy than those built to meet the 2016 standards.

The 2022 Title 24 standards became effective January 1, 2023, and will result in less energy use, thereby reducing air pollutant emissions associated with energy consumption across California. For example, the 2022 Title 24 standards will require efficient electric heat pumps, establishes electric-ready requirements for new homes, expands solar photovoltaic and battery storage standards, and strengthens ventilation standards.

On August 11, 2021, the CEC adopted the 2022 Energy Code. In December, it was approved by the California Building Standards Commission for inclusion into the California Building Standards Code. Among other updates like strengthened ventilation standards for gas cooking appliances, the 2022 Energy Code includes updated standards in three major areas:

- New electric heat pump requirements for residential uses, schools, offices, banks, libraries, retail, and grocery stores.
- The promotion of electric-ready requirements for new homes including the addition of circuitry for electric appliances, battery storage panels, and dedicated infrastructure to allow for the conversion from natural gas to electricity.
- The expansion of solar photovoltaic and battery storage standards to additional land uses including high-rise multifamily residences, hotels and motels, tenant spaces, offices, (including medical offices and clinics), retail and grocery stores, restaurants, schools, and civic uses (including theaters auditoriums, and convention centers).

The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, is a statewide mandatory construction code that was developed and adopted by the California Building Standards Commission and the California Department of Housing and Community Development. CALGreen standards require new residential and commercial buildings to comply with mandatory measures under five topical areas: planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality. CALGreen also provides voluntary measures (CALGreen Tier 1 and Tier 2) that local governments may adopt which encourage or require additional measures in the five green building topics. The most recent update to the CALGreen Code was adopted in 2022 and went into effect January 1, 2023. Projects whose permit applications are applied for on or after January 1, 2023, must comply with the 2022 Energy Code.<sup>5</sup>

### **California Public Utilities Commission Energy Efficiency Strategic Plan**

The California Public Utilities Commission (CPUC) prepared an Energy Efficiency Strategic Plan in 2011 with the goal of promoting energy efficiency and a reduction in greenhouse gases. AB 1109, adopted in 2007, also serves as a framework for lighting efficiency. This bill requires the State Energy Resources Conservation and Development Commission to adopt minimum energy efficiency standards as a means to reduce average Statewide electrical energy consumption by not less than 50 percent from the 2007 levels for indoor residential lighting and not less than 25 percent from the 2007 levels for indoor commercial and outdoor lighting by 2018. According to the Energy Efficiency Strategic Plan, lighting comprises approximately one-fourth of California's electricity use while non-residential sector exterior lighting (parking lot, area, walkway, and security lighting) usage comprises 1.4 percent of California's total electricity use, much of which occurs during limited occupancy periods.

### **Renewable Portfolio Standard**

In 2002, California established its Renewable Portfolio Standard program with the goal of increasing the annual percentage of renewable energy in the State's electricity mix by the equivalent of at least 1 percent of sales, with an aggregate total of 20 percent by 2017. The California Public Utilities Commission subsequently accelerated that goal to 2010 for retail sellers of electricity (Public Utilities Code Section 399.15(b)(1)). Then-Governor Schwarzenegger signed Executive Order S-14-08 in 2008, increasing the target to 33 percent renewable energy by 2020. In September 2009, then-Governor Schwarzenegger continued California's commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs the California Air Resources Board under its AB 32 authority to enact regulations to help the State meet its Renewable Portfolio Standard goal of 33 percent renewable energy by 2020. In September 2010, the California Air Resources Board adopted its Renewable Electricity Standard regulations, which require all of the State's load-serving entities to meet this target. In October 2015, then-Governor Brown signed into legislation Senate Bill 350, which requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030. Signed in 2018, SB 100 revised the goal of the program to achieve the 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045. Under the bill, the State cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

<sup>5</sup> California Energy Commission. 2022. *2022 Building Energy Efficiency Standards*, <https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency> (accessed January 2023).

## 3.2 City of Santa Ana

### City of Santa Ana Climate Action Plan

The Santa Ana Climate Action Plan (CAP)<sup>6</sup> was adopted in December 2015. The CAP outlines the City's efforts to reduce carbon pollution and energy use from City operations and the community as a whole. For community-wide GHG emissions, the reduction goal is 15 percent below the baseline year 2008 by 2020, and 30 percent below the baseline year 2008 by 2035. For municipal operations emissions, the reduction goal is 30 percent by 2020 and 40 percent by 2035.

CAP strategies and actions for energy-use reduction are:

- **Property Assessed Clean Energy (PACE) Financing for Commercial Properties.** PACE is an energy efficiency financing program operated by private contractors in many communities in California. PACE financing is available for a wide range of energy and water-saving measures, and for renewable energy generation. Repayment of loans through the program is made on the property tax bill for the property. The financing can be used for a variety of energy efficiency projects, including air conditioning and heating systems, lighting upgrades, cool roofing materials, and solar installations.
- **Southern California Edison Small and Medium Business Direct Install.** The CPUC authorizes certain energy-efficiency programs through Southern California Edison (SCE). SCE sends trained energy efficiency contractors to help small businesses (those using up to 199 kilowatts) identify ways to save electricity. SCE provides free upgrades to customers that may include energy-efficient lighting, signage, sensors, refrigeration, sun-blocking window film, and programmable thermostats.
- **Property Assessed Clean Energy Financing for Residential Properties.** PACE will also be applied to residential properties. Projects include air conditioning and furnace upgrades, air duct sealing, insulation, and small solar installations.
- **Solar Photovoltaic Systems for New Private Installs.** Rebates or incentive payments for installation of solar photovoltaic are available as part of the California Solar Incentive program, which is administered by the CEC.
- **Southern California Edison and Southern California Gas Company Residential Programs.** For residential customers, SCE's efficiency programs include rebates for air conditioner replacement, energy efficient appliances, pool pumps and motors, etc. Southern California Gas Company (SoCalGas) also offers rebates for energy-efficiency upgrades, including furnaces, insulation, and water heaters.
- **Weatherization.** The weatherization program is delivered through the Community Action Partnership and funded through federal grants and local entities. Actions taken in homes can include a number of energy saving measures, such as air-duct sealing, insulation, window glazing, and tune-up or replacement of air conditioning and heating equipment.
- **Southern California Gas Company Commercial Programs.** For commercial customers, SoCalGas offers rebates for replacement of inefficient equipment, including water heaters, boilers, and food service equipment.

<sup>6</sup> Santa Ana Climate Action Plan, <https://www.santa-ana.org/documents/climate-action-plan/>, December 2015, Accessed January 25, 2023.

- **Streetlight Purchase and Retrofit.** SCE owns and operates over 11,000 streetlights in Santa Ana. This measure provides for the City to purchase these streetlights and convert them from high-pressure sodium lamps to light-emitting diode.
- **Benchmarking and Retro-commissioning.** Benchmarking is tracking the energy performance of commercial buildings on an ongoing basis. The Energy Star Portfolio Manager is a free tool for benchmarking and gives an energy performance score between 1 and 100. A score of 75, for example, means that the building performs better than 75 percent of similar buildings. Retro-commissioning is testing and tuning building systems to ensure they operate as designed. For this measure, the City would pass an ordinance requiring that all nonresidential buildings larger than 10,000 square feet report their Portfolio Manager results every seven years, and that buildings with a score of less than 75 must complete retro-commissioning.
- **Green Business Challenge Program.** A Green Business Challenge establishes friendly competition between businesses to improve performance in energy efficiency, water conservation, waste reduction, and other areas. Businesses receive recognition for participating, and the City recognizes those that achieve the largest GHG emissions reduction.

### City of Santa Ana General Plan Update

The following are relevant policies of the Santa Ana General Plan, which may contribute to reducing potential energy impacts.

#### Conservation Element

**Policy 1.2 Climate Action Plan.** Consistency with emission reduction goals highlighted in the Climate Action Plan shall be considered in all major decisions on land use and investments in public infrastructure.

**Policy 1.4 Development Standards.** Support new development that meets or exceeds standards for energy-efficient building design and site planning.

**Policy 1.6 New and Infill Residential Development.** Promote development that is mixed-use, pedestrian-friendly, transit oriented, and clustered around activity centers.

**Policy 1.8 Promote Alternative Transportation.** Promote use of alternate modes of transportation in the City of Santa Ana, including pedestrian, bicycling, public transportation, car sharing programs and emerging technologies.

**Policy 1.9 Public Investment Alternative Transportation Infrastructure.** Continue to invest in infrastructure projects that support public transportation and alternate modes of transportation in the City of Santa Ana, including pedestrian, bicycling, public transportation, car sharing programs, and emerging technologies.

**Policy 1.10 Transportation Management.** Continue to support and invest in improvements to the City's Transportation Management System, including projects or programs that improve traffic flow and reduce traffic congestion.

**Policy 1.11 Public Investment in Low- or Zero Emission Vehicles.** Continue to invest in low-emission or zero-emission vehicles to replace the City's gasoline powered vehicle fleet and to transition to available clean fuel sources such as bio-diesel for trucks and heavy equipment.

**Policy 1.12 Sustainable Infrastructure.** Encourage the use of low or zero emission vehicles, bicycles, non-motorized vehicles, and car-sharing programs by supporting new and existing development that includes

sustainable infrastructure and strategies such as vehicle charging stations, drop-off areas for ridesharing services, secure bicycle parking, and transportation demand management programs.

**Policy 1.14 Transportation Demand Management.** Require and incentivize projects to incorporate Transportation Demand Management (TDM) techniques.

**Policy 3.1 Interagency Coordination.** Consult with regional agencies and utility companies to pursue energy efficiency goals and expand renewable energy strategies.

**Policy 3.2 Education Programs.** Support education programs to provide information on energy conservation and alternatives to non-renewable energy sources.

**Policy 3.3 Development Patterns.** Promote energy efficient-development patterns by clustering mixed use developments and compatible uses adjacent to public transportation.

**Policy 3.4 Site Design.** Encourage site planning and subdivision design that incorporates the use of renewable energy systems.

**Policy 3.5 Landscaping.** Promote and encourage the planting of native and diverse tree species to improve air quality, reduce heat island effect, reduce energy consumption, and contribute to carbon mitigation with special focus in environmental justice areas.

**Policy 3.6 Life Cycle Costs.** Encourage construction and building development practices that use renewable resources and life cycle costing in construction and operating decisions.

**Policy 3.7 Energy Conservation Design and Construction.** Incorporate energy conservation features in the design of new construction and rehabilitation projects.

**Policy 3.8 Energy-Efficient Public Facilities.** Promote and encourage efficient use of energy and the conservation of available resources in the design, construction, maintenance, and operation of public facilities, infrastructure, and equipment.

**Policy 3.9 Energy Generation in Public Facilities.** Encourage and support the generation, transmission, use, and storage of locally-distributed renewable energy in order to promote energy independence, efficiency, and sustainability.

**Policy 3.10 Energy Conservation in Public Projects.** Work with businesses and contractors that use energy-efficient practices in the provision of services and equipment for city construction projects.

**Policy 3.11 Energy-Efficient Transportation Infrastructure.** Continue to support public and private infrastructure for public transportation such as bus routes, rail lines, and the OC Streetcar.

### **Economic Prosperity Element**

**Policy 2.9 Energy Conservation.** Collaborate with utility providers and regional partners to encourage business and industry to improve performance in energy efficiency, water conservation, and waste reduction.

**Policy 2.10 Green Business.** Support the growth of a diverse green business sector that facilitates and promotes environmental sustainability and creates a competitive advantage for business attraction activities.



## Land Use Element

**Policy 1.5 Diverse Housing Types.** Incentivize quality infill residential development that provides a diversity of housing types and accommodates all income levels and age groups.

**Policy 1.6 Transit Oriented Development.** Encourage residential mixed-use development, within the City's District Centers and Urban Neighborhoods, and adjacent to high quality transit.

**Policy 1.7 Active Transportation Infrastructure.** Invest in active transportation connectivity between activity centers and residential neighborhoods to encourage healthy lifestyles.

**Policy 2.5 Benefits of Mixed Use.** Encourage infill mixed-use development at all ranges of affordability to reduce vehicle miles travelled, improve jobs/housing balance, and promote social interaction.

**Policy 2.10 Smart Growth.** Focus high density residential in mixed-use villages, designated planning focus areas, Downtown Santa Ana, and along major travel corridors.

**Policy 4.3 Sustainable Land Use Strategies.** Encourage land uses and strategies that reduce energy and water consumption, waste and noise generation, soil contamination, air quality impacts, and light pollution.

**Policy 4.4 Natural Resource Capture.** Encourage the use of natural processes to capture rainwater runoff, sustainable electric power, and passive climate control.

**Policy 4.5 VMT Reduction.** Concentrate development along high-quality transit corridors to reduce vehicle miles traveled (VMT) and transportation related carbon emissions.

## Public Services Element

**Policy 1.7 Sustainable and Resilient Practices.** Require development or rehabilitation of any public facility or capital improvement to incorporate site design and building practices that promote sustainability, energy efficiency, and resiliency.

## Urban Design Element

**Policy 1.6 Active Transportation Infrastructure.** Support the creation of citywide public street and site amenities that accommodate and promote an active transportation-friendly environment.

**Policy 2.10 Greening the Built Environment.** Promote planting of shade trees and require, where feasible, preservation and site design that uses appropriate tree species to shade parking lots, streets, and other facilities with the goal of reducing the heat island effect.

**Policy 2.11 Sustainable Practices.** Encourage sustainable development through the use of drought tolerant landscaping, permeable hardscape surfaces, and energy efficient building design and construction.

**Policy 3.10 Coordinated Street Improvement Plans.** Coordinate citywide landscape medians and street trees with land use plans and development projects.

**Policy 5.4 Intersections for all Travel Modes.** Strengthen active transportation connections and amenities at focal intersections to promote a pleasant and safe experience for non-motorized forms of travel.

## 4 SIGNIFICANCE CRITERIA AND METHODOLOGY

In accordance with State CEQA Guidelines, the effects of a project are evaluated to determine whether they would result in a significant adverse impact on the environment. This assessment focuses on these effects and offer mitigation measures to reduce or avoid any significant impacts that are identified. The criteria used to determine the significance of impacts may vary depending on the nature of the project. According to State CEQA Guidelines Appendix G, the proposed Project would have a significant impact related to energy, if it would:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation; and/or
- Conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

### Methodology

In determining whether implementation of the Project would result in the inefficient, wasteful or unnecessary use of fuel or energy, this analysis considers the recommendations of State CEQA Guidelines Appendix F. State CEQA Guidelines Appendix F does not prescribe a threshold for the determination of significance. Rather, Appendix F focuses on reducing and minimizing inefficient, wasteful, and unnecessary consumption of energy. The analysis follows State CEQA Guidelines Appendix F, which states that the goal of conserving energy includes decreasing overall per capita energy consumption; decreasing reliance on fossil fuels such as coal, natural gas, and oil; and increasing reliance on renewable energy. State CEQA Guidelines Appendix F states that environmental impact analyses of energy conservation may include:

1. The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project's life cycle including construction, operation, maintenance and/or removal. If appropriate, the energy intensiveness of materials may be discussed.
2. The effects of the project on local and regional energy supplies and on requirements for additional capacity.
3. The effects of the project on peak and base period demands for electricity and other forms of energy.
4. The degree to which the project complies with existing energy standards.
5. The effects of the project on energy resources.
6. The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

The impact analysis focuses on the three sources of energy that are relevant to the proposed Project: electricity, natural gas, and transportation fuel for vehicle trips associated with the Project as well as the fuel necessary for Project construction. The analysis of the Project's electricity and natural gas use is based on the California Emissions Estimator Model 2022 (CalEEMod), which quantifies energy use for occupancy. The results of CalEEMod are included in the Project's Air Quality Assessment, prepared by Kimley-Horn (2023). Modeling related to Project energy use was based primarily on the default settings in CalEEMod. The amount of operational fuel use was estimated using CalEEMod outputs for the Project and CARB Emissions Factor (EMFAC) 2021 computer program for typical daily fuel use in Orange County. Construction fuel was calculated based on CalEEMod emissions outputs and conversion ratios from the Climate Registry.

## 5 POTENTIAL IMPACTS AND MITIGATION

### Overview of the Santa Ana General Plan Update Program EIR

The Santa Ana General Plan Update Program EIR (General Plan EIR) analyzed potential energy impacts associated with the buildout development potential of the General Plan. Overall, regulatory compliance (e.g., Building Energy Efficiency Standards, CALGreen, State mandated renewable energy requirements, and fuel efficiency standards) would increase building energy efficiency and vehicle fuel efficiency and reduce building energy demand and transportation-related fuel usage. Additionally, the General Plan policies related to land use and transportation planning and design, energy efficiency, public and active transit, and renewable energy generation would contribute to minimizing building and transportation-related energy demands overall and demands on nonrenewable sources of energy.

Implementation of proposed policies under the General Plan in conjunction with and complementary to regulatory requirements, would ensure that energy demand associated with growth under the General Plan would not be inefficient, wasteful, or unnecessary. The General Plan EIR determined that energy impacts associated with implementation and operation of land uses accommodated under the General Plan Update would be less than significant.

Additionally, the General Plan EIR determined that the goals and policies would contribute to the reduction in energy demand and implementation of the General Plan Update would not interfere with the goals and measures of the City's CAP, and no impact would occur.

### Threshold 5.1 Would the project result in wasteful, inefficient, or unnecessary consumption of energy resources?

Energy consumption associated with the proposed Project is summarized in **Table 6: Project and Countywide Energy Consumption**.

<b>Table 6: Project and Countywide Energy Consumption</b>			
<b>Energy Type</b>	<b>Project Annual Energy Consumption</b>	<b>Orange County Annual Energy Consumption<sup>1, 2</sup></b>	<b>Percentage Increase Countywide</b>
<b>Phase 1</b>			
<b>Operational Electricity and Natural Gas</b>			
Electricity Consumption	17,182,736 kWh	18,931,838,624 kWh	0.09%
Natural Gas Consumption	279,772 therms	580,187,556 therms	0.05%
<b>Automotive Fuel Consumption<sup>3</sup></b>			
<b>Project Construction<sup>4, 5</sup></b>			
Diesel	529,054 gallons	132,389,635 gallons	0.40%
Gasoline	384,969 gallons	1,013,631,011 gallons	0.04%
<b>Project Operations</b>			
Diesel	431,837 gallons	132,389,635 gallons	0.33%
Gasoline	1,435,828 gallons	1,013,631,011 gallons	0.14%

<b>Table 6: Project and Countywide Energy Consumption</b>			
<b>Energy Type</b>	<b>Project Annual Energy Consumption</b>	<b>Orange County Annual Energy Consumption<sup>1, 2</sup></b>	<b>Percentage Increase Countywide</b>
<b>Phase 2</b>			
<b>Operational Electricity and Natural Gas</b>			
Electricity Consumption	6,100,357 kWh	18,931,838,624 kWh	0.03%
Natural Gas Consumption	88,107 therms	580,187,556 therms	0.02%
<b>Automotive Fuel Consumption<sup>3</sup></b>			
Project Construction <sup>4, 5</sup>			
Diesel	287,909 gallons	128,736,290 gallons	0.22%
Gasoline	99,845 gallons	972,316,450 gallons	0.01%
Project Operations			
Diesel	181,517 gallons	128,736,290 gallons	0.13%
Gasoline	570,283 gallons	972,316,450 gallons	0.06%
<b>Phase 3</b>			
<b>Operational Electricity and Natural Gas</b>			
Electricity Consumption	9,271,206 kWh	18,931,838,624 kWh	0.05%
Natural Gas Consumption	151,580 therms	580,187,556 therms	0.03%
<b>Automotive Fuel Consumption<sup>3</sup></b>			
Project Construction <sup>4, 5</sup>			
Diesel	637,296 gallons	124,124,931 gallons	0.51%
Gasoline	416,625 gallons	943,405,017 gallons	0.04%
Project Operations			
Diesel	261,236 gallons	124,124,931 gallons	0.21%
Gasoline	868,590 gallons	943,405,017 gallons	0.09%
<b>Buildout</b>			
<b>Operational Electricity and Natural Gas</b>			
Electricity Consumption	32,554,299 kWh	18,931,838,624 kWh	0.002%
Natural Gas Consumption	519,459 therms	580,187,556 therms	0.001%
<b>Operational Fuel</b>			
Diesel	874,590 gallons	124,124,931 gallons	0.007%
Gasoline	2,874,701 gallons	943,405,017 gallons	0.003%
1. The Project increases in electricity and natural gas consumption are compared with the total consumption in Orange County in 2021. 2. The Project increases in automotive fuel consumption are compared with the countywide fuel consumption (projected) in 2030, 2033, and 2036 for Phase 1, Phase 2, and Phase 3 respectively. 3. Countywide fuel consumption is from the California Air Resources Board EMFAC2021 model. 4. Construction fuel consumption is based equipment and load factors from California Emissions Estimator Model (CalEEMod). 5. The estimated construction fuel consumption is based on the Project's construction equipment list timing/phasing, and hours of duration for construction equipment, as well as vendor, hauling, and construction worker trips.			
Refer to <a href="#">Appendix A: Energy Data</a> for assumptions used in this analysis.			

**Construction-Related Energy**

During construction, the Project would consume energy in two general forms: (1) the fuel energy consumed by construction vehicles and equipment; and (2) bound energy in construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass.

Fossil fuels used for construction vehicles and other energy-consuming equipment would be used during grading, paving, and building construction. Fuel energy consumed during construction would be temporary in nature and would not represent a significant demand on energy resources. Some incidental energy conservation would occur during construction through compliance with State requirements that equipment not in use for more than five minutes be turned off (§2449 of California Code of Regulations Title 13, Article 4.8, Chapter 9 requires the minimization of nonessential idling of construction equipment).

Project construction equipment would also be required to comply with the latest U.S. EPA and California Air Resources Board engine emissions standards. These emissions standards require highly efficient combustion systems that maximize fuel efficiency and reduce unnecessary fuel consumption. Due to increasing transportation costs and fuel prices, contractors and owners have a strong financial incentive to avoid wasteful, inefficient, and unnecessary consumption of energy during construction.

Substantial reductions in energy inputs for construction materials can be achieved by selecting building materials composed of recycled materials that require substantially less energy to produce than non-recycled materials. The incremental increase in the use of energy bound in construction materials such as asphalt, steel, concrete, pipes and manufactured or processed materials (e.g., lumber and gas) would not substantially increase demand for energy compared to overall local and regional demand for construction materials. It is reasonable to assume that production of building materials such as concrete, steel, etc., would employ all reasonable energy conservation practices in the interest in minimizing the cost of doing business.

As identified in **Table 6**, the overall diesel fuel consumption during construction of the Project would be 529,054 gallons for Phase 1, 287,909 gallons for Phase 2, and 637,296 gallons for Phase 3. Gasoline consumption would be 384,969 gallons for Phase 1, 99,845 gallons for Phase 2, and 416,625 gallons for Phase 3 which would result in a nominal increase (0.40 percent, 0.22 percent, and 0.51 percent, respectively for the three phases for diesel fuel consumption and 0.04 percent, 0.01 percent, and 0.04 percent, respectively for the three phases for gasoline fuel consumption) in fuel use in the County. As such, Project construction would have a minimal effect on the local and regional energy supplies. It is noted that construction fuel use is temporary and would cease upon completion of construction activities. There are no unusual Project characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites in the region or State. Therefore, construction fuel consumption would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature. Impacts would be less than significant.

### Operational Energy

**Transportation Energy Demand.** Pursuant to the Federal Energy Policy and Conservation Act of 1975, the National Highway Traffic and Safety Administration (NTSA) is responsible for establishing additional vehicle standards and for revising existing standards. Compliance with federal fuel economy standards is not determined for each individual vehicle model. Rather, compliance is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the United States. **Table 6** provides an estimate of the daily fuel consumed by vehicles traveling to and from the project site. As identified in **Table 6**, Project operations for Phase 1 are estimated to consume approximately 431,837 gallons of diesel fuel and 1,435,828 gallons of gasoline fuel per year, which would increase Countywide automotive fuel consumption by 0.33 percent and 0.14 percent, respectively. Project operations for Phase 2 are estimated to consume approximately 181,517 gallons of diesel fuel and 570,283 gallons of gasoline fuel per year, which would increase Countywide automotive fuel consumption by 0.13 percent and 0.06 percent, respectively. Project operations for Phase 3 are estimated to consume approximately 261,236 gallons of diesel fuel and 868,590 gallons of gasoline fuel per year, which would

increase Countywide automotive fuel consumption by 0.21 percent and 0.09 percent, respectively. Project operations at buildout are estimated to consume approximately 874,590 gallons of diesel fuel and 2,874,701 gallons of gasoline fuel per year, which would increase Countywide automotive fuel consumption by 0.007 percent and 0.003 percent, respectively. Therefore, the Project's effects on local and regional transportation fuel supplies would be nominal. The Project would not result in any unusual characteristics that would result in excessive long-term operational fuel consumption. Fuel consumption associated with vehicle trips generated by the Project would not be considered inefficient, wasteful, or unnecessary in comparison to other similar developments in the region.

**Building Energy Demand.** Operations of the proposed Project in Phase 1 would require approximately 17,182,736 kWh of electricity per year and approximately 279,772 therms of natural gas per year. Operations of the Project in Phase 2 would require approximately 6,100,357 kWh of electricity per year and approximately 88,107 therms of natural gas per year. Operations of the Project in Phase 3 would require approximately 9,271,206 kWh of electricity per year and approximately 151,580 therms of natural gas per year. Operations of the entire Project at buildout would require approximately 32,554,299 kWh of electricity per year and approximately 519,459 therms of natural gas per year.

The proposed Project would be required to comply with most current Title 24 Building Energy Efficiency Standards, which provide minimum efficiency standards related to various building features, including appliances, water and space heating and cooling equipment, building insulation and roofing, and lighting. Implementation of the Title 24 standards significantly reduces energy usage. Greenhouse Gas (GHG) Emissions Assessment Mitigation Measure **(MM) GHG-2** requires the Project to meet CALGreen Tier 2 voluntary energy efficiency standards, which surpass the building code energy efficiency requirements. Additionally, the Project proposes new energy efficient buildings that would replace the existing buildings, many of which were constructed in the early 1970s, when energy efficiency standards were substantially less restrictive. Additionally, the electricity provider, SCE, is subject to California's Renewables Portfolio Standard (RPS). The RPS requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 60 percent of total procurement by 2030 and requires all the State's electricity to come from carbon-free (i.e., renewable) resources by 2045. Renewable energy is generally defined as energy that comes from resources which are naturally replenished within a human timescale such as sunlight, wind, tides, waves, and geothermal heat. The increase in reliance of such energy resources further ensures projects would not result in the waste of the finite energy resources.

As indicated in **Table 6**, operational energy consumption would represent an approximate 0.09 percent and 0.05 percent increase in electricity and natural gas consumption, respectively in Phase 1; a 0.03 percent and 0.02 percent increase in electricity and natural gas consumption, respectively in Phase 2; and a 0.05 percent and 0.03 percent increase in electricity and natural gas consumption, respectively in Phase 3 over the current Countywide usage. Project operations would not substantially affect existing energy supplies or resources. The Project would comply with applicable energy standards and new capacity would not be required. The Project would adhere to all federal, State, and local requirements for energy efficiency, including the Title 24 standards.

Additionally, the Project includes the construction and use of renewable solar photovoltaic energy, which would further ensure that the Project's energy use would not be wasteful, inefficient, or unnecessary. **MM GHG-1** in the Project GHG Emissions Assessment requires the Project to include renewable solar photovoltaic (PV) energy to offset the Project's energy demand. Additionally, **MM GHG-2** requires the Project to meet CALGreen Tier 2 energy efficiency standards and **MM GHG-5** requires electric Energy Star

rated appliances. As such, the Project would not result in the inefficient, wasteful, or unnecessary consumption of building energy.

**Conclusion.** As shown in **Table 6**, the increase in electricity and automotive fuel consumption over existing conditions is minimal (less than one percent). For the reasons described above, the Project would not place a substantial demand on regional energy supply or require significant additional capacity, or significantly increase peak and base period electricity demand. Thus, the Project would not cause a wasteful, inefficient, and unnecessary consumption of energy during Project construction, operation, and/or maintenance, or preempt future energy development or future energy conservation.

**Mitigation Measures:** No mitigation is required; however, refer to **MM GHG-1**, **MM GHG-2**, and **MM GHG-5** in the Project's GHG Emissions Assessment for measures that would reduce energy consumption.

**Level of Significance:** Less than significant impact. The City of Santa Ana General Plan Update Program EIR found that the goals and policies would contribute to the reduction in energy demand and implementation of the General Plan Update would not interfere with the goals and measures of the City's Climate Action Plan (CAP), and no impact would occur. Therefore, the impacts identified in this analysis with respect to energy would be the same as what was anticipated in the General Plan Update Program EIR.

#### **Threshold 5.2 Would the project conflict with or obstruct a State or local plan for renewable energy or energy efficiency?**

Title 24 of the California Code of Regulations contains energy efficiency standards for residential and non-residential buildings based on a State mandate to reduce California's energy demand. Specifically, Title 24 addresses a number of energy efficiency measures that impact energy used for lighting, water heating, heating, and air conditioning, including the energy impact of the building envelope such as windows, doors, skylights, wall/floor/ceiling assemblies, attics, and roofs.

Part 6 of Title 24 specifically establishes energy efficiency standards for residential and nonresidential buildings constructed in the State of California in order to reduce energy demand and consumption. The Project would comply with Title 24, Part 6 per State regulations. In accordance with Title 24 Part 6, the Project would have: (a) sensor-based lighting controls— for fixtures located near windows, the lighting would be adjusted by taking advantage of available natural light; and (b) efficient process equipment— improved technology offers significant savings through more efficient processing equipment.

Title 24, Part 11, contains voluntary and mandatory energy measures that are applicable to the Project under the California Green Building Standards Code. As discussed above, the Project would result in an increased demand for electricity, natural gas, and petroleum. In accordance with Title 24 Part 11 mandatory compliance, the Project Applicant would have (a) 65 percent of its nonhazardous construction and demolition waste diverted from landfills; (b) mandatory inspections of energy systems to ensure optimal working efficiency; (c) low pollutant emitting exterior and interior finish materials, such as paints, carpets, vinyl flooring and particle boards; and (d) a 20 percent reduction in indoor water use. Compliance with all of these mandatory measures would decrease the consumption of electricity, natural gas, and petroleum. Additionally, as noted above, **MM GHG-1** in the Project GHG Emissions Assessment requires the Project to include renewable solar PV energy to offset the Project's energy demand. The final PV generation facility size requires approval by Southern California Edison (SCE). SCE's Rule 21 governs operating and metering requirements for any facility connected to SCE's distribution system. Should SCE limit the off-site export, the proposed Project may utilize a battery energy storage system (BESS) to lower off-site export while maintaining on-site renewable generation to off-set consumption. Additionally, **MM**

**GHG-2** requires the Project to meet CALGreen Tier 2 voluntary energy efficiency standards, which surpass the building code energy efficiency requirements.

The City of Santa Ana CAP establishes a series of energy efficiency related goals intended to reduce GHG emissions based on the AB 32 Scoping Plan. Those applicable to the Project are Renewables Portfolio Standard for Building Energy Use, AB 1109 Energy Efficiency Standards for Lighting, Electricity Energy Efficiency, and Commercial Energy Efficiency Requirements. Project consistency with the City’s CAP is discussed in the Project’s GHG Emissions Assessment. As described in the GHG Emissions Assessment, the Project would be consistent with applicable CAP goals. The proposed Project would be subject to compliance with all building codes in effect at the time of construction, which include energy conservation measures mandated by California Building Standards Code Title 24 – Energy Efficiency Standards. The CAP identifies a series of local measures to help guide the City in the areas of building energy, transportation, solid waste management, wastewater treatment, and water conveyance to further reduce community wide GHG emissions. Further measures that are applicable to the Project include meeting the City’s waste diversion goal consistent with CALGreen, reducing the amount of water, energy, and fuels consumed, and demonstrating energy efficiency in new development.

The Project would not conflict with the CAP’s municipal measures. Additionally, the Project would implement project-level CAP GOAL 2: Local Residential Nodes near Retail and Employment and CAP GOAL 14: Solar Photovoltaic Systems – New Private Installs. The Project is an infill development that includes high-density residential dwelling units near existing and proposed retail uses and employment opportunities. Also, GHG Emissions Assessment **MM GHG-1** requires the use of solar photovoltaic systems.

The City’s General Plan also includes various Goals and Policies related to energy. The applicable goals and the Project’s consistency are discussed in **Table 7: Consistency with General Plan Energy Policies**. The Project would not conflict with any of the federal, State, or local plans for renewable energy and energy efficiency. Because the Project would comply with Parts 6 and 11 of Title 24 and with City of Santa Ana CAP measures, and applicable City of Santa Ana General Plan Policies, no conflict with existing energy standards and regulations would occur. Therefore, impacts associated with renewable energy or energy efficiency plans would be considered less than significant.

<b>Table 7: Consistency With General Plan Energy Policies</b>	
<b>General Plan Policy</b>	<b>Project Consistency</b>
<b>Conservation Element</b>	
<b>Policy 1.2 Climate Action Plan.</b> Consistency with emission reduction goals highlighted in the Climate Action Plan shall be considered in all major decisions on land use and investments in public infrastructure.	<b>Consistent.</b> As analyzed in the Project Greenhouse Gas Emissions Assessment, the Project would be consistent with the City’s Climate Action Plan (CAP).
<b>Policy 1.4 Development Standards.</b> Support new development that meets or exceeds standards for energy-efficient building design and site planning.	<b>Consistent.</b> Greenhouse Gas Emissions Assessment <b>MM GHG-2</b> requires the Project to meet or exceed CALGreen Tier 2 voluntary standards, which are approximately 15 percent more efficient than the building code requirements.
<b>Policy 1.6 New and Infill Residential Development.</b> Promote development that is mixed-use, pedestrian-friendly, transit oriented, and clustered around activity centers.	<b>Consistent.</b> The proposed Project is an urban mixed-use infill project that would include retail, housing, and hotel uses near OCTA transit routes, major freeways, and roadways. The infill location, mix of uses, and proximity to transit would reduce dependency on passenger vehicles, reduce time spent in traffic, closely links residents to jobs and services, and reduce transportation fuel consumption.
<b>Policy 1.8 Promote Alternative Transportation.</b> Promote use of alternate modes of transportation in the City of Santa	<b>Consistent.</b> The proposed Project would include retail, housing, senior community, and hotel uses at an urban infill



<b>Table 7: Consistency With General Plan Energy Policies</b>	
<b>General Plan Policy</b>	<b>Project Consistency</b>
Ana, including pedestrian, bicycling, public transportation, car sharing programs and emerging technologies.	location near transit, major freeways, and roadways. The inclusion of 3,750 residential dwelling units would create a more optimal mix of land uses that would be conducive to the increased use of transit, walking, and biking.
<b>Policy 1.10 Transportation Management.</b> Continue to support and invest in improvements to the City’s Transportation Management System, including projects or programs that improve traffic flow and reduce traffic congestion.	<b>Consistent.</b> As noted above, the proposed mixed-use infill project would promote the increased use of transit. The Project would include a variety of connectivity points for vehicles, bicycles, transit, and pedestrians. The Project has multiple bus lines that stop at the existing public transit stops along the northern, eastern, and southern boundaries of the project site.
<b>Policy 1.11 Public Investment in Low- or Zero Emission Vehicles.</b> Continue to invest in low-emission or zero-emission vehicles to replace the City’s gasoline powered vehicle fleet and to transition to available clean fuel sources such as bio-diesel for trucks and heavy equipment.	<b>Consistent.</b> MM GHG-2 requires Project EV charging to meet CALGreen Tier 2 standards, which would promote the use of zero emission vehicles.
<b>Policy 1.12 Sustainable Infrastructure.</b> Encourage the use of low or zero emission vehicles, bicycles, non-motorized vehicles, and car-sharing programs by supporting new and existing development that includes sustainable infrastructure and strategies such as vehicle charging stations, drop-off areas for ridesharing services, secure bicycle parking, and transportation demand management programs.	<b>Consistent.</b> As noted above, MM GHG-2 requires Project EV charging to meet CALGreen Tier 2 standards, which would promote the use of zero emission vehicles. Additionally, the Project would provide bicycle parking facilities in accordance with Santa Ana Municipal Code Section 41.1307.1. The Project would include a variety of connectivity points for vehicles, bicycles, transit, and pedestrians. The Project has multiple bus lines that stop at the existing public transit stops along the northern, eastern, and southern boundaries of the project site.
<b>Policy 1.14 Transportation Demand Management.</b> Require and incentivize projects to incorporate Transportation Demand Management (TDM) techniques.	<b>Consistent.</b> Air Quality Assessment MM AQ-3 requires a Transportation Demand Management program. Single-occupancy vehicle trips would be discouraged and alternative modes of transportation such as carpooling, taking transit, walking, and biking would be encouraged and facilitated. In addition to on-site employment opportunities, the project site is within walking distance of major office developments within the South Coast Metro area.
<b>Policy 3.3 Development Patterns.</b> Promote energy efficient-development patterns by clustering mixed use developments and compatible uses adjacent to public transportation.	<b>Consistent.</b> The proposed Project would redevelop an underutilized shopping center with an urban mixed-use infill project that would include retail, housing, and hotel uses near OCTA transit routes, major freeways, and roadways.
<b>Policy 3.4 Site Design.</b> Encourage site planning and subdivision design that incorporates the use of renewable energy systems.	<b>Consistent.</b> MM GHG-1 requires the installation of photovoltaic solar panels (i.e., the Project would use renewable energy systems).
<b>Policy 3.7 Energy Conservation Design and Construction.</b> Incorporate energy conservation features in the design of new construction and rehabilitation projects.	<b>Consistent.</b> MM GHG-2 requires Project EV charging to meet CALGreen Tier 2 voluntary energy efficiency/conservation standards.
<b>Economic Prosperity Element</b>	
<b>Policy 2.9 Energy Conservation.</b> Collaborate with utility providers and regional partners to encourage business and industry to improve performance in energy efficiency, water conservation, and waste reduction.	<b>Consistent.</b> The Project would exceed building code energy efficiency, water conservation, and waste reduction requirements through the implementation of MM GHG-2, which requires the Project to meet CALGreen Tier 2 voluntary energy efficiency/conservation standards.
<b>Land Use Element</b>	
<b>Policy 1.5 Diverse Housing Types.</b> Incentivize quality infill residential development that provides a diversity of housing types and accommodates all income levels and age groups.	<b>Consistent.</b> The Project is a high-density infill development that would redevelop and existing underutilized shopping center. The Project proposes 3,750 multi-family residences as well as 200 senior living dwelling units.

<b>Table 7: Consistency With General Plan Energy Policies</b>	
<b>General Plan Policy</b>	<b>Project Consistency</b>
<b>Policy 1.6 Transit Oriented Development.</b> Encourage residential mixed-use development, within the City’s District Centers and Urban Neighborhoods, and adjacent to high quality transit.	<b>Consistent.</b> As noted above, the proposed Project would include retail, housing, senior community, and hotel uses at an urban infill location near transit, major freeways, and roadways. The inclusion of 3,750 residential dwelling units would create a more optimal mix of land uses that would be conducive to the increased use of transit.
<b>Policy 1.7 Active Transportation Infrastructure.</b> Invest in active transportation connectivity between activity centers and residential neighborhoods to encourage healthy lifestyles.	<b>Consistent.</b> The Project is a high-density infill development that would redevelop an existing underutilized shopping center and place high-density residential dwelling units in close proximity to various uses and services including office and retail to encourage healthy lifestyles. The Project also proposes on-site open space and recreational areas, pedestrian walkways which connect to sidewalks at the adjoining roadways, and bicycle improvements.
<b>Policy 2.5 Benefits of Mixed Use.</b> Encourage infill mixed-use development at all ranges of affordability to reduce vehicle miles travelled, improve jobs/housing balance, and promote social interaction.	<b>Consistent.</b> As noted above, the proposed Project would include retail, housing, senior community, and hotel uses (i.e., mixed-use) at an urban infill location near transit, major freeways, roadways, and bike routes.
<b>Policy 2.10 Smart Growth.</b> Focus high density residential in mixed-use villages, designated planning focus areas, Downtown Santa Ana, and along major travel corridors.	<b>Consistent.</b> The Project is a mixed-use infill development in a transit priority area within the City.
<b>Policy 4.3 Sustainable Land Use Strategies.</b> Encourage land uses and strategies that reduce energy and water consumption, waste and noise generation, soil contamination, air quality impacts, and light pollution.	<b>Consistent.</b> The Project is a mixed-use infill development within an urbanized area of the City. <b>MM GHG-1</b> requires the installation of photovoltaic solar panels to offset energy emissions; <b>MM GHG-2</b> requires the Project to meet or exceed CALGreen Tier 2 standards to further improve energy efficiency. <b>MM GHG-3</b> requires the Project to divert 75 percent of waste from landfills.
<b>Policy 4.4 Natural Resource Capture.</b> Encourage the use of natural processes to capture rainwater runoff, sustainable electric power, and passive climate control.	<b>Consistent.</b> <b>MM GHG-1</b> requires the Project to include renewable solar PV energy to offset the Project’s energy demand. <b>MM GHG-2</b> requires the Project to meet or exceed CALGreen Tier 2 standards to further improve energy efficiency.
<b>Policy 4.5 VMT Reduction.</b> Concentrate development along high-quality transit corridors to reduce vehicle miles traveled (VMT) and transportation related carbon emissions.	<b>Consistent.</b> As noted above, the proposed Project would include retail, housing, senior community, and hotel uses (i.e., mixed-use) at an urban infill location near transit, major freeways, and roadways.
<b>Urban Design Element</b>	
<b>Policy 1.6 Active Transportation Infrastructure.</b> Support the creation of citywide public street and site amenities that accommodate and promote an active transportation-friendly environment.	<b>Consistent.</b> Although this is a citywide measure, the Project is a mixed-use infill development that would include pedestrian amenities, plazas, and paseos that would promote pedestrian and bicycle mobility and access.
<b>Policy 2.10 Greening the Built Environment.</b> Promote planting of shade trees and require, where feasible, preservation and site design that uses appropriate tree species to shade parking lots, streets, and other facilities with the goal of reducing the heat island effect.	<b>Consistent.</b> The Project would comply with City landscaping and shade tree requirements. The Conceptual Landscape Plan is addressed in the Related Bristol Specific Plan.
<b>Policy 2.11 Sustainable Practices.</b> Encourage sustainable development through the use of drought tolerant landscaping, permeable hardscape surfaces, and energy efficient building design and construction.	<b>Consistent.</b> The Project would comply with City landscaping and shade tree requirements. The Conceptual Landscape Plan is addressed in the Related Bristol Specific Plan.
<b>Policy 3.10 Coordinated Street Improvement Plans.</b> Coordinate citywide landscape medians and street trees with land use plans and development projects.	<b>Consistent.</b> Project-related roadway and median improvements would be coordinated with the City. Conceptual improvements are addressed in the Related Bristol Specific Plan.

<b>Table 7: Consistency With General Plan Energy Policies</b>	
<b>General Plan Policy</b>	<b>Project Consistency</b>
<b>Policy 5.4 Intersections for all Travel Modes.</b> Strengthen active transportation connections and amenities at focal intersections to promote a pleasant and safe experience for non-motorized forms of travel.	<b>Consistent.</b> The Project would include a variety of connectivity points for vehicles, bicycles, transit, and pedestrians. The Project has multiple bus lines that stop at the existing public transit stops along the northern, eastern, and southern boundaries of the project site.

**Mitigation Measures:** Refer to **MM GHG-1** through **MM GHG-5** in the Project GHG Emissions Assessment and **MM AQ-3** in the Project Air Quality Assessment.

**Level of Significance:** Less than significant impact with mitigation incorporated. The City of Santa Ana General Plan Update Program EIR found that the goals and policies would contribute to the reduction in energy demand and implementation of the General Plan Update would not interfere with the goals and measures of the City’s Climate Action Plan (CAP), and no impact would occur. Therefore, the impacts identified in this analysis with respect to energy would be the same as what was anticipated in the General Plan Update Program EIR.

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# Appendix A

Energy Data

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Construction Fuel Consumption (Phase 1)

On-Site Diesel <sup>1</sup> (off-road construction Equipment)	MTCO <sub>2</sub> e	Total Gallons of Fuel <sup>2</sup>	Average Fuel/Year	Current County Fuel	Percent
Demolition	393	38,721	9,293		
Site Preparation/Grading	2,526	248,886	59,733		
Building Construction	3,993	393,443	94,426		
Paving	627	61,779	14,827		
Architectural Coating	47	4,619	1,108		
<b>Total</b>	<b>7,587</b>	<b>747,448</b>	<b>179,388</b>	<b>132,389,635</b>	<b>0.1355%</b>

Off-Site Diesel <sup>1</sup> (on-road construction trips)	MTCO <sub>2</sub> e	Total Gallons of Fuel <sup>2</sup>	Average Fuel/Year	Current County Fuel	Percent
Demolition	770	75,886	18,213		
Site Preparation/Grading	5,227	514,972	123,593		
Building Construction	8,791	866,086	207,861		
Paving	0	0	0		
Architectural Coating	0	0	0		
<b>Total</b>	<b>14,788</b>	<b>1,456,944</b>	<b>349,667</b>	<b>132,389,635</b>	<b>0.2641%</b>

Off-Site Gasoline <sup>2</sup>	MTCO <sub>2</sub> e	Total Gallons of Fuel <sup>2</sup>	Average Fuel/Year	Current County Fuel	Percent
Demolition	15	1,651	396		
Site Preparation/Grading	67	7,595	1,823		
Building Construction	13,455	1,527,292	366,550		
Paving	50	5,675	1,362		
Architectural Coating	545	61,823	14,838		
<b>Total</b>	<b>14,132</b>	<b>1,604,036</b>	<b>384,969</b>	<b>1,013,631,011</b>	<b>0.0380%</b>

Total Diesel Fuel		2,204,392	529,054	132,389,635	0.3996%
Total Gasoline Fuel		1,604,036	384,969	1,013,631,011	0.0380%
<b>Total Construction Fuel</b>	<b>36,506</b>	<b>3,808,429</b>	<b>914,023</b>		

Construction Phase <sup>3</sup>	Demolition			Site Preparation			Grading		
	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)
2026	393	770	15	940	0	26	1586	5227	41
<b>Total</b>	<b>393</b>	<b>770</b>	<b>15</b>	<b>940</b>	<b>0</b>	<b>26</b>	<b>1,586</b>	<b>5,227</b>	<b>41</b>

Construction Phase <sup>3</sup>	Infrastructure + Building Construction			Paving			Architectural Coating		
	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)
2026	430	975	1485						
2027	1707	3792	5791						
2028	1712	3717	5704						
2029	145	307	475	627	0	50	24	0	282
2030							23	0	263
<b>Total</b>	<b>3,993</b>	<b>8,791</b>	<b>13,455</b>	<b>627</b>	<b>0</b>	<b>50</b>	<b>47</b>	<b>0</b>	<b>545</b>

Notes:

- <sup>1</sup> Fuel used for off-road, hauling, and vendor trips assumed to be diesel.
- <sup>2</sup> Fuel used for worker trips assumed to be gasoline.
- <sup>3</sup> MTCO<sub>2</sub>e rates from CalEEMod (3.0 Construction Details).
- <sup>4</sup> For CO<sub>2</sub>e emissions, see Chapter 13 (page 94); Conversion Ratios: Climate Registry, General Reporting Protocol, 2016.

Climate Registry Conversion Ratios:

- Gasoline: 10.15 kg CO<sub>2</sub> per gallon / 1,000 kg per metric ton

Operational Fuel (Phase 1)

Vehicle Type	Percent <sup>1</sup>	Annual VMT <sup>2</sup>	MPG <sup>3</sup>	Annual Fuel (Gallons)	Fuel Type	Orange County Gallons <sup>4</sup>	Percent
Passenger Cars (Gasoline)	0.82	31,013,891	21.6	1,435,828	Gas	1,013,631,011	0.1417%
Light/Medium Trucks	0.18	6,725,981	17.2	391,045	Diesel	132,389,635	0.2954%
Heavy Trucks/Other	0.01	248,830	6.1	40,792	Diesel	132,389,635	0.0308%
Total Diesel	0.18	37,988,702		431,837			0.3262%

Land Use	HHD	LDA	LDT1	LDT2	LHD	LHD2	MCY	MDV	MH	MHD	OBUS	SBUS	UBUS
Apartments mid rise	0.0066	0.4811	0.0357	0.2464	0.0297	0.0082	0.0234	0.1478	0.0031	0.0161	0.0006	0.0009	0.0003
Hotel	0.0066	0.4811	0.0357	0.2464	0.0297	0.0082	0.0234	0.1478	0.0031	0.0161	0.0006	0.0009	0.0003
Regional shopping center	0.0066	0.4811	0.0357	0.2464	0.0297	0.0082	0.0234	0.1478	0.0031	0.0161	0.0006	0.0009	0.0003
Retirement Community	0.0066	0.4811	0.0357	0.2464	0.0297	0.0082	0.0234	0.1478	0.0031	0.0161	0.0006	0.0009	0.0003

Notes:

<sup>1</sup> Percent of vehicle trip distribution based on fleet mix from CalEEMod.

<sup>2</sup> Total annual operational VMT based on mitigated annual VMT from CalEEMod.

<sup>3</sup> Average fuel economy derived from Department of Transportation.

<sup>4</sup> Total annual county fuel per EMFAC 2021 projected operational fuel usage.

Electricity/Natural Gas Energy (Phase 1)

	Mitigated Project Annual Energy	Orange County Annual Energy <sup>2</sup>	Percentage Increase
Electricity (kWh/yr)	17,182,736	18,931,838,624	0.0908%
Natural Gas (kBtu/yr)	27,977,163	58,018,755,600	0.0482%
Natural Gas (therms/yr)	279,772	580,187,556	0.0482%
Natural Gas (ft <sup>3</sup> /yr)	27,971,568		

Land Use	Electricity <sup>1</sup> (kWh/yr)		Natural Gas <sup>1</sup> (kBtu/yr)	
	Unmitigated	Mitigated	Unmitigated	Mitigated
Apartments Mid Rise	5,040,522	4,679,103	15,271,909	13,532,992
Retirement Community	767,009	713,427	3,261,135	2,889,637
Regional Shopping Center	2,455,342	2,194,869	1,496,736	1,483,999
Enclosed Parking with Elevator	5,188,307	5,188,307	0	0
Other Asphalt Surfaces	0	0	0	0
City Park	0	0	0	0
Hotel	5,079,714	4,407,030	10,480,427	10,070,535
<b>Total Energy</b>	<b>18,530,894</b>	<b>17,182,736</b>	<b>30,510,208</b>	<b>27,977,163</b>

Notes:

<sup>1</sup> Electricity and Natural Gas use per CalEEMod (5.11 Operational Energy Consumption).

<sup>2</sup> County total energy values from California Energy Commission energy reports available through [cedms.energy.ca.gov](http://cedms.energy.ca.gov).



Construction Fuel Consumption (Phase 2)

On-Site Diesel <sup>1</sup> (off-road construction Equipment)	MTCO <sub>2</sub> e	Gallons of Fuel <sup>4</sup>	Average Fuel/Year	Current County Fuel	Percent
Demolition	421	41,484	15,645		
Site Preparation/Grading	1,178	116,070	43,775		
Building Construction	2,988	294,340	111,008		
Paving	896	88,256	33,285		
Architectural Coating	40	3,951	1,490		
<b>Total</b>	<b>5,523</b>	<b>544,101</b>	<b>205,204</b>	<b>128,736,290</b>	<b>0.1594%</b>

Off-Site Diesel <sup>1</sup> (on-road construction trips)	MTCO <sub>2</sub> e	Gallons of Fuel <sup>4</sup>	Average Fuel/Year	Current County Fuel	Percent
Demolition	203	20,015	7,548		
Site Preparation/Grading	798	78,641	29,659		
Building Construction	1,224	120,639	45,498		
Paving	0	0	0		
Architectural Coating	0	0	0		
<b>Total</b>	<b>2,226</b>	<b>219,294</b>	<b>82,705</b>	<b>128,736,290</b>	<b>0.0642%</b>

Off-Site Gasoline <sup>2</sup>	MTCO <sub>2</sub> e	Gallons of Fuel <sup>4</sup>	Average Fuel/Year	Current County Fuel	Percent
Demolition	7	818	309		
Site Preparation/Grading	21	2,424	914		
Building Construction	2,176	246,972	93,144		
Paving	24	2,712	1,023		
Architectural Coating	104	11,813	4,455		
<b>Total</b>	<b>2,332</b>	<b>264,740</b>	<b>99,845</b>	<b>972,316,450</b>	<b>0.0103%</b>

Total Diesel Fuel		763,395	287,909	128,736,290	0.2236%
Total Gasoline Fuel		264,740	99,845	972,316,450	0.0103%
<b>Total Construction Fuel</b>	<b>10,081</b>	<b>1,028,135</b>	<b>387,754</b>		

Construction Phase <sup>3</sup>	Demolition			Site Preparation			Grading		
	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)
2030	421	203	7	289	0	4	889	798	18
<b>Total</b>	<b>421</b>	<b>203</b>	<b>7</b>	<b>289</b>	<b>0</b>	<b>4</b>	<b>889</b>	<b>798</b>	<b>18</b>

Construction Phase <sup>3</sup>	Infrastructure + Building Construction			Paving			Architectural Coating		
	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)
2030				271	0	0			
2031	1562	651	1145	625	0	24			
2032	1426	573	1031				40	0	104
<b>Total</b>	<b>2,988</b>	<b>1,224</b>	<b>2,176</b>	<b>896</b>	<b>0</b>	<b>24</b>	<b>40</b>	<b>0</b>	<b>104</b>

Notes:

- <sup>1</sup> Fuel used for off-road, hauling, and vendor trips assumed to be diesel.
- <sup>2</sup> Fuel used for worker trips assumed to be gasoline.
- <sup>3</sup> MTCO<sub>2</sub>e rates from CalEEMod (3.0 Construction Details).
- <sup>4</sup> For CO<sub>2</sub>e emissions, see Chapter 13 (page 94); Conversion Ratios: Climate Registry, General Reporting Protocol, 2016.

Climate Registry Conversion Ratios:

- Gasoline: 10.15 kg CO<sub>2</sub> per gallon / 1,000 kg per metric ton

Operational Fuel (Phase 2)

Vehicle Type	Percent <sup>1</sup>	Annual VMT <sup>2</sup>	MPG <sup>3</sup>	Annual Fuel (Gallons)	Fuel Type	Orange County Gallons <sup>4</sup>	RS Percent
Passenger Cars (Gasoline)	0.82	12,318,118	21.6	570,283	Gas	972,316,450	0.0587%
Light/Medium Trucks	0.18	2,671,429	17.2	155,316	Diesel	128,736,290	0.1206%
Heavy Trucks/Other	0.01	98,830	6.1	16,202	Diesel	128,736,290	0.0126%
Total Diesel	0.18	15,088,377		171,517			0.1332%

Total

Land Use	HHD	LDA	LDT1	LDT2	LHD	LHD2	MCY	MDV	MH	MHD	OBUS	SBUS	UBUS
Apartments mid rise	0.0066	0.4811	0.0357	0.2464	0.0297	0.0082	0.0234	0.1478	0.0031	0.0161	0.0006	0.0009	0.0003
Hotel	0.0066	0.4811	0.0357	0.2464	0.0297	0.0082	0.0234	0.1478	0.0031	0.0161	0.0006	0.0009	0.0003
Regional shopping center	0.0066	0.4811	0.0357	0.2464	0.0297	0.0082	0.0234	0.1478	0.0031	0.0161	0.0006	0.0009	0.0003
Retirement Community	0.0066	0.4811	0.0357	0.2464	0.0297	0.0082	0.0234	0.1478	0.0031	0.0161	0.0006	0.0009	0.0003

Notes:

<sup>1</sup> Percent of vehicle trip distribution based on fleet mix from CalEEMod.

<sup>2</sup> Total annual operational VMT based on mitigated annual VMT from CalEEMod.

<sup>3</sup> Average fuel economy derived from Department of Transportation.

<sup>4</sup> Total annual county fuel per EMFAC 2021 projected operational fuel usage.

Electricity/Natural Gas Energy (Phase 2)

	Mitigated Project Annual Energy	Orange County Annual Energy <sup>2</sup>	Percentage Increase
Electricity (kWh/yr)	6,100,357	18,931,838,624	0.0322%
Natural Gas (kBTU/yr)	8,810,742	58,018,755,600	0.0152%
Natural Gas (therms/yr)	88,107	580,187,556	0.0152%
Natural Gas (ft <sup>3</sup> /yr)	8,808,980		

Land Use	Electricity <sup>1</sup> (kWh/yr)		Natural Gas <sup>1</sup> (kBTU/yr)	
	Unmitigated	Mitigated	Unmitigated	Mitigated
Apartments Mid Rise	3,137,954	3,100,486	9,507,458	8,424,903
Regional Shopping Center	638,389	578,292	389,151	385,840
Enclosed Parking with Elevator	2,421,579	2,421,579	0	0
Other Asphalt Surfaces	0	0	0	0
<b>Total Energy</b>	<b>6,197,922</b>	<b>6,100,357</b>	<b>9,896,609</b>	<b>8,810,742</b>

Notes:

<sup>1</sup> Electricity and Natural Gas use per CalEEMod (5.11 Operational Energy Consumption).

<sup>2</sup> County total energy values from California Energy Commission energy reports available through [cdms.energy.ca.gov](http://cdms.energy.ca.gov).

Construction Fuel Consumption (Phase 3)

On-Site Diesel <sup>1</sup> (off-road construction Equipment)	MTCO <sub>2</sub> e	Gallons of Fuel <sup>4</sup>	Average Fuel/Year	Current County Fuel	Percent
Demolition	599	59,003	17,522		
Site Preparation/Grading	3,878	382,026	113,447		
Building Construction	2,417	238,144	70,720		
Paving	804	79,257	23,536		
Architectural Coating	40	3,916	1,163		
<b>Total</b>	<b>7,738</b>	<b>762,345</b>	<b>226,388</b>	<b>124,124,931</b>	<b>0.1824%</b>

Off-Site Diesel <sup>1</sup> (on-road construction trips)	MTCO <sub>2</sub> e	Gallons of Fuel <sup>4</sup>	Average Fuel/Year	Current County Fuel	Percent
Demolition	1,886	185,806	55,177		
Site Preparation/Grading	6,580	648,272	192,513		
Building Construction	5,579	549,622	163,217		
Paving	0	0	0		
Architectural Coating	0	0	0		
<b>Total</b>	<b>14,045</b>	<b>1,383,700</b>	<b>410,908</b>	<b>124,124,931</b>	<b>0.3310%</b>

Off-Site Gasoline <sup>2</sup>	MTCO <sub>2</sub> e	Gallons of Fuel <sup>4</sup>	Average Fuel/Year	Current County Fuel	Percent
Demolition	39	4,462	1,325		
Site Preparation/Grading	177	20,060	5,957		
Building Construction	11,361	1,289,603	382,964		
Paving	118	13,440	3,991		
Architectural Coating	664	75,387	22,387		
<b>Total</b>	<b>12,360</b>	<b>1,402,953</b>	<b>416,625</b>	<b>943,405,017</b>	<b>0.0442%</b>

Total Diesel Fuel		2,146,045	637,296	124,124,931	0.5134%
Total Gasoline Fuel		1,402,953	416,625	943,405,017	0.0442%
<b>Total Construction Fuel</b>	<b>34,142</b>	<b>3,548,999</b>	<b>1,053,921</b>		

Construction Phase <sup>3</sup>	Demolition			Site Preparation			Grading		
	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)
2033	599	1886	39	159	0	8	3320	5890	151
2034							399	690	18
<b>Total</b>	<b>599</b>	<b>1,886</b>	<b>39</b>	<b>159</b>	<b>0</b>	<b>8</b>	<b>3,718</b>	<b>6,580</b>	<b>169</b>

Construction Phase <sup>3</sup>	Infrastructure + Building Construction			Paving			Architectural Coating		
	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)
2033				804	0	118			
2034	285	684	1355						
2035	1707	3948	8026						
2036	425	947	1980				40	0	664
<b>Total</b>	<b>2,417</b>	<b>5,579</b>	<b>11,361</b>	<b>804</b>	<b>0</b>	<b>118</b>	<b>40</b>	<b>0</b>	<b>664</b>

Notes:

- <sup>1</sup> Fuel used for off-road, hauling, and vendor trips assumed to be diesel.
- <sup>2</sup> Fuel used for worker trips assumed to be gasoline.
- <sup>3</sup> MTCO<sub>2</sub>e rates from CalEEMod (3.0 Construction Details).
- <sup>4</sup> For CO<sub>2</sub>e emissions, see Chapter 13 (page 94); Conversion Ratios: Climate Registry, General Reporting Protocol, 2016.

Climate Registry Conversion Ratios:

- Gasoline: 10.15 kg CO<sub>2</sub> per gallon / 1,000 kg per metric ton

Operational Fuel (Phase 3)

Vehicle Type	Percent <sup>1</sup>	Annual VMT <sup>2</sup>	MPG <sup>3</sup>	Annual Fuel (Gallons)	Fuel Type	Orange County Gallons <sup>4</sup>	RS Percent
Passenger Cars (Gasoline)	0.82	18,761,548	21.6	868,590	Gas	943,405,017	0.0921%
Light/Medium Trucks	0.18	4,068,816	17.2	236,559	Diesel	124,124,931	0.1906%
Heavy Trucks/Other	0.01	150,527	6.1	24,677	Diesel	124,124,931	0.0199%
Total Diesel	0.18	22,980,891		261,236			0.2105%

Total

Land Use	HHD	LDA	LDT1	LDT2	LHD	LHD2	MCY	MDV	MH	MHD	OBUS	SBUS	UBUS
Apartments Mid Rise	0.0066	0.4811	0.0357	0.2464	0.0297	0.0082	0.0234	0.1478	0.0031	0.0161	0.0006	0.0009	0.0003
Regional Shopping Center	0.0066	0.4811	0.0357	0.2464	0.0297	0.0082	0.0234	0.1478	0.0031	0.0161	0.0006	0.0009	0.0003
Enclosed Parking with Elevator	0.0066	0.4811	0.0357	0.2464	0.0297	0.0082	0.0234	0.1478	0.0031	0.0161	0.0006	0.0009	0.0003
Other Asphalt Surfaces	0.0066	0.4811	0.0357	0.2464	0.0297	0.0082	0.0234	0.1478	0.0031	0.0161	0.0006	0.0009	0.0003
City Park	0.0066	0.4811	0.0357	0.2464	0.0297	0.0082	0.0234	0.1478	0.0031	0.0161	0.0006	0.0009	0.0003

Notes:

<sup>1</sup> Percent of vehicle trip distribution based on fleet mix from CalEEMod.

<sup>2</sup> Total annual operational VMT based on mitigated annual VMT from CalEEMod.

<sup>3</sup> Average fuel economy derived from Department of Transportation.

<sup>4</sup> Total annual county fuel per EMFAC 2021 projected operational fuel usage.

**Electricity/Natural Gas Energy (Phase 3)**

	Mitigated Project Annual Energy	Orange County Annual Energy <sup>3</sup>	Percentage Increase
Electricity (kWh/yr)	9,271,206	18,931,838,624	0.0490%
Natural Gas (kBTU/yr)	15,158,025	58,018,755,600	0.0261%
Natural Gas (therms/yr)	151,580	580,187,556	0.0261%
Natural Gas (ft <sup>3</sup> /yr)	15,154,994		

Land Use	Electricity <sup>1</sup> (kWh/yr)		Natural Gas <sup>2</sup> (kBTU/yr)	
	Unmitigated	Mitigated	Unmitigated	Mitigated
Apartments Mid Rise	5,568,402	5,169,132	16,871,294	14,950,265
Regional Shopping Center	343,748	307,282	209,543	207,760
Enclosed Parking with Elevator	3,794,792	3,794,792	0	0
Other Asphalt Surfaces	0	0	0	0
City Park	0	0	0	0
<b>Total Energy</b>	<b>9,706,941</b>	<b>9,271,206</b>	<b>17,080,837</b>	<b>15,158,025</b>

Notes:

<sup>1</sup> Electricity and Natural Gas use per CalEEMod (5.11 Operational Energy Consumption).

<sup>2</sup> County total energy values from California Energy Commission energy reports available through [cdms.energy.ca.gov](http://cdms.energy.ca.gov).