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May 6, 2022 Project 00750.00002.001
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SANDAG
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Subject: Energy Impact Assessment for the San Diego Metropolitan Transit System Clean Transit Advancement Campus Project

Dear Mr. Pesce:

HELIX Environmental Planning, Inc. (HELIX) has assessed energy consumption impacts associated with the construction and operation of the proposed San Diego Metropolitan Transit System (MTS) Clean Transit Advancement Campus (CTAC) Project (project). This letter summarizes the findings of the energy consumption impact assessment.

PROJECT DESCRIPTION

~~The San Diego~~ MTS and the San Diego Association of Governments (SANDAG) propose~~s~~ to construct the CTAC, a new bus ~~division~~ maintenance and charging facility for electric buses, ~~located~~ near the intersection of Federal Boulevard and 47th Street in the City of San Diego (refer to Figure 1, *Regional Location*, and Figure 2, *Aerial Photograph*). The Project site is ~~proposed to be~~ located north of Federal Boulevard and west of 47th Street and divided in two portions that are separated by a driveway/access road to a FedEx distribution center~~areas~~. The smaller portion~~section~~ of the Project site, consisting of Assessor Parcel Number (APN) 541-611-2700, occurs on the eastern side (east of the FedEx driveway) and is proposed for employee parking and potentially an administration/operation building, and the larger portion, consisting of APNs 541-611-0400, 3100, 3400, and 3500, occurs on the western side (west of the FedEx driveway) and is proposed for bus parking/charging, a maintenance facility building~~bays~~, bus washes, and an ~~operations~~ administration building. Access to the Project is proposed to be located at up to four driveways along the Federal Boulevard Project frontage. A new traffic signal would be installed at the western-most site driveway.

The existing nine buildings on site would be demolished and a new bus division facility would be constructed. The existing buildings consist of a variety of one- to two-story structures, some of which are occupied by industrial uses. The proposed new bus division would entail the construction of a new

bus maintenance facility building, charging facilities, bus wash facilities, equipment lift facilities, storage facilities, bus parking facilities, an administration and operations office building, employee parking, lighting improvements, security and camera improvements, stormwater improvements, utility relocations, and landscaping and irrigation improvements.

Two to four new buildings would be constructed to accommodate maintenance and service functions, administrative space, and potentially some auxiliary uses. A maintenance facility building would be constructed on the western portion of the site that would encompass approximately 155,000 square feet (sf) and would include maintenance support areas, 20 repair service bays, a body shop, a tire shop, bus wash and service areas, charging stations, storage areas, restrooms, and mechanical and electrical rooms. Administration and auxiliary use space would encompass a total of approximately 75,000 sf and would be housed in one to two buildings. The administration building(s) would include general administration areas, conference rooms and training spaces, storage, security office, changing room and locker area, restrooms, area for future day care services, custodial room, recreation area, lounges, break/lunch room, radio dispatch, clerk facilities, and mechanical and electrical rooms. Administration buildings would be constructed on either or both the western and eastern portions of the site, depending on final design to accommodate up to 250 buses. Additionally, an employee parking lot or structure would be constructed on the eastern portion of the site. The new buildings would range between one to three levels, and up to three levels may be visible from Federal Boulevard due to site and area topography. The proposed facility would be designed to achieve a LEED certification and would also include rooftop solar panels.

~~Proposed new buildings would include an approximately 35,000-square-foot (sf) maintenance facility, approximately 75,000 sf administration and operation office building, and approximately 25,000 sf of storage areas. The maintenance facility would consist of approximately 20 bus maintenance service bays, 2 bus wash lanes, 4 fare and servicing lanes, and 16 equipment lift bays (which could be a combination of portables and in ground). Charging~~Charging facilities would include up to approximately ~~200~~ 250 zero emission bus (ZEB) electric chargers. The new facility would include a total of about 120 administrative offices. The number of employees at full buildout would include approximately 300 bus operators, 125 maintenance staff, and 150 administrative staff[1]. The facility would operate seven days a week, 24 hours a day. The number and type of employees per shift would include approximately 200 bus operators, 50 management/administrative staff, and 30 maintenance staff[2]. Approximately 500 daily electric ZEB trips would be dispatched from the new facility.

The new facility would also include asphalt or concrete surface and/or structured parking for approximately 250 buses, approximately 350 employee vehicles, and approximately 60 non-revenue vehicles (i.e., bus supervisor, relief, and maintenance vehicles). ~~Buses would be able to park at night in employee areas and employee vehicles could utilize bus parking areas during the day.~~ Some employee

[1] It is anticipated that most employment opportunities at the proposed project would be filled by existing residents in the region, including but not limited to residents located near the new facility. While an economic or social change by itself is not considered a significant effect on the environment under CEQA (State CEQA Guidelines sections 15131 and 15382), MTS will comply with all employment and labor laws and regulations that apply to the staffing of its transit facilities. Potential physical changes associated with economic or social changes from the proposed project have been identified and analyzed in this document.

[2] The number of employees per shift represents full buildout operational conditions and is based on similar bus fleet and maintenance parameters at MTS' South Bay Maintenance Facility. It is likely that these numbers could be lower at project opening and would gradually increase to the buildout numbers.

vehicles may be able to utilize bus parking areas during the day. Parking facilities would encompass a total of approximately 136,000 sf.

Retaining walls would be constructed in some locations along the bus parking/charging lot. Proposed fencing would consist of a combination of block wall and/or chain link and would vary from approximately 6 to 12 feet depending on whether it was near the frontage or near adjacent properties. Proposed exterior lighting would be installed along the perimeter of the facility to ensure security and would be shielded or directional to minimize spill into adjacent properties and open space.

Utilities within the project site would be relocated, as required, and stormwater improvements would be constructed. Driveways would also be relocated and modified as required. As noted above, one signalized driveway and up to three unsignalized driveways would be provided for access to the project site from Federal Boulevard. Driveways would be sited, designed, and constructed pursuant to applicable regulations to allow for adequate circulation along Federal Boulevard. The Project would also include irrigation and landscaping to visually enhance the streetscape.

An existing roadway easement adjacent to and west of the FedEx driveway, as well as various San Diego Gas & Electric (SDG&E) utility easements within the site, would be vacated. An existing open space easement occurs along the northern site boundary and the project would not encroach into this easement.

Regulatory Requirements and Project Design Features that Reduce Energy Consumption

The project would be designed to meet 2022 Title 24 Part 6 energy efficiency standards and Part 11, California Green Building (CALGreen) standards, including the requirement for on-site photovoltaic (solar) energy generation for new nonresidential buildings and cool/green roofs (California Energy Commission [CEC] 2022; California Building Standards Commission [CBSC] 2019). In addition, the project would be required to provide 20 percent water indoor reduction in accordance with CALGreen Standards using low flow plumbing fixtures and fittings (CBSC 2019).

REGULATORY FRAMEWORK

Federal Energy Regulations

Energy Independence and Security Act of 2007

House of Representatives Bill 6 (HR 6), the federal Energy Independence and Security Act of 2007, established new standards for a few energy-consuming equipment types not already subject to a standard, and updated some existing standards. The most substantial new standard that HR 6 established was for general service lighting that is being deployed in two phases. First, phased in between 2012 through 2014, common light bulbs were required to use about 20 to 30 percent less energy than previous incandescent bulbs. Second, by 2020, light bulbs were required to consume 60 percent less energy than previous incandescent bulbs; this requirement will effectively phase out the incandescent light bulb.

California Energy Regulations and Plans

Renewable Energy Programs and Mandates (SB 1078, SB 107, SB 2 X1, SB 350, and SB 100)

A series of substantive legislative initiatives have been advanced at the State level in the last two decades. These initiatives focused on increasing the generation of electricity via renewable energy sources and promoting a shift away from fossil- or carbon-based fuels as a key strategy to reduce greenhouse gas (GHG) emissions, air pollution, and water use associated with the energy sector.

In 2002, California established the Renewables Portfolio Standard (RPS) with Senate Bill (SB) 1078, requiring electric utilities in the State to increase procurement of eligible renewable energy resources to achieve a target of 20 percent of their annual retail sales by the year 2010. In 2011, Governor Jerry Brown approved the California Renewable Energy Resources Act, SB 2 X1. SB 2 X1 legislatively broadened the scope of the State RPS to include retail electricity sellers; investor- and publicly owned utilities; municipal utilities; and community choice aggregators under the mandate to obtain 33 percent of their retail electrical energy sales from renewable sources by 2020.

Approved by Governor Brown on October 7, 2015, SB 350 increased California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This will increase the use of Renewables Portfolio Standard eligible resources, including solar, wind, biomass, and geothermal. In addition, large utilities are required to develop and submit Integrated Resource Plans to detail how each entity will meet their customers resource needs, reduce GHG emissions, and increase the use of clean energy.

Approved by Governor Brown on September 10, 2018, SB 100 extended the renewable electricity procurement goals and requirements of SB 350. SB 100 requires that all retail sale of electricity to California end-use customers be procured from 100 percent eligible renewable energy resources and/or zero-carbon resources by the end of 2045.

California Energy Plan

The CEC is responsible for preparing the State Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the fewest environmental and energy costs. To further this policy, the plan identifies a number of strategies, including providing assistance to public agencies and fleet operators.

California Energy Code

California Code of Regulations (CCR) Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. Energy-efficient buildings require less electricity, natural gas, and other fuels.

The Title 24 standards are updated approximately every three years to allow consideration and possible incorporation of new energy efficiency technologies and methods. 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. For businesses, the 2022 Energy Code encourages efficient electric heat pumps, expands solar photovoltaic and battery storage standards, strengthens ventilation standards, improves efficiency standards for building envelope, various internal systems, and grid integration equipment, such as demand-responsive controls to buoy grid stability. Establishes combined solar PV and battery standards for select businesses. Systems are sized to maximize onsite use of solar energy and avoid electricity demand during times when the grid must use gas-powered plants. Buildings whose permit applications are applied for on or after January 1, 2023, must comply with the 2022 Energy Code. (CEC 2022a).

The standards are divided into three basic sets. First, there is a basic set of mandatory requirements that apply to all buildings. Second, there is a set of performance standards–the energy budgets–that vary by climate zone (of which there are 16 in California) and building type; thus, the standards are tailored to local conditions. Finally, the third set constitutes an alternative to the performance standards, which is a set of prescriptive packages that are basically a recipe or a checklist compliance approach.

California Green Building Standards Code

The California Green Building Standards Code (CALGreen; CCR Title 24, Part 11) is a code with mandatory requirements for new residential and nonresidential buildings (including industrial buildings) throughout California. The code is Part 11 of the California Building Standards Code in Title 24 of the CCR. The current 2019 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings went into effect on January 1, 2020 (CBSC 2019).

The development of CALGreen is intended to (1) cause a reduction in GHG emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to the directives by the Governor. In short, the code is established to reduce construction waste; make buildings more efficient in the use of materials and energy; and reduce environmental impact during and after construction.

CALGreen contains requirements for storm water control during construction; construction waste reduction; indoor water use reduction; material selection; natural resource conservation; site irrigation conservation; and more. The code provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. The code also requires building commissioning, which is a process for the verification that all building systems, like heating and cooling equipment and lighting systems, are functioning at their maximum efficiency.

Regional Energy Regulations and Plans

San Diego Association of Governments Regional Energy Strategy

The San Diego Association of Governments' (SANDAG's) 2009 Regional Energy Strategy (RES) serves as the energy policy blueprint for the San Diego region through 2050. The RES identifies priority early implementation actions, essential to meeting the region's energy goals (SANDAG 2009):

- Pursue a comprehensive building retrofit program to improve efficiency and install renewable energy systems;
- Create financing programs to pay for projects and improvements that save energy;
- Utilize the SANDAG-SDG&E Local Government Partnership to help local governments identify opportunities and implement energy savings at government facilities and throughout their communities;
- Support land use and transportation planning strategies that reduce energy use and GHG emissions;
- Support planning of electric charging and alternative fueling infrastructure; and
- Support use of existing unused reclaimed water to decrease the amount of energy needed to meet the water needs of the San Diego region.

The RES identified the main drivers of the strategy, including the state's preferred loading order for meeting new energy needs and global climate change and its policy implications. The California Public Utilities Commission (CPUC) and CEC adopted a preferred loading order to meet the goals for satisfying the state's growing demand for electricity, which would place top priority on increasing energy efficiency and demand response (i.e., temporary reduction or shift in energy use during peak hours), generating new energy from renewable and distributed generation resources, and improvements to clean fossil-fueled generation and infrastructure.

Local Energy Regulations and Plans

City of San Diego General Plan

The following policies contained in the Conservation Element of the 2008 City General Plan are applicable to the Project's energy use:

- CE-A.2. Reduce the City's carbon footprint. Develop and adopt new or amended regulations, programs, and incentives as appropriate to implement the goals and policies set forth in the General Plan to:
    - Create sustainable and efficient land use patterns to reduce vehicular trips and preserve open space;
    - Reduce fuel emission levels by encouraging alternative modes of transportation and increasing fuel efficiency;
    - Improve energy efficiency, especially in the transportation sector and buildings and appliances;
    - Reduce the Urban Heat Island effect through sustainable design and building practices; and
    - Reduce waste by improving management and recycling programs.

- CE-A.5. Employ sustainable or "green" building techniques for the construction and operation of buildings.
    - Develop and implement sustainable building standards for new and significant remodels of residential and commercial buildings to maximize energy efficiency, and to achieve overall net zero energy consumption by 2020 for new residential buildings and 2030 for new commercial buildings.

Climate Action Plan

The City adopted a Climate Action Plan (CAP) in December 2015 (City 2015). The CAP quantifies GHG emissions; establishes Citywide reduction targets for 2020 and 2035; identifies strategies and measures to reduce GHG levels; and provides guidance for monitoring progress on an annual basis. The City CAP identifies a comprehensive set of goals and actions, including ordinances, policies, resolutions, programs, and incentives, that the City can use to reduce GHG emissions. Many of these goals and actions would have the effect of reducing energy use.

EXISTING CONDITIONS

State Energy Supply

Electricity

California's electricity needs are satisfied by a variety of entities, including investor-owned utilities, publicly owned utilities, and electric service providers. As of 2020, California electricity demand totaled 272,576 gigawatt hours (GWh). In-state generating facilities accounted for about 190,913 GWh, or 70 percent of the total electric power used in the state, with the remaining electricity coming from out-of-state imports (CEC 2022b).

Natural Gas

Natural gas continues to play an important and varied role in California. In 2012, nearly 45 percent of the natural gas burned in California was used for electricity generation, and much of the remainder was consumed in the residential (21 percent), industrial (25 percent), and commercial (9 percent) sectors (CEC 2022c). Natural gas supplies are currently plentiful and relatively inexpensive as a result of technological advances that allow recovery of natural gas from formations such as shale reservoirs that were previously inaccessible. However, potential environmental concerns are causing decision makers to reexamine the development of shale resources and consider tighter regulations, which could affect future natural gas supplies and prices.

Transportation Fuels

Automobiles and trucks consume gasoline and diesel fuel, which are nonrenewable energy products derived from crude oil. In addition to energy consumption associated with on-road vehicle use, energy is consumed in connection with construction and maintenance of transportation infrastructure. Passenger cars and light-duty trucks are by far the largest consumers of transportation fuel. Retail sales of

transportation fuel in California totaled 11.2 billion gallons of gasoline and 1.6 billion gallons of diesel in 2020 (CEC 2022d).

Regional Energy Supply

The primary provider of electricity and natural gas in San Diego County is the San Diego Gas and Electric Company (SDG&E). SDG&E is a regulated public utility that provides energy service to 3.6 million people in San Diego and southern Orange counties. In 2021, SDG&E delivered 9,739 GWh of electricity and 378 million therms of natural gas to residential, commercial, industrial, and agricultural customers (SDG&E 2022).

METHODOLOGY

Units of Measure

The units of energy used in this section are the British thermal units (Btu), kilowatt hours (kWh), therms, and gallons. A Btu is the quantity of heat required to raise the temperature of one pound of water one °F at sea level. Because the other units of energy can all be converted into equivalent Btu, the Btu is used as the basis for comparing energy consumption associated with different resources and is often expressed in millions of Btus (MMBTU). A kWh is a unit of electrical energy, and one kWh is equivalent to approximately 3,413 Btus, taking into account initial conversion losses (i.e., from one type of energy, such as chemical, to another type of energy, such as mechanical) and transmission losses. Natural gas consumption is described typically in terms of cubic feet or therms; one cubic foot of natural gas is equivalent to approximately 1.05 MMBtu, and one therm represents 0.1 MMBtu. One gallon of gasoline/diesel is equivalent to approximately 0.125/0.139 MMBtu, respectively, taking into account energy consumed in the refining process.

Modeling and Calculations

The proposed project's direct electricity and natural gas consumption as well as the indirect electricity consumption from water/wastewater sourcing, transport, and treatment were estimated from the air quality emissions project modeling completed using the California Emissions Estimator Model (CalEEMod), Version 2020.4.0, as described the *San Diego Metropolitan Transit System Clean Transit Advancement Campus Project Air Quality Technical Report* (HELIX 2022). Fuel consumption factors in terms of gallons per hour of diesel for off-road equipment were calculated using data from the CARB Mobile Source Emissions Inventory online database–OFFROAD2021 (CARB 2022). Fuel consumption factors, in terms of gallon of diesel and gasoline per mile travel, were calculated from the CARB Mobile Source Emissions Inventory online database–EMFAC2021 (CARB 2022). The energy calculation sheets are included as Attachment A to this letter.

Energy usage from transportation sources is associated with project-related vehicle trip generation and trip length. According to the Transportation Impact Study (TIS) prepared for the project by VRPA Technologies, Inc., the project is estimated to generate 2,090 average daily trips (ADT); this was broken down as 1,590 ADT by employees and 500 ADT by buses. The TIS also included a vehicle miles traveled (VMT) analysis from which it was estimated that the average employee trip length would be 5.59 miles (VRPA Technologies 2022).

Project building energy consumption was estimated assuming the CalEEMod default based on land use type and implementation of energy-reducing project design features to comply with the 2022 Title 24 standards. CalEEMod Version 2020.4.0 incorporates the 2019 Title 24 energy efficiency standards. The project would also be required to incorporate onsite photovoltaic solar panels in compliance with 2022 Title 24. Based on the size of the development, the project would be required to install a system rated at 344 kilowatts (kW) direct current (DC) generating approximately 603 megawatt-hours (MWh) per year.

Indirect energy consumption from water/wastewater sourcing and treatment was estimated based on the CalEEMod indoor and outdoor water use estimates from the *San Diego Metropolitan Transit System Clean Transit Advancement Campus Project Air Quality Technical Report* (HELIX 2022), and from CalEEMod default values for water/wastewater electricity use intensity factors for San Diego County (California Air Pollution Control Officers Association [CAPCOA] 2021).

SIGNIFICANCE CRITERIA

MTS has not adopted thresholds for use in CEQA documents where they are the lead agency. In the absence of MTS adopted thresholds, this analysis relies on the Governor's Office of Planning and Research updated Appendix G CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a project would have a significant environmental impact if it would:

1. Result in the wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

2. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

IMPACT ANALYSIS

Issue 1: Result in the wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation

Construction Energy

Energy consumed for project construction would primarily consist of fuels in the form of diesel and gasoline. Fuel consumption would result from: the use of on-road trucks for the transportation of construction materials and water; construction worker vehicles traveling to and from the project site; and from the use of off-road construction equipment. A complete description of the project construction equipment use and vehicle trips is included in Attachment A to this letter. The estimated fuel and total energy consumed during project construction is shown in Table 1, *Construction Energy Use*. The full construction energy consumption calculation sheets are included as Attachment A to this letter.

Table 1
CONSTRUCTION ENERGY USE

Source	Gallons Diesel	Gallons Gasoline	MMBtu
Off-Road Construction Equipment	18,047	-	2,508
On-Road Construction Traffic	~~5,435~~5,422	~~19,382~~16,277	~~3,159~~2,772
Total[1]	**~~23,482~~23,469**	**~~19,382~~16,277**	**~~5,667~~5,280**

Source: CalEEMod; CARB 2022
[1] Totals may not sum due to rounding.
MMBtu = million British thermal units

While construction activities would consume petroleum-based fuels, consumption of such resources would be temporary and would cease upon the completion of construction. The petroleum consumed during project construction would be typical of similar residential projects and would not require the use of new petroleum resources beyond those typically consumed in California annually for construction activities. Based on these considerations, construction of the project would not result in wasteful, inefficient, or unnecessary consumption of energy resources and the impact would be less than significant.

Operational Energy

During long-term operation of the project, energy would be consumed in the form of diesel and gasoline used by vehicles traveling to and from the project site; natural gas for heating and hot water; electricity required to source and treat water used by the project; and electricity used directly by the project. The project's net electricity use calculation accounts for the on-site solar generation requirement, as described in the Methodology Section, above. The project's estimated annual operational energy use (for the first full year of operation—2026) in gallons of fuel, electricity, and equivalent MMBtu is shown in Table 2, *Operational Energy Use*. The analysis conservatively assumes full operation/buildout with 250 buses in the first year of operation. This assumption is conservative because it will likely take a few years to ramp up operations to this level. The energy calculation sheets are included in Attachment A to this letter.

Table 2
OPERATIONAL ENERGY USE

Source	Diesel (gallons)	Gasoline (gallons)	Electricity (kWh)	Total Energy (MMBtu)
Mobile	29,077	12,766	-	5,625
Natural Gas	-	-	-	~~1,947~~3,288
Water/Wastewater	-	-	~~305,256~~426,295	~~1,042~~1,455
Direct Electricity Use	-	-	~~3,700,806~~3,702,685	~~12,628~~12,630
Total[1]	29,077	12,766	**~~3,701,111~~4,127,980**	**~~21,241~~22,998**

Source: CalEEMod; CARB 2022
[1] Totals may not sum due to rounding.
kWhr = kilowatt-hours; MMBtu = million British thermal units

As shown in Table 2, the project would result in a net increase in annual energy consumption of approximately ~~21,241~~22,998 MMBtu. While the proposed project would result in the consumption of gasoline, diesel, electricity and natural gas, the increase would consistent overall with the energy projections for the state and the region to meet the demands of anticipated future residential growth in the state and region. According to the project Transportation Study, the regional average vehicle miles traveled (VMT) per employee is 18.9 miles per day. The project employees would have a VMT of 15.3 miles per day, 19.1 percent below the regional average (VRPA Technologies 2022). Therefore, the project would likely result in a regional decrease in VMT, and a decrease in the associated per capita consumption of transportation fuels for the region. Furthermore, the Project is a mass transit project aimed at reducing overall regional VMT through increased ridership with a bus fleet consisting of energy

efficient ZEBs. Implementation of the project would not require the construction of new regional facilities and sources of energy. Therefore, operation of the project would not result in wasteful, inefficient, or unnecessary consumption of energy resources and the impact would be less than significant.

Issue 2: Conflict with or obstruct a state or local plan for renewable energy or energy efficiency

The 2022 Title 24 Part 6, Building Energy Efficiency Standards, and 2019 Title 24 Part 11, CALGreen, include provisions applicable to all buildings, which are mandatory requirements for efficiency and design. The project would be consistent with the requirements of Title 24 through implementation of energy-reduction measures, such as energy efficient lighting and appliances, water efficient appliances and plumbing fixtures, water efficient landscaping and irrigation, and the onsite generation of renewable solar energy, as described above. Additionally, the Project is a mass transit project aimed at reducing overall regional VMT through increased ridership with a bus fleet consisting of energy efficient ZEBs. Therefore, the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and the impact would be less than significant.

Cumulative Impact Analysis

The geographic scope for energy is the County of San Diego. Short-term and long-term cumulative development is expected to result in an increase in the demand for energy resources throughout the County. Several County programs and policies and SDG&E initiatives would serve to reduce total energy demand among cumulative projects. Additionally, minimum standards for energy efficiency are outlined in California's Title 24 energy efficiency standards for residential buildings. SDG&E as well as state and federal agencies offer incentive programs to encourage developers to exceed Title 24 standards.

The proposed project's energy usage would not be carried out in a wasteful, inefficient, or unnecessary manner. In addition, the predominant consumer of energy for the project would be on-road vehicle travel. On-road vehicle efficiency is regulated at the State and federal level. Therefore, the proposed project's cumulative impacts related to energy usage would be less than cumulatively considerable.

CONCLUSION

The project would comply with all applicable requirements of California's 2022 Title 24 Building energy Efficiency Standards and California Green Building Standards (CALGreen), including the requirement for on-site solar electricity generation. The project would result in 19.1 percent lower VMT per employee (and lower associated transportation fuel consumption) than the regional average. Construction and operation of the project would not require the development of new energy resources and distribution infrastructure The project would not result in wasteful or inefficient consumption of energy resources and the project would not conflict a State or local plan for renewable energy or energy efficient. Impacts related to energy consumption would be less than significant.

Sincerely,

Victor Ortiz
Senior Technical Specialist

Enclosures:

Figure 1: Regional Location
Figure 2: Aerial Photograph
Attachment A: Energy Calculation Sheets

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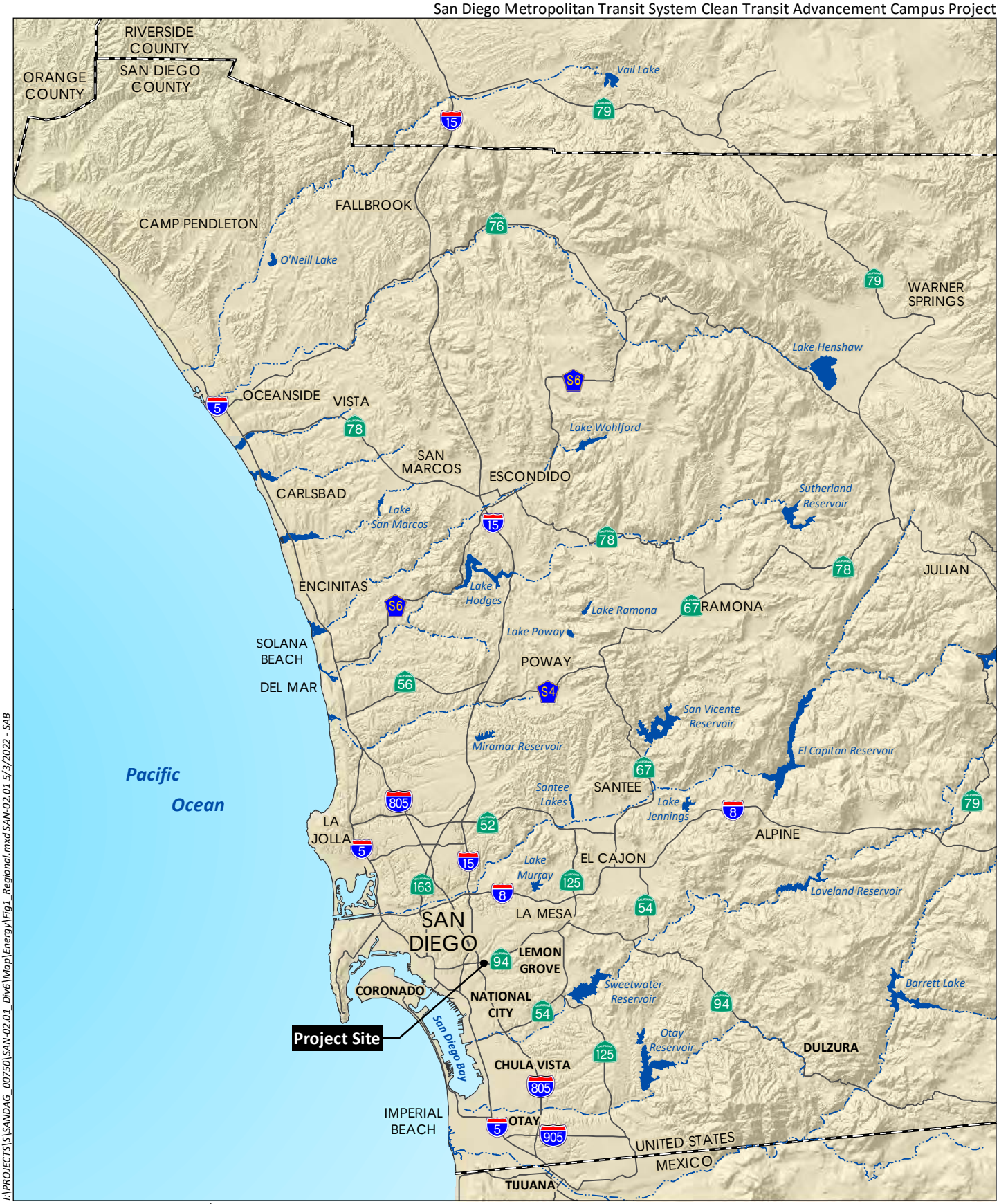

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Source: Base Map Layers (SanGIS, 2016)

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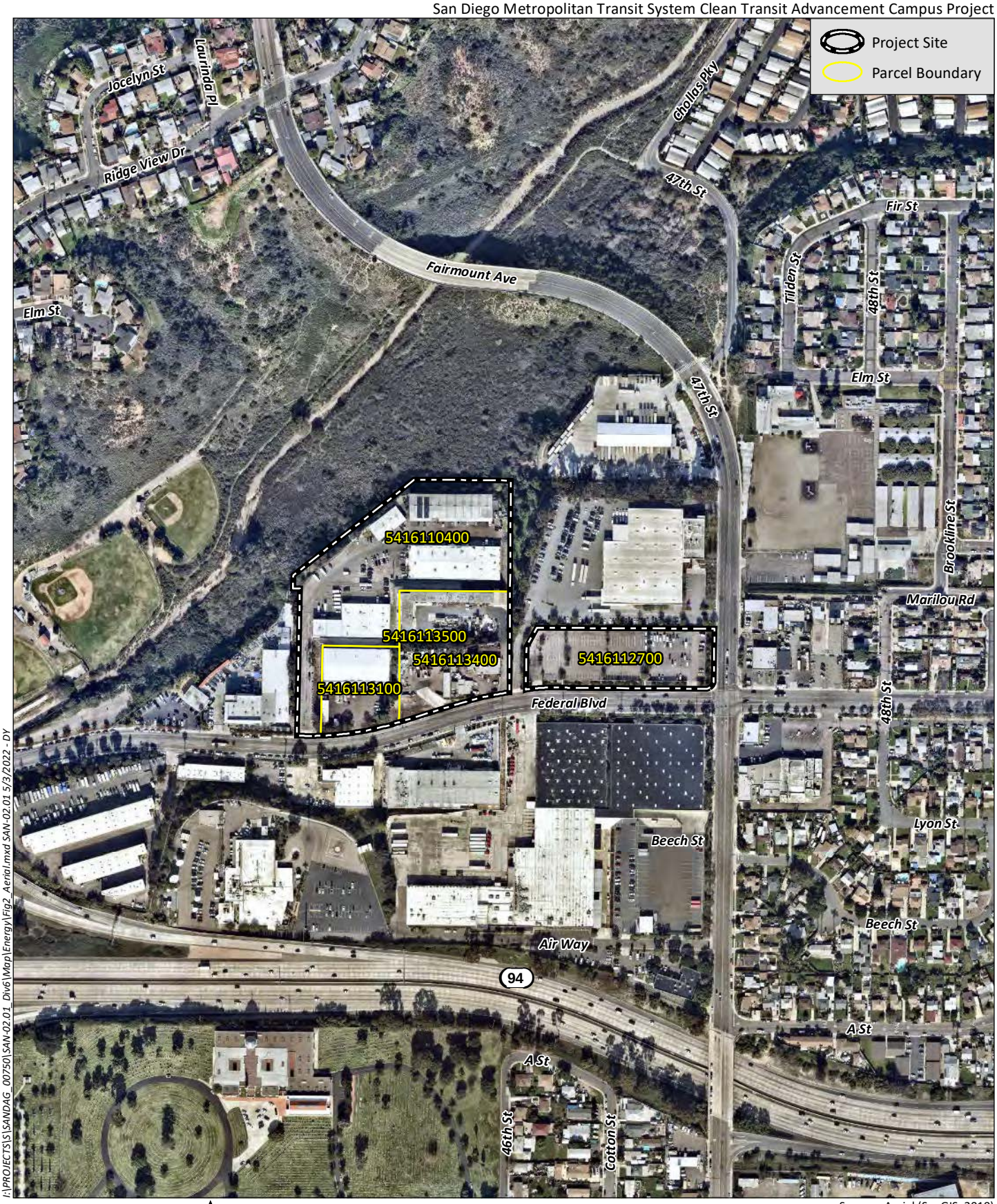
Regional Location

Figure 1



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Source: Aerial (SanGIS, 2019)

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Aerial Photograph

Figure 2

Appendix A

Energy Calculation Sheets

Construction Energy Use

Off-Road Construction Equipment Energy Use

Phase	Equipment	Fuel	Equipment Count	Hours/Day	HP	Load Factor	Work Days	Gallons /HP-Hr	Gallons /Hour	Gallons /Day	Total Gallons	Total kBtu
Demolition	Concrete/Industrial Saws	Diesel	1	8.0	81	0.73	20	0.0416823	2.46467	19.717	394.3	54,814
	Excavators	Diesel	3	8.0	158	0.38	20	0.0197573	1.18623	28.469	569.4	79,145
	Rubber Tired Dozers	Diesel	2	8.0	247	0.4	20	0.0204799	2.02342	32.375	647.5	90,002
Site Preparation	Rubber Tired Dozers	Diesel	3	8.0	247	0.4	10	0.0204799	2.02342	48.562	485.6	67,501
	Tractors/Loaders/Backhoes	Diesel	4	8.0	97	0.37	10	0.0191339	0.68671	21.975	219.7	30,545
Grading	Excavators	Diesel	2	8.0	158	0.38	35	0.0197573	1.18623	18.980	664.3	92,336
	Grader	Diesel	1	8.0	187	0.41	35	0.0211398	1.62079	12.966	453.8	63,081
	Rubber Tired Dozers	Diesel	1	8.0	247	0.4	35	0.0204799	2.02342	16.187	566.6	78,751
	Scraper	Diesel	2	8.0	367	0.48	35	0.0250024	4.40442	70.471	2,466.5	342,840
	Tractors/Loaders/Backhoes	Diesel	2	8.0	97	0.37	35	0.0191339	0.68671	10.987	384.6	53,454
Building Construction	Cranes	Diesel	1	7.0	231	0.29	281	0.0148924	0.99764	6.983	1,962.4	272,768
	Forklifts	Diesel	3	8.0	89	0.2	281	0.0103890	0.18492	4.438	1,247.1	173,351
	Generator Sets	Diesel	1	8.0	84	0.74	281	0.0158178	0.98324	7.866	2,210.3	307,234
	Tractors/Loaders/Backhoes	Diesel	3	7.0	97	0.37	281	0.0191339	0.68671	14.421	4,052.3	563,270
	Welders	Diesel	1	8.0	46	0.45	281	0.0258257	0.53459	4.277	1,201.8	167,045
Paving	Pavers	Diesel	2	8.0	130	0.42	20	0.0215239	1.17521	18.803	376.1	52,273
	Paving Equipment	Diesel	2	8.0	132	0.36	20	0.0183374	0.87139	13.942	278.8	38,759
	Rollers	Diesel	2	8.0	80	0.38	20	0.0194146	0.59021	9.443	188.9	26,252
Architectural Coating	Air Compressors	Diesel	1	6.0	78	0.48	20	0.0158178	0.59222	3.553	71.1	9,878
										Project Construction Off-Road Total	**18,046.7**	**2,508,486**

On-Road Construction Energy Use

Phase	Trip Type (Fleet Mix)	Trips	Distance (miles)	Work Days	Total VMT	gallons diesel/VMT	Total diesel gallons	gallons gas/VMT	Total gasoline gallons	Total kBtu
Demolition	Worker (LDA, LDT1, LDT2)	15	10.8	20	3,240	9.91E-05	0.32	3.88E-02	125.76	15,639
	Hauling (HHDT)	1,610	20.0	20	32,200	1.65E-01	5,318.82	6.68E-08	0.00	739,316
Site Preparation	Worker (LDA, LDT1, LDT2)	18	10.8	10	1,944	9.91E-05	0.19	3.88E-02	75.46	9,384
	Hauling (HHDT)	-	20.0	10	-	1.65E-01	-	6.68E-08	-	-
Grading	Worker (LDA, LDT1, LDT2)	20	10.8	35	7,560	9.91E-05	0.75	3.88E-02	293.45	36,492
	Hauling (HHDT)	-	20.0	35	-	1.65E-01	-	6.68E-08	-	-
Building Construction	Worker (LDA, LDT1, LDT2)	131	10.8	281	397,559	9.91E-05	39.40	3.88E-02	15,431.70	1,919,008
	Vendor (HHDT, MHDT)	60	7.3	281	438	1.41E-01	61.76	1.53E-02	6.69	9,413
Paving	Worker (LDA, LDT1, LDT2)	15	10.8	20	3,240	9.91E-05	0.32	3.88E-02	125.76	15,639
	Hauling (HHDT)	-	20.0	20	-	1.65E-01	-	6.68E-08	-	-
Architectural Coating	Worker (LDA, LDT1, LDT2)	26	10.8	20	5,616	9.91E-05	0.56	3.88E-02	217.99	27,108
				Project Construction On-Road Total	**451,797**		**5,422**		**16,277**	**2,772,000**

Notes:
1. Off-road equipment types and horsepower from CalEEMod defaults.
2. Off-road equipment count and hours from CalEEMod for the AQ report.
3. Off-road fuel consumption factors from CARB OFFROAD2021- Web Database, for San Diego County, aggregate model years. https://arb.ca.gov/emfac/emissions-inventory/.
4. On-road fleet mix and trip distances from CalEEMod for the AQ report.
5. On-road fuel consumption factors weighted average for fleet mix from CARB EMFAC2021, for San Diego Cpounty, aggregate model years, aggregate speeds. https://arb.ca.gov/emfac/emissions-inventory/
6. 1 Gallon of diesel = 139 kBtu; 1 gallon of gasoline = 124 kBtu.

Construction Energy Summary

Source	Gallons Diesel	Gallons Gas	kBtu
Off-Road Construction Equipment	18,047	-	2,508,486
On-Road Construction Traffic	5,422	16,277	2,772,000
Project Construction Total	**23,469**	**16,277**	**5,280,486**

Annual Operational Energy Use

Project VMT
3,235,268

Project On-Road Project Operational Energy Use

Category	Mix	Diesel Gallons/VMT	Diesel Gallons	Gasoline Gallons/VMT	Gasoline Gallons	kBtu
LDA	56.5387%	7.31E-05	134	7.31E-05	134	35,157
LDT1	6.2253%	7.90E-04	159	7.31E-05	15	23,953
LDT2	17.5474%	1.29E-04	73	1.29E-04	73	19,217
MDV	11.6234%	5.14E-02	19,338	7.18E-04	270	2,721,505
LHDT1	2.3574%	5.80E-02	4,424	2.59E-02	1,975	859,841
LHDT2	0.6359%	3.56E-02	733	5.06E-02	1,041	230,985
MHDT	0.9156%	4.41E-02	1,307	9.20E-02	2,725	519,628
HHDT	0.6316%	6.68E-05	1	1.65E-01	3,375	418,726
OBUS	0.0699%	1.12E-01	253	6.57E-02	149	53,615
UBUS	0.0586%	2.58E-02	49	9.01E-02	171	27,982
MCY	2.8465%	-	-	2.54E-02	2,344	290,620
SBUS	0.0937%	1.03E-01	314	-	-	43,584
MH	0.4559%	1.55E-01	2,293	3.35E-02	494	379,907
Annual Total			**29,077**		**12,766**	**5,624,720**

Project Electricity and Natural Gas

Type	Source	MWhr	kBtu
Natural Gas	Hot Water, Heating	-	3,287,850
Electricity	Buildings, Lighting, Bus Charging	3,702	12,630,676
	Total	**3,701.685**	**15,918,526**

Project Water and Wastewater Energy Use

Indoor (Mgal)	Outdoor (Mgal)	Supply (kWhr/Mgal)	Treat Water (kWhr/Mgal)	Distribute (kWhr/Mgal)	Treat Wastewater (kWhr/Mgal)	kWhr	kBtu
22.3301	13.68618	9,727	111	1,272	1,911	426,295	1,454,580

Project Total

Energy Type	Quantity	kBtu
Gasoline (Gallons)	12,766	1,583,003
Diesel (Gallons)	29,077	4,041,717
Natural Gas (kBtu)	3,287,850	3,287,850
Electricity (MWhr)	4,127.980	14,085,256
	Total	**22,997,826**

Notes:
1. VMT, electricity, natural gas, and water use from project CalEEMod annual output.
2. Fleet mix from CalEEMod default for San Diego County
3. Fuel consumption factors weighted average for fleet mix from CARB EMFAC22021, for San Diego County, aggregate model years for 2026, aggregate speeds.
4. Water electricity intensity factors from CalEEMod default for San Diego County.
5. 1 Gallon of diesel = 139 kBtu; 1 gallon of gasoline = 124 KBtu; 1 kWhr = 3.412142 kBtu.
6. Electricity use includes reduction from on-site photovoltaic generation.

Model Output: OFFROAD2021 (v1.0.2) Emissions Inventory
Region Type: County
Region: San Diego
Calendar Year: 2024
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2021 Equipment Types
Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	Calendar Y	Vehicle Category	Model Year	Horsepower Bin	Fuel	Fuel Consumption	Total_Activity_hpy	Total_Population	Horsepower_Hours_hhpy	Gallons/hp-hour
San Diego	2024	Construction and Mining - Cranes	Aggregate	300	Diesel	143284.0037	43812.75586	90.82659325	9621281.304	0.014892404
San Diego	2024	Construction and Mining - Excavators	Aggregate	175	Diesel	432423.7115	149801.3132	247.59169	21886825.55	0.01975726
San Diego	2024	Construction and Mining - Graders	Aggregate	300	Diesel	540152.8878	119130.8453	154.0540624	25551509.75	0.021139764
San Diego	2024	Construction and Mining - Misc - Concrete/Industrial Saws	Aggregate	50	Diesel	3650	2653.55	4.57	87567.15	0.041682298
San Diego	2024	Construction and Mining - Pavers	Aggregate	175	Diesel	57178.07821	16835.85911	42.68307298	2656487.507	0.02152394
San Diego	2024	Construction and Mining - Paving Equipment	Aggregate	175	Diesel	24137.00724	9036.438737	19.27285867	1316275.272	0.018337355
San Diego	2024	Construction and Mining - Rollers	Aggregate	100	Diesel	137902.5126	81397.77221	239.8218186	7103015.609	0.019414643
San Diego	2024	Construction and Mining - Rubber Tired Dozers	Aggregate	300	Diesel	20755.48277	4482.354022	6.402132402	1013454.131	0.020479943
San Diego	2024	Construction and Mining - Scrapers	Aggregate	600	Diesel	1971314.207	186729.7136	379.9710831	78845130.43	0.025002358
San Diego	2024	Construction and Mining - Tractors/Loaders/Backhoes	Aggregate	100	Diesel	2125326.9	1333935.756	2089.021601	111076673.4	0.019133872
San Diego	2024	Industrial - Forklifts	Aggregate	175	Diesel	184468.7185	125663.7943	163.9142796	17756190.86	0.01038898
San Diego	2024	Light Commercial - Misc - Air Compressors	Aggregate	50	Diesel	74722.8	73219	89.91	2709103	0.027582119
San Diego	2024	Light Commercial - Misc - Welders	Aggregate	50	Diesel	343001.45	288725.95	449.59	13281393.7	0.025825712
San Diego	2024	Portable Equipment - Non-Rental Generator	Aggregate	100	Diesel	105483.454	69708.97824	50.81482926	6668646.217	0.015817821
San Diego	2024	Portable Equipment - Rental Compressor	Aggregate	100	Diesel	5003.952016	3820.403498	7.090441292	316349.0047	0.015817821

Source: EMFAC2021 (v1.0.1) Emissions Inventory
Region Type: County
Region: San Diego
Calendar Year: 2024, 2026
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/year for CVMT and EVMT, trips/year for Trips, kWh/year for Energy Consumption, tons/year for Emissions, 1000 gallons/year for Fuel Consumption

2024 Construction Fleet Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	VMT	Fuel Consumption (1000 Gal.)	Gallons/VMT
Worker (LDA, LDT1, LDT2)								
San Diego	2024	LDA	Aggregate	Aggregate	Diesel	59757769	1500.674931	
San Diego	2024	LDT1	Aggregate	Aggregate	Diesel	308112.81	13.70129412	
San Diego	2024	LDT2	Aggregate	Aggregate	Diesel	30424239	1029.504501	
					Diesel Total	**90490120**	**2543.880726**	**9.91164E-05**
San Diego	2024	LDA	Aggregate	Aggregate	Gasoline	1.625E+10	581253.5869	
San Diego	2024	LDT1	Aggregate	Aggregate	Gasoline	1.537E+09	66725.95852	
San Diego	2024	LDT2	Aggregate	Aggregate	Gasoline	7.783E+09	348259.4638	
					Gas Total	**2.558E+10**	**996239.0092**	**0.038816153**
					Total VMT	**2.567E+10**		
Vendor (HHDT, MHDT)								
San Diego	2024	HHDT	Aggregate	Aggregate	Diesel	592931221	97966.23267	
San Diego	2024	MHDT	Aggregate	Aggregate	Diesel	233514250	27640.01611	
					Diesel total	**826445470**	**125606.2488**	**0.140997229**
San Diego	2024	HHDT	Aggregate	Aggregate	Gasoline	154277.92	39.62714087	
San Diego	2024	MHDT	Aggregate	Aggregate	Gasoline	64242220	13557.12777	
					Gas Total	**64396498**	**13596.75491**	**0.015262814**
					Total VMT	**890841969**		
Hauling (HHDT)								
San Diego	2024	HHDT	Aggregate	Aggregate	Diesel	592931221	97966.23267	**0.165180624**
San Diego	2024	HHDT	Aggregate	Aggregate	Gasoline	154277.92	39.62714087	**6.68152E-08**
					Total VMT	**593085499**		

2026 Operational Fleet Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	VMT	Consumption (1000 Gal.)	Gallons/VMT
LDA								
San Diego	2026	LDA	Aggregate	Aggregate	Diesel	47783453	1180.272	**7.30801E-05**
San Diego	2026	LDA	Aggregate	Aggregate	Gasoline	1.61E+10	555195.2	**0.034376595**
					Total VMT	**1.62E+10**		
LDT1								
San Diego	2026	LDT1	Aggregate	Aggregate	Diesel	47783453	1180.272	**0.000790407**
San Diego	2026	LDT1	Aggregate	Aggregate	Gasoline	1.45E+09	60923.99	**0.040799716**
					Total VMT	**1.49E+09**		
LDT2								
San Diego	2026	LDT2	Aggregate	Aggregate	Diesel	30987925	1017.159	**0.000128711**
San Diego	2026	LDT2	Aggregate	Aggregate	Gasoline	7.87E+09	338527.2	**0.042837191**
					Total VMT	**7.9E+09**		
MDV								
San Diego	2026	MDV	Aggregate	Aggregate	Diesel	76596205	3341.963	**0.000718064**
San Diego	2026	MDV	Aggregate	Aggregate	Gasoline	4.58E+09	239338.9	**0.051425035**
					Total VMT	**4.65E+09**		
LHDT1								
San Diego	2026	LHDT1	Aggregate	Aggregate	Diesel	3.95E+08	24352.65	**0.025901829**
San Diego	2026	LHDT1	Aggregate	Aggregate	Gasoline	5.46E+08	54531.58	**0.058000585**
					Total VMT	**9.4E+08**		
LHDT2								
San Diego	2026	LHDT2	Aggregate	Aggregate	Diesel	1.64E+08	12132.71	**0.050622714**
San Diego	2026	LHDT2	Aggregate	Aggregate	Gasoline	75407026	8535.555	**0.035613888**
					Total VMT	**2.4E+08**		
MHDT								
San Diego	2026	MHDT	Aggregate	Aggregate	Diesel	2.36E+08	27593.72	**0.092004335**
San Diego	2026	MHDT	Aggregate	Aggregate	Gasoline	64251852	13233.84	**0.044124921**
					Total VMT	**3E+08**		
HHDT								
San Diego	2026	HHDT	Aggregate	Aggregate	Diesel	5.93E+08	97966.23	**0.165180624**
San Diego	2026	HHDT	Aggregate	Aggregate	Gasoline	154277.9	39.62714	**6.68152E-05**
					Total VMT	**5.93E+08**		
OBUS								
San Diego	2026	OBUS	Aggregate	Aggregate	Diesel	14044423	2031.555	**0.065710999**
San Diego	2026	OBUS	Aggregate	Aggregate	Gasoline	16872094	3460.84	**0.111941456**
					Total VMT	**30916518**		
UBUS								
San Diego	2026	UBUS	Aggregate	Aggregate	Diesel	14663303	1788.956	**0.090117781**
San Diego	2026	UBUS	Aggregate	Aggregate	Gasoline	5188004	511.9778	**0.025790636**
					Total VMT	**19851307**		
MCY								
San Diego	2026	MCY	Aggregate	Aggregate	Gasoline	1.46E+08	3718.302	**0.025449695**
SBUS								
San Diego	2026	SBUS	Aggregate	Aggregate	Gasoline	4742125	490.4976	**0.103434136**
MH								
San Diego	2026	MH	Aggregate	Aggregate	Diesel	12541362	1336.598	**0.033485152**
San Diego	2026	MH	Aggregate	Aggregate	Gasoline	27374774	6204.217	**0.155431314**
					Total VMT	**39916135**		