

# Appendix A

---

Greenhouse Gas Inventory  
(Technical Memorandum)



# Memo



455 Capitol Mall, Unit 300  
Sacramento, CA 95814  
916.444.7301

**Date:** March 29, 2022

**To:** Stefan Heisler and Darcy Goulart (City of Rancho Cordova)

**From:** Alyssa Way, Andrew Martin, and Honey Walters (Ascent Environmental)

**Subject:** City of Rancho Cordova Climate Action Plan, Greenhouse Gas Emissions Inventory  
Technical Memorandum

---

## INTRODUCTION

In 2009, the County of Sacramento prepared a baseline inventory for the unincorporated county and the incorporated cities, including specifically a 2005 baseline year inventory for the City of Rancho Cordova (City). The Sacramento Area Council of Governments (SACOG) 2020 Metropolitan Transportation Plan / Sustainable Communities Strategy (MTP/SCS) Draft Environmental Impact Report included a greenhouse gas (GHG) emissions inventory and forecast for 2016, 2030, 2040, and 2050 that included the City. Though the City was considered in both efforts, an updated communitywide GHG emissions inventory using the latest methodologies with a more recent 2019 baseline year has been prepared for the City's Climate Action Plan (CAP).

The CAP is intended to reduce GHG emissions for the 2030 target year and 2045 goal. This initial preparation of a GHG emissions inventory provides a foundation for the forthcoming phases of the CAP process, which includes forecasting future emissions, developing GHG emissions reduction targets, defining GHG emissions reduction measures, and preparing a CAP to reduce GHG emissions from activities occurring in the city. This technical memorandum provides the results of the 2019 GHG emissions inventory, as well as associated methods, assumptions, emissions factors, and data sources.

## ORGANIZATION OF THIS MEMORANDUM

This memorandum consists of two main parts:

- ▶ Section 1: Summary of Inventory Results presents an overview of the 2019 community inventories for each sector.
- ▶ Section 2: Data, Methods, and Assumptions summarizes data, methods, and assumptions used in the 2019 inventory and provides activity data and GHG emissions estimates by sector.

# 1 SUMMARY OF INVENTORY RESULTS

## 1.1 COMMUNITY INVENTORY

The city’s GHG emissions inventory for 2019 was estimated based on methodologies and guidance provided by ICLEI – Local Governments for Sustainability (ICLEI) (discussed further in Section 2.2.1). Based on the modeling conducted, community activities in 2019 generated approximately 679,706 metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>e). Major emissions sectors included on-road transportation, residential and nonresidential building energy use, solid waste, water use, and wastewater generation. The 2019 inventory will serve as the City’s GHG emissions baseline, which will be used to set future emissions reductions targets. A description of each emissions sector, including key sources, is provided in further detail in Section 2, “Data, Methods, and Assumptions”. Table 1 and Figure 1 present the overall 2019 community inventory and the contributions from each key sector.

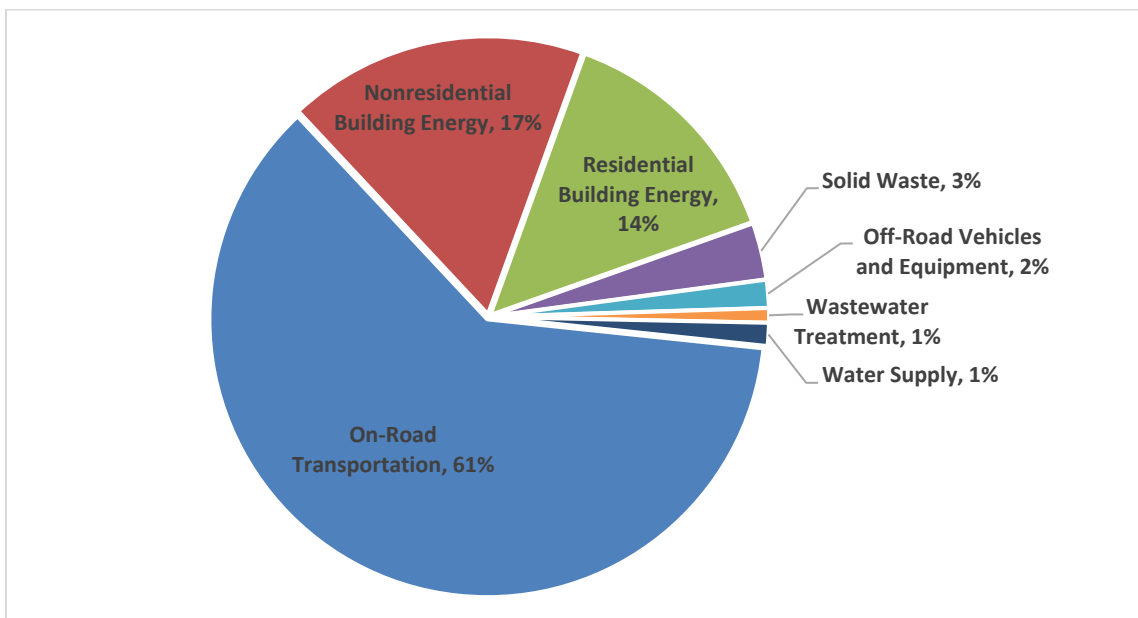
**Table 1 2019 City of Rancho Cordova Community Greenhouse Gas Emissions Inventory**

Sectors	MTCO <sub>2</sub> e/year	Percent of Total
On-Road Transportation	417,145	61%
Nonresidential Building Energy	118,801	17%
Residential Building Energy	95,575	14%
Solid Waste	22,397	3%
Off-Road Vehicles and Equipment	11,027	2%
Water Supply	9,071	1%
Wastewater Treatment	5,690	1%
Total	679,706	100%

Notes: MTCO<sub>2</sub>e/year = metric tons of carbon dioxide equivalent per year

Source: Ascent Environmental 2021

Figure 1 2019 City of Rancho Cordova Community Greenhouse Gas Emissions Inventory



Source: Ascent Environmental 2021

## 2 DATA, METHODS, AND ASSUMPTIONS

### 2.1 OVERALL ASSUMPTIONS AND DATA

#### 2.1.1 Utility Emissions Factors

Emissions of carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O) per unit of electricity and natural gas can vary by location and from year to year depending on numerous factors. Utility-specific factors for GHG emissions were obtained and used in the 2019 inventory to estimate GHG emissions from electricity and natural gas consumption. Sources for electricity and natural gas emissions factors are shown below.

- ▶ Electricity: Utility electricity emissions factors for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O were obtained from the Sacramento Municipal Utility District (SMUD) and the U.S. Environmental Protection Agency's (EPA's) Emissions & Generation Resource Integrated Database (eGRID). For 2019, SMUD's CO<sub>2</sub> emissions factor was interpolated using the 2018 emissions factor provided by SMUD and the requirements of the Renewables Portfolio Standard included in Senate Bill (SB) 100. The same approach was taken for CH<sub>4</sub> and N<sub>2</sub>O emissions factors from eGRID's 2018 Annual Output Emissions Rates (EPA 2020).
- ▶ Natural Gas: Utility natural gas emissions factors for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O were obtained from The Climate Registry's (TCR's) 2020 Default Emission Factors (TCR 2020).

Specific utility emissions factors used in the inventory calculations are shown below in Table 3.

**Table 3 2019 City of Rancho Cordova Utility Emissions Factors**

Source and Unit	2019 Emissions Factor
SMUD – Electricity	
g CO <sub>2</sub> /kWh	232.10
g CH <sub>4</sub> /kWh	0.015
g N <sub>2</sub> O/kWh	0.002
g CO <sub>2</sub> e/MWh	233.01
PG&E – Natural Gas	
g CO <sub>2</sub> /therm	5306
g CH <sub>4</sub> /therm	0.47
g N <sub>2</sub> O/therm	0.01
g CO <sub>2</sub> e/therm	5322

Notes: CH<sub>4</sub> = methane; CO<sub>2</sub> = carbon dioxide; g= grams, MWh = megawatt-hours; N<sub>2</sub>O = nitrous oxide; SMUD = Sacramento Municipal Utility District; PG&E = Pacific Gas and Electric Company.

Source: Utility emissions factors provided by SMUD, EPA, The Climate Registry (TCR). Ascent Environmental 2021

#### 2.1.2 Global Warming Potentials

GHG emissions other than CO<sub>2</sub> generally have a stronger insulating effect and thus, a greater ability to warm the earth's atmosphere through the greenhouse effect. This effect is measured in terms of a pollutant's Global Warming

Potential (GWP). CO<sub>2</sub> has a GWP factor of one while all other GHGs have GWP factors measured in multiples of one relative to the GWP of CO<sub>2</sub>. This conversion of non-CO<sub>2</sub> gases to one unit enables the reporting of all emissions in terms of carbon dioxide equivalent (CO<sub>2</sub>e), which allows consideration of all GHGs in comparable terms and makes it easier to communicate how various sources and types of emissions contribute to climate change. MTCO<sub>2</sub>e is the standard unit for reporting emissions.

Consistent with the best available science, these inventories use GWP factors published in the Sixth Assessment Report (AR6) from the Intergovernmental Panel on Climate Change (IPCC), where CH<sub>4</sub> and N<sub>2</sub>O have GWP factors of 27.9 and 273, respectively (IPCC 2021). This means that CH<sub>4</sub> and N<sub>2</sub>O are approximately 28 and 273 times stronger than CO<sub>2</sub> in their potential to warm Earth's atmosphere, respectively. It should be noted that the California Air Resources Board's (CARB) Statewide GHG Inventory which is associated with the 2017 Scoping Plan uses the Fourth Assessment Report (AR4). Under AR4 CH<sub>4</sub> is approximately 24 times stronger than CO<sub>2</sub> and N<sub>2</sub>O is 298 times stronger than CO<sub>2</sub>. The GWP can be toggled in the GHG Inventory and Forecast Workbook to compare the change in emissions between the Assessment Reports.

### 2.1.3 Population and Employment

Population and employment data were used to scale activity levels for certain emissions sources and sectors. Population and employment data were obtained from the California Department of Finance and the Employment Development Department 2019.

## 2.2 COMMUNITY INVENTORIES DATA AND ASSUMPTIONS

### 2.2.1 Sector-Specific Assumptions and Methods for Community Inventories

Several inventory protocols have been developed to provide guidance for communities and local governments to account for emissions accurately and consistently. In coordination with other partners, ICLEI has developed guidance for local-scale accounting of emissions that many local governments use to develop their GHG inventories. The most recent guidance for community-scale emissions inventories is ICLEI's Community Protocol, Version 1.2, published in July 2019 (ICLEI 2019). GHG emissions from livestock were not included in the inventory due to a lack of available information about the number of cattle grazing within City limits.

The following summarizes data sources and methods used in estimating community GHG emissions in 2019:

- ▶ **Building Energy:** Annual electricity and natural gas usage data for the city were provided by SMUD and Pacific Gas and Electric (PG&E) (see Table 3 above). Emissions factors were obtained from SMUD, eGRID, and TCR. Annual nonresidential backup generator usage was provided by Sacramento Metropolitan Air Quality Management District (SMAQMD). Emissions factors for backup generator fuels was obtained from TCR.
- ▶ **Transportation:** For the on-road transportation sector, daily vehicle miles traveled (VMT) were obtained from Fehr & Peers for the city, using the SB 375 Regional Technical Advisory Committee's (RTAC's) origin-destination method. Vehicle emissions factors were derived from CARB's 2021 Emissions FACTor (EMFAC2021) model. Off-road vehicle emissions were estimated from CARB's OFFROAD2007 and OFFROAD2021 models and scaled by population, employment, or share of road miles.
- ▶ **Solid Waste:** Emissions associated with waste generated by residents and businesses in the city were estimated using disposal data available from the California Department of Resources Recycling and Recovery (CalRecycle) for landfills receiving waste from the city. Landfill gas (LFG) collection information was available from EPA.

- ▶ **Water Supply:** Using guidance provided by ICLEI, water supply emissions were estimated using approximate water consumption volumes obtained from the Sacramento County Water Agency, Golden State Water Company, and California American Water in combination with region-specific energy intensity factors obtained from the California Public Utilities Commissions (CPUC).
- ▶ **Wastewater:** Emissions from wastewater treatment depend on the types of treatment processes and equipment that centralized wastewater treatment plants (WWTPs) use. Emissions in this sector are also generated from onsite wastewater treatment systems. Data regarding treatment processes, population served, digester gas combustion, and daily nitrogen load were obtained from Sacramento Area Sewer District and Regional San to estimate emissions from centralized WWTPs.

## 2.2.2 Building Energy

Residential and nonresidential building energy use in 2019 resulted in approximately 214,376 MTCO<sub>2</sub>e. This sector generated approximately 32 percent of the City's emissions in 2019 and represents the second largest emissions sector in the inventory. Most of these emissions were a result of electricity and natural gas use in homes and businesses, primarily for lighting and heating, ventilation, air condition, and cooling (HVAC), as well as to power appliances. A small proportion of nonresidential building energy emissions are associated with diesel consumption in backup generators. In 2019, electricity from both residential and nonresidential buildings accounted for approximately 67 percent of emissions from the building energy sector. Natural gas use accounted for approximately 32 percent, and backup generators accounted for less than 1 percent, of emissions from the building sector in 2019. Annual electricity, natural gas, and backup generator usage and GHG emissions are shown in Table 4.

**Table 4 2019 City of Rancho Cordova Community Building Energy Use Greenhouse Gas Emissions**

Source	Quantity	GHG Emissions	Percentage
Electricity	MWh/year	MTCO <sub>2</sub> e/year	% of Energy Total
Residential	202,727	47,238	22
Nonresidential	416,664	97,089	45
<i>Electricity Total</i>	<i>619,391</i>	<i>144,327</i>	<i>67</i>
Natural Gas	therms/year	MTCO <sub>2</sub> e/year	% of Energy Total
Residential	9,082,624	48,336	23
Nonresidential	3,902,601	20,769	10
<i>Natural Gas Total</i>	<i>12,985,225</i>	<i>69,105</i>	<i>32</i>
Backup Generators	gallons	MTCO <sub>2</sub> e/year	% of Energy Total
Nonresidential	92,209	943	<1
Energy Combined		MTCO <sub>2</sub> e/year	% of Energy Total
Residential	NA	95,575	45
Nonresidential	NA	118,801	55
Grand Total	NA	214,376	100

Notes: Totals in columns may not sum exactly due to independent rounding. GHG = greenhouse gas; MTCO<sub>2</sub>e/year = metric tons of carbon dioxide equivalent per year; MWh = megawatt-hours; NA = not applicable.

Source: Ascent Environmental 2021

## RESIDENTIAL ENERGY

Residential energy emissions result indirectly from electricity consumption and directly from onsite combustion of natural gas. SMUD and PG&E are the providers of residential energy in the city. Annual residential electricity usage data for 2019 in the city were obtained from SMUD, expressed as MWh per year (MWh/year). To calculate the MTCO<sub>2e</sub> of residential electricity consumption, emissions factors (shown in Table 3) for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O were applied to electricity consumption data.

Annual residential natural gas consumption for 2019 in the city was obtained from PG&E, expressed as therms per year (therms/year). CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions factors for natural gas were applied to consumption data to estimate MTCO<sub>2e</sub> from residential natural gas usage.

## NONRESIDENTIAL ENERGY

Nonresidential energy emissions, which are generated by commercial and industrial uses, result indirectly from electricity consumption and directly from onsite combustion of natural gas. SMUD provided nonresidential electricity in the city. Nonresidential natural gas in the city was provided by PG&E in 2019.

Annual nonresidential electricity usage data for 2019 were obtained from SMUD, expressed as MWh/year, and annual nonresidential natural gas consumption in the city was obtained from PG&E, expressed as therms/year. PG&E natural gas usage data for industrial customers could not be provided to the City because of the 15/15 Rule, which is statewide requirement protecting the privacy of utility customer data<sup>1</sup>. Emissions associated with nonresidential energy consumption were quantified using the same methods as described above for residential energy calculations.

Data for annual nonresidential backup generators were obtained from SMAQMD, expressed as gallons per year (gallons/year) for diesel fuel. Emissions factors obtained from TCR were applied to fuel consumption data to estimate GHG emissions associated with nonresidential backup generator usage.

### 2.2.3 On-Road Transportation

The on-road transportation sector represents the largest emissions-generator sector in the city. Based on modeling conducted, on-road transportation in the city resulted in approximately 417,145 MTCO<sub>2e</sub>, or 61 percent of the City's 2019 inventory. The on-road transportation sector represents the largest emissions sector in the city. Annual VMT and GHG emissions from on-road transportation are shown in Table 5 broken down by EMFAC vehicle category.

**Table 5 2019 City of Rancho Cordova Community On-Road Transportation Greenhouse Gas Emissions**

EMFAC Vehicle Category	EMFAC Vehicle Category Description	VMT/year <sup>a</sup>	GHG Emissions (MTCO <sub>2e</sub> /year)
LDA	Passenger Cars	465,261,020	148,453
LDT2	Light-Duty Trucks (GVWR <6000 lb)	191,143,033	78,535
MDV	Medium-Duty Trucks (GVWR 5751-8500 lb)	130,832,664	65,206
LDT1	Light-Duty Trucks (GVWR <6000 lb)	45,762,151	17,554
LHD1	Light-Heavy-Duty Trucks (GVWR 8501- 10000 lbs)	33,974,541	29,056

<sup>1</sup> The 15/15 Rule originates from a California Public Utilities Commission (CPUC) ruling in 1997 that enacted privacy standards for utilities to help ensure customer anonymity when energy data is released to third parties without customer consent. The 15/15 Rule requires that aggregated data include a minimum of 15 customers with no one customer's load exceeding 15 percent of the group's energy consumption.



EMFAC Vehicle Category	EMFAC Vehicle Category Description	VMT/year <sup>a</sup>	GHG Emissions (MTCO <sub>2e</sub> /year)
T7 Trucks	Heavy-Heavy Duty Trucks	19,391,641	38,318
T6 Trucks	Medium-Heavy Duty Trucks	16,550,426	23,818
LHD2	Light-Heavy-Duty Trucks (GVWR 10001- 14000 lb)	7,751,499	7,083
MCY	Motorcycles	3,695,927	891
MH	Motor Homes	1,034,081	1,826
UBUS	Urban Buses	960,288	1,597
OBUS	Other Buses	803,554	1,515
SBUS	School Buses	728,388	897
All Other Buses	All Other Buses	563,571	749
PTO	Power Take Off	500,107	1,138
Motor Coach	Motor Coach	265,909	511
Total	N/A	919,218,798	417,145

Notes: GHG = greenhouse gas; GVWR = gross vehicle weight rating; lb= pounds; MTCO<sub>2e</sub>/year = metric tons of carbon dioxide equivalent per year; N/A = not applicable; VMT/year = vehicle miles traveled per year.

<sup>a</sup> VMT by vehicle category based on the modeled vehicle fleet mix in EMFAC2021 for Sacramento County in 2019 using EMFAC2011 vehicle categories applied to the city's total annual VMT.

Source: Ascent Environmental 2021

On-road transportation emissions are primarily the result of the combustion of gasoline and diesel fuels in passenger vehicles (i.e., cars, light-duty trucks, and motorcycles), medium- and heavy-duty trucks, and other types of vehicles permitted to operate "on-road." To a smaller degree, emissions from on-road electric vehicles also result from upstream electricity generation; these emissions are represented in annual electricity emissions in the city. Due to lack of available data, emissions from the combustion of natural gas and other non-electric alternative fuels in on-road vehicles were not included in the community inventory and are assumed to have minimal contribution to total emissions.

Fehr & Peers conducted a study that provides daily VMT by city for the years 2016, 2027, 2035, and 2040. These VMT estimates are associated with trips that begin or end in the city. VMT estimates included 100 percent of vehicle trips that both originate from and end in the city (i.e., fully internal trips), 50 percent of trips that either end in or depart from the city (i.e., internal-external or external-internal trips), and zero percent of vehicle trips that are simply passing through the city boundaries (i.e., external-external, or "pass-through," trips). This vehicle trip accounting method is consistent with the RTAC origin-destination method established through SB 375 and CARB recommendations.

An overall emissions rate for countywide VMT was derived from EMFAC2021, CARB's statewide mobile source emissions inventory model. EMFAC2021 was used to generate emission rates for the county for the calendar year 2019 with all vehicle classes, model years, speeds, and fuel types. The countywide MTCO<sub>2e</sub> per mile emissions factor was calculated based on the distribution of VMT for each vehicle class and its emissions factor.

## OFF-ROAD VEHICLES AND EQUIPMENT

Based on modeling conducted, off-road vehicles and equipment operating in the city emitted approximately 11,027 MTCO<sub>2e</sub>, or 2 percent of the 2019 inventory. The largest emissions-generating off-road transportation categories include construction and mining equipment, portable equipment, and industrial equipment. The estimated annual emissions and scaling factors used are presented in Table 6 below by equipment type.

**Table 6 2019 City of Rancho Cordova Community Off-Road Vehicles-Equipment Greenhouse Gas Emissions**

Off-Road Vehicles and Equipment Type	GHG Emissions (MTCO <sub>2</sub> e)	Scaling Method
Construction and Mining Equipment	5,350	service population
Entertainment Equipment	54	employment
Industrial Equipment	1,426	employment
Lawn and Garden Equipment	138	population
Light Commercial Equipment	839	employment
Portable Equipment	2,478	employment
Recreational Equipment	81	population
Transportation Refrigeration Units	661	service population
Total	11,027	N/A

Notes: GHG = greenhouse gas; MTCO<sub>2</sub>e/year = metric tons of carbon dioxide equivalent per year; N/A = not applicable.

Source: Ascent Environmental 2021; based on modeling from OFFROAD2007 and OFFROAD2021.

Emissions from the off-road vehicles and equipment sector result from fuel combustion in off-road vehicles and equipment. Data associated with this sector were available from CARB's OFFROAD2007 and OFFROAD2021 models. These models provide emissions details at the State, air basin, or county level. Sacramento County emissions data from OFFROAD2007 and OFFROAD2021 were apportioned to the city using custom scaling factors depending on the off-road fleet type. For example, due to the likely correlation between commercial activity and employment, the city's portion of emissions from light commercial equipment in the county is assumed to be proportional to the number of jobs in the city as compared to the county as a whole.

OFFROAD2007 provides emissions details for all off-road vehicle and equipment types, but OFFROAD2017 only provides details for certain types of off-road vehicles and equipment that are relevant to the city (i.e., construction and mining equipment, industrial equipment, and transport refrigeration units). CARB recommends using OFFROAD2007 where desired information is unavailable from the OFFROAD2021 model, so data from both models were used (CARB 2020). Additionally, while OFFROAD2021 provides estimates of CO<sub>2</sub> emissions, it does not provide estimates for CH<sub>4</sub> and N<sub>2</sub>O emissions. To estimate CH<sub>4</sub> and N<sub>2</sub>O emissions from the vehicle and equipment types included in OFFROAD2017, ratios of CH<sub>4</sub> to CO<sub>2</sub> and N<sub>2</sub>O to CO<sub>2</sub> were obtained from OFFROAD2007 and applied to CO<sub>2</sub> data from OFFROAD2021 to calculate CH<sub>4</sub> and N<sub>2</sub>O emissions.

## 2.2.4 Solid Waste

Based on modeling conducted, the solid waste sector was responsible for approximately 22,397 MTCO<sub>2</sub>e in 2019, or 3 percent of the 2019 community GHG inventory. Community-generated solid waste emissions are result primarily from decomposition of solid waste generated by the city in landfills, while a smaller proportion of emissions are produced by the decomposition of alternative daily cover (ADC) generated by the county. Table 7 summarizes emissions from the solid waste sector. Additional details regarding calculation methods and assumptions are discussed below.

**Table 7 2019 City of Rancho Cordova Community Solid Waste Greenhouse Gas Emissions**

Source	Quantity (tons/year)	GHG Emissions (MTCO <sub>2</sub> e/year)
Community-Generated Solid Waste	59,464	22,397

Notes: Totals may not sum exactly due to independent rounding. GHG = greenhouse gas; MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent.

Source: Ascent Environmental 2021

## COMMUNITY-GENERATED SOLID WASTE

CH<sub>4</sub> emissions generated by community-generated solid waste occur from decay of landfill disposed waste generated annually by residences and businesses in the city. A total of 56,877 tons of landfilled waste was reported for the city in 2019. In addition to landfilled waste, communities send ADC to landfills. ADC is non-earthen material used to cover an active landfill surface at the end of each operating day to control for vectors, fires, odors, blowing litter, and scavenging. This material can include compost, construction and demolition waste, sludge, green material, shredded tires, spray-on cement, and fabric. Given that ADC can also include organic material, CH<sub>4</sub> emissions from landfills result from organic decomposition in both waste disposal and ADC. ADC from the city was 2,587 tons in 2019. Data for landfilled waste and ADC were obtained from CalRecycle (CalRecycle 2021).

The amount of CH<sub>4</sub> released from community-generated waste depends on the LFG management systems of the landfills at which the waste is disposed. Information regarding the use of an LFG capture system was available from EPA's Landfill Methane Outreach Program. All facilities included an LFG capture system; therefore, the default LFG collection efficiency of 0.75 was applied to adjust emissions estimates, as recommended by the Community Protocol. Default waste characterization emissions factors obtained from EPA were used in calculations.

### 2.2.5 Water Supply

Based on modeling conducted, water supply emissions accounted for approximately 9,071 MTCO<sub>2</sub>e in 2019. GHG emissions associated with water supply occur from the indirect use of energy associated with water extraction, conveyance, treatment, and distribution to the point of use (e.g., residences, businesses). Energy consumption for supplying water was estimated by applying energy intensity factors (i.e., the total amount of energy required to produce a unit of water for a particular use) to water supply consumption values. Water supply emissions are estimated by applying electricity emissions factors to water consumption values. Table 8 presents water supply volume and energy consumption, as well as associated GHG emissions for the county in 2019. The methods used are explained in more detail below.

**Table 8 2019 City of Rancho Cordova Community Water Supply Greenhouse Gas Emissions**

	Quantity (AF)	GHG Emissions (MTCO <sub>2</sub> e/year)
Water Supply	65,645	9,071

Notes: AF = acre feet; GHG = greenhouse gas; MTCO<sub>2</sub>e/year = metric tons of carbon dioxide equivalent per year..

Source: Ascent Environmental 2021

## ENERGY INTENSITY FACTOR

An energy intensity factor, regarding water supply emissions, is defined by the amount of energy (e.g., electricity, natural gas) required to produce a unit of water for a particular use. Electricity is the primary source of energy used for water extraction, conveyance, treatment, and distribution in the Sacramento River hydrologic region. Other energy sources may include fossil fuel-powered pumps and backup generators at treatment plants, but these sources that may be used were considered negligible. Thus, for purposes of this analysis, energy intensity is based on electricity use only and is expressed as kilowatt-hours per acre-foot (kWh/AF).

In 2015, the CPUC commissioned a study of hydrologic zones in California and their relative energy intensities for water extraction, conveyance, treatment, and distribution. The city is within the Sacramento River hydrologic zone, which has specific energy intensities by supply type (e.g., local surface water, imported deliveries). According to the City's Water Supply Evaluation water in the city is either sourced from surface water, groundwater, recycled water, or wholesale purchases.

## ENERGY CONSUMPTION

To estimate water supply emissions, the energy intensity factors discussed above were applied to total water consumption volumes reported by each water supplier. GHG emissions were estimated using electricity emissions factors in 2019 as described in the building energy sector.

### 2.2.6 Wastewater Treatment

Based on modeling conducted, wastewater generation in 2019 resulted in emissions of approximately 5,690 MTCO<sub>2</sub>e, one percent of total emissions, primarily from fugitive CH<sub>4</sub>. Wastewater emissions were estimated in two components: (1) pumping-related energy for wastewater conveyance from the source to the treatment facility, and (2) wastewater treatment process emissions. Each is discussed separately below. GHG emissions associated with the treatment of wastewater from the city is shown in Table 9.

**Table 9 2019 City of Rancho Cordova Wastewater Treatment Greenhouse Gas Emissions**

Wastewater Emission Type	GHG Emissions (MTCO <sub>2</sub> e/year)
Treatment Plants	5,690

Notes: Totals may not sum exactly due to independent rounding. GHG = greenhouse gas; MTCO<sub>2</sub>e/year = metric tons of carbon dioxide equivalent per year.

Source: Ascent Environmental 2021

#### Wastewater Conveyance

SASD and Regional San are the primary agencies responsible for sewer conveyance and wastewater treatment for the city. Emissions associated with wastewater conveyance are directly related to the energy required to convey the wastewater and the volume of water conveyed/pumped. To estimate GHG emissions, a regional wastewater conveyance energy intensity factor was calculated from total pumping energy data within SASD and Regional service area from 2015 and total wastewater treated in 2019. SASD pumping data were provided directly by SASD. Regional San pumping energy and treatment effluent volumes were provided directly by Regional San (pers. Comm. Steve Nebozuk, Regional San. 2016). Effluent volume was apportioned to the City of Rancho Cordova's population and the calculated energy intensity factor was applied to obtain total wastewater conveyance-related energy. GHG emissions were estimated using the same emissions factors described for the building sector.

According to the ICLEI Community Protocol, wastewater discharge and treatment energy intensities associated with septic tanks and other on-site systems are assumed negligible. Hauling emissions associated with maintenance of septic tanks are captured in the on-road vehicle sector and not included in this sector.

#### Wastewater Treatment Process Emissions

Wastewater generated by the city is treated at the Regional San WWTP. Treatment process emissions at the WWTP include electricity consumption for treatment, process N<sub>2</sub>O, wastewater effluent containing N<sub>2</sub>O, and emissions from biogas combustion. The analysis assumes the entire city population is served by the Regional San WWTP. As such, process wastewater emissions may be slightly overestimated as some portion of the city use onsite septic tanks for wastewater treatment.

## REFERENCES

- California Air Resources Board. 2020. Mobile Source Emissions Inventory – Off-Road Documentation. Available: <https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-road-documentation-0>. Accessed December 6, 2021.
- California Department of Resources Recycling and Recovery. 2020. Disposal and Diversion Rates for Business Groups. Available: <https://www2.calrecycle.ca.gov/WasteCharacterization/BusinessGroupRates>. Accessed December 6, 2021.
- CalRecycle. See California Department of Resources Recycling and Recovery.
- CARB. See California Air Resources Board.
- EPA. See U.S. Environmental Protection Agency.
- ICLEI. See ICLEI – Local Governments for Sustainability.
- IPCC. See Intergovernmental Panel on Climate Change.
- ICLEI – Local Governments for Sustainability. 2019. *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions*. Version 1.2.
- Intergovernmental Panel on Climate Change. 2021 (August). *Climate Change 2021: The Physical Science Basis. Chapter 7: The Earth's energy budget, climate feedbacks, and climate sensitivity - Supplementary Material*. Available: [https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC\\_AR6\\_WGI\\_Full\\_Report.pdf](https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Full_Report.pdf). Accessed December 6, 2021.
- Sacramento Regional County Sanitation District. 2016. Wastewater pumping data for Regional San. Personal communication between Steve Nebozuk (Regional San) and Dimitri Antoniou (Ascent Environmental). Phone conversation September 14, 2016.
- TCR. See The Climate Registry.
- The Climate Registry. 2020. *2020 Default Emission Factor Document*. Available: <https://www.theclimateregistry.org/wp-content/uploads/2020/04/The-Climate-Registry-2020-Default-Emission-Factor-Document.pdf>. Accessed December 6, 2021.
- U.S. Environmental Protection Agency. 2020. *Emissions & Generation Integrated Database (eGRID), Annual Output Emissions Rates*. Available: <https://www.epa.gov/egrid/download-data>. Accessed December 6, 2021.



# Appendix B

---

Greenhouse Gas Inventory  
and Forecast Worksheet





## Table of Contents

Summary
Building Energy Inventory and Forecast
On Road Transportation Inventory and Forecast
On Road Vehicle Category
Off Road Inventory and Forecast
Water Inventory and Forecast
Wastewater Inventory and Forecast
Solid Waste Inventory and Forecast
Assumptions
Demographics
Energy Emission Factors
Water Factors
Wastewater Equations
Offroad 2007
Offroad 2021
Offroad category Lookup
EMFAC Category Lookup
EMFAC 2021
2019 Offroad 2007
2030 Offroad 2007
Natural Gas Activity Data
Electricity Activity Data
Generator Activity Data
VMT Activity Data
Water Activity Data
Wastewater Summary
Wastewater Conveyance Calculations
Electricity CO <sub>2</sub> e
Process N <sub>2</sub> O
Biogas CO <sub>2</sub> e
N <sub>2</sub> O Effluent CO <sub>2</sub> e

## Summary

Row Labels	Column Labels									
	2019		2030		2045		2045		2045	
	(blank)	BAU	BAU	Leg-Adjusted	BAU	Leg-Adjusted	BAU	Leg-Adjusted	BAU	Leg-Adjusted
	Sum of MT CO2e	Percentage	Sum of MT CO2e	Percentage	Sum of MT CO2e	Percentage	Sum of MT CO2e	Percentage	Sum of MT CO2e	Percentage
<b>OnRoad</b>	<b>417,145</b>	<b>61.4%</b>	<b>486,187</b>	<b>59.53%</b>	<b>387,784</b>	<b>75.25%</b>	<b>593,347</b>	<b>60.07%</b>	<b>384,651</b>	<b>72.60%</b>
<b>Building Energy</b>	<b>214,376</b>	<b>31.5%</b>	<b>266,866</b>	<b>32.67%</b>	<b>75,823</b>	<b>14.71%</b>	<b>315,909</b>	<b>31.98%</b>	<b>81,238</b>	<b>15.33%</b>
Non-Residential	118,801	17.5%	141,055	17.27%	23,605	4.58%	161,388	16.34%	25,335	4.78%
Residential	95,575	14.1%	125,811	15.40%	52,217	10.13%	154,521	15.64%	55,903	10.55%
<b>Solid Waste</b>	<b>22,397</b>	<b>3.3%</b>	<b>29,483</b>	<b>3.61%</b>	<b>29,483</b>	<b>5.72%</b>	<b>36,211</b>	<b>3.67%</b>	<b>36,211</b>	<b>6.83%</b>
<b>OffRoad</b>	<b>11,027</b>	<b>1.6%</b>	<b>14,772</b>	<b>1.81%</b>	<b>14,772</b>	<b>2.87%</b>	<b>18,488</b>	<b>1.87%</b>	<b>18,488</b>	<b>3.49%</b>
Construction and Mining	5,350	0.79%	7,500	0.92%	7,500	1.46%	9,675	0.98%	9,675	1.83%
Entertainment Equipment	54	0.01%	67	0.01%	67	0.01%	80	0.01%	80	0.02%
Industrial	1,426	0.21%	1,787	0.22%	1,787	0.35%	2,129	0.22%	2,129	0.40%
Lawn and Garden Equipment	138	0.02%	211	0.03%	211	0.04%	287	0.03%	287	0.05%
Light Commercial Equipment	839	0.12%	1,052	0.13%	1,052	0.20%	1,253	0.13%	1,253	0.24%
Recreational Equipment	81	0.01%	123	0.02%	123	0.02%	168	0.02%	168	0.03%
Transport Refrigeration Units	661	0.10%	927	0.11%	927	0.18%	1,196	0.12%	1,196	0.23%
Portable Equipment	2,478	0.36%	3,105	0.38%	3,105	0.60%	3,699	0.37%	3,699	0.70%
<b>Water</b>	<b>9,071</b>	<b>1.3%</b>	<b>11,940</b>	<b>1.46%</b>	-	<b>0.00%</b>	<b>14,665</b>	<b>1.48%</b>	-	<b>0.00%</b>
<b>Wastewater</b>	<b>5,690</b>	<b>0.8%</b>	<b>7,490</b>	<b>0.92%</b>	<b>7,490</b>	<b>1.45%</b>	<b>9,200</b>	<b>0.93%</b>	<b>9,200</b>	<b>1.74%</b>
<b>Grand Total</b>	<b>679,706</b>	<b>100.00%</b>	<b>816,738</b>	<b>100.00%</b>	<b>515,352</b>	<b>100.00%</b>	<b>987,820</b>	<b>100.00%</b>	<b>529,788</b>	<b>100.00%</b>

**Building Energy**

Enter inventory data into the yellow table. Enter Forecast Data into the green table.

- Insert rows within the table as needed.
- Only input data in the colored cells.
- See comments in headers for specific input instructions.
- For the forecast data, copy the entries from the inventory and paste one set for each forecast year and BAU/Leg-Adjusted combination. (E.g., if you have 2 entries in the inventory and 3 forecast years, you should have 2\*3\*2=12 row entries in the forecast table.)

Year	Emissions Sector	Calculation Sector	Fuel Type	Utility (if applicable)	Sub-Sector	Activity	Activity Unit	Notes	Energy Use (kBtu)	MT CO2	MT CH4	MT N2O	MT CO2e	Activity Data Source
2019	Building Energy	Building Energy	Electricity	SMUD	Residential	202,726,752	kWh	Source: SMUD	691,732,360	47,053	3	0	47,238	SMUD
2019	Building Energy	Building Energy	Electricity	SMUD	Non-Residential	416,664,459	kWh	Source: SMUD	1,421,718,084	96,709	6	1	97,089	SMUD
2019	Building Energy	Building Energy	Natural Gas	PG&E	Residential	9,082,624	therm	Source: PG&E	908,045,548	48,192	4	0	48,336	PG&E
2019	Building Energy	Building Energy	Natural Gas	PG&E	Non-Residential	3,902,601	therm	Source: PG&E, CEC Industrial natural g	390,166,923	20,707	2	0	20,769	PG&E
2019	Building Energy	Building Energy	Diesel	NA	Non-Residential	92,209	gal	Source: SMAQMD	12,733,622	941	0	0	943	SMAQMD

Enter Forecast Data Here:

Year	Emissions Sector	Calculation Sector	Fuel Type	Utility (if applicable)	Sub-Sector	BAU or Leg-Adjusted?	Activity Growth Method	Activity Growth Factor	Legislative Adjustment	Activity	Activity Unit	Notes	Energy Use (kBtu)	MT CO2	MT CH4	MT N2O	MT CO2e	Activity Data Source
2030	Building Energy	Building Energy	Electricity	SMUD	Residential	BAU	Population	1.187324608	1	266,861,897	kWh		910,570,549	61,939	4	0	62,183	
2030	Building Energy	Building Energy	Electricity	SMUD	Non-Residential	BAU	Employment	1.187324608	1	494,715,965	kWh		1,688,040,866	114,824	7	1	115,276	
2030	Building Energy	Building Energy	Natural Gas	PG&E	Residential	BAU	Population	1.187324608	1	11,956,026	therm		1,195,317,121	63,439	6	0	63,628	
2030	Building Energy	Building Energy	Natural Gas	PG&E	Non-Residential	BAU	Employment	1.187324608	1	4,633,654	therm		463,254,789	24,586	2	0	24,660	
2030	Building Energy	Building Energy	Diesel	NA	Non-Residential	BAU	Employment	1.187324608	1	109,482	gal		15,118,943	1,118	0	0	1,120	
2045	Building Energy	Building Energy	Electricity	SMUD	Residential	BAU	Population	1.616762442	1	327,760,999	kWh		1,118,366,899	76,074	5	1	76,373	
2045	Building Energy	Building Energy	Electricity	SMUD	Non-Residential	BAU	Employment	1.358471102	1	566,026,627	kWh		1,931,362,931	131,376	8	1	131,892	
2045	Building Energy	Building Energy	Natural Gas	PG&E	Residential	BAU	Population	1.616762442	1	14,684,445	therm		1,468,093,937	77,916	7	0	78,148	
2045	Building Energy	Building Energy	Natural Gas	PG&E	Non-Residential	BAU	Employment	1.358471102	1	5,301,571	therm		530,030,490	28,130	2	0	28,214	
2045	Building Energy	Building Energy	Diesel	NA	Non-Residential	BAU	Employment	1.358471102	1	125,263	gal		17,298,238	1,279	0	0	1,281	
2030	Building Energy	Building Energy	Electricity	SMUD	Residential	Leg-Adjusted	Population	1.187324608	0.2538	219,004,252	kWh		747,273,492	-	-	-	-	
2030	Building Energy	Building Energy	Electricity	SMUD	Non-Residential	Leg-Adjusted	Employment	1.187324608	0.4655	452,997,435	kWh		1,545,691,339	-	-	-	-	
2030	Building Energy	Building Energy	Natural Gas	PG&E	Residential	Leg-Adjusted	Population	1.187324608	0.2538	9,811,893	therm		980,955,073	52,062	5	0	52,217	
2030	Building Energy	Building Energy	Natural Gas	PG&E	Non-Residential	Leg-Adjusted	Employment	1.187324608	0.4655	4,242,906	therm		424,189,325	22,513	2	0	22,580	
2030	Building Energy	Building Energy	Diesel	NA	Non-Residential	Leg-Adjusted	Employment	1.187324608	0.4655	100,250	gal		13,843,989	1,024	0	0	1,025	
2045	Building Energy	Building Energy	Electricity	SMUD	Residential	Leg-Adjusted	Population	1.616762442	0.2538	234,460,444	kWh		800,012,206	-	-	-	-	
2045	Building Energy	Building Energy	Electricity	SMUD	Non-Residential	Leg-Adjusted	Employment	1.358471102	0.4655	486,192,548	kWh		1,658,957,760	-	-	-	-	
2045	Building Energy	Building Energy	Natural Gas	PG&E	Residential	Leg-Adjusted	Population	1.616762442	0.2538	10,504,366	therm		1,050,185,829	55,736	5	0	55,903	
2045	Building Energy	Building Energy	Natural Gas	PG&E	Non-Residential	Leg-Adjusted	Employment	1.358471102	0.4655	4,553,821	therm		455,273,414	24,163	2	0	24,235	
2045	Building Energy	Building Energy	Diesel	NA	Non-Residential	Leg-Adjusted	Employment	1.358471102	0.4655	107,596	gal		14,858,460	1,099	0	0	1,101	



**On-Road Transportation**

Year	Emissions Sector	Calculation Sector	Sub-Sector	EMFAC Categories	Activity	Activity Unit	Notes	g CO2 per mi	g CH4 per mi	g N2O per mi	MT CO2	MT CH4	MT N2O	MT CO2e
2019	OnRoad	OnRoad	All Other Buses	All Other Buses		563,571 Annual VMT	Source: Fehr & Peier	1,269.96	0.13	0.20	715.71	0.07	0.12	749.18
2019	OnRoad	OnRoad	LDA	LDA	465,261,020 Annual VMT		Source: Fehr & Peier	315.30	0.02	0.01	146,697.14	8.06	5.61	148,452.56
2019	OnRoad	OnRoad	LD1	LD1	45,762,151 Annual VMT		Source: Fehr & Peier	376.90	0.03	0.02	17,247.93	1.53	0.56	17,553.89
2019	OnRoad	OnRoad	LD2	LD2	191,143,033 Annual VMT		Source: Fehr & Peier	406.09	0.02	0.02	77,620.79	3.75	2.96	78,534.80
2019	OnRoad	OnRoad	LHD1	LHD1	33,974,541 Annual VMT		Source: Fehr & Peier	837.15	0.03	0.06	28,441.89	0.87	2.16	29,056.45
2019	OnRoad	OnRoad	LHD2	LHD2	7,751,499 Annual VMT		Source: Fehr & Peier	888.58	0.02	0.09	6,887.84	0.14	0.70	7,082.70
2019	OnRoad	OnRoad	MCY	MCY	3,095,027 Annual VMT		Source: Fehr & Peier	218.68	0.31	0.05	808.21	1.13	0.19	890.59
2019	OnRoad	OnRoad	MDV	MDV	130,832,664 Annual VMT		Source: Fehr & Peier	491.58	0.03	0.02	64,314.27	3.85	2.87	65,206.26
2019	OnRoad	OnRoad	MH	MH	1,034,081 Annual VMT		Source: Fehr & Peier	1,747.51	0.02	0.07	1,807.06	0.02	0.07	1,826.09
2019	OnRoad	OnRoad	Motor Coach	Motor Coach	265,909 Annual VMT		Source: Fehr & Peier	1,841.22	0.01	0.29	489.60	0.00	0.08	510.71
2019	OnRoad	OnRoad	OBUS	OBUS	803,554 Annual VMT		Source: Fehr & Peier	1,870.91	0.04	0.05	1,503.38	0.03	0.04	1,514.68
2019	OnRoad	OnRoad	PFO	PFO	500,107 Annual VMT		Source: Fehr & Peier	2,181.06	0.02	0.34	1,090.76	0.01	0.17	1,137.87
2019	OnRoad	OnRoad	SBUS	SBUS	728,388 Annual VMT		Source: Fehr & Peier	1,181.28	0.09	0.17	860.43	0.07	0.13	896.76
2019	OnRoad	OnRoad	T6 CAIRP heavy	T6 CAIRP heavy	347,437 Annual VMT		Source: Fehr & Peier	1,058.54	0.00	0.17	367.78	0.00	0.06	383.62
2019	OnRoad	OnRoad	T6 CAIRP small	T6 CAIRP small	92,040 Annual VMT		Source: Fehr & Peier	1,136.97	0.00	0.18	104.65	0.00	0.02	109.15
2019	OnRoad	OnRoad	T6 instate heavy	T6 instate heavy	1,885,072 Annual VMT		Source: Fehr & Peier	1,192.82	0.02	0.19	2,248.55	0.03	0.35	2,346.18
2019	OnRoad	OnRoad	T6 instate small	T6 instate small	6,793,663 Annual VMT		Source: Fehr & Peier	1,248.13	0.01	0.20	8,479.37	0.09	1.33	8,846.16
2019	OnRoad	OnRoad	T6 ODS heavy	T6 ODS heavy	203,526 Annual VMT		Source: Fehr & Peier	1,057.42	0.00	0.17	215.21	0.00	0.03	224.49
2019	OnRoad	OnRoad	T6 ODS small	T6 ODS small	46,511 Annual VMT		Source: Fehr & Peier	1,136.97	0.00	0.18	52.88	0.00	0.01	55.16
2019	OnRoad	OnRoad	T6 Public	T6 Public	4,167,560 Annual VMT		Source: Fehr & Peier	1,373.70	0.05	0.22	5,724.99	0.19	0.91	5,978.15
2019	OnRoad	OnRoad	T6 Utility	T6 Utility	52,219 Annual VMT		Source: Fehr & Peier	1,188.75	0.01	0.19	62.19	0.00	0.01	64.88
2019	OnRoad	OnRoad	T6T5	T6T5	2,962,296 Annual VMT		Source: Fehr & Peier	1,944.20	0.07	0.06	5,759.28	0.22	0.16	5,810.16
2019	OnRoad	OnRoad	T7 CAIRP	T7 CAIRP	3,869,997 Annual VMT		Source: Fehr & Peier	1,719.11	0.03	0.27	6,652.95	0.10	1.05	6,942.51
2019	OnRoad	OnRoad	T7 NNOOS	T7 NNOOS	4,458,408 Annual VMT		Source: Fehr & Peier	1,719.53	0.01	0.27	7,666.38	0.04	1.21	7,996.95
2019	OnRoad	OnRoad	T7 NDOOS	T7 NDOOS	1,621,110 Annual VMT		Source: Fehr & Peier	1,732.19	0.01	0.27	2,808.07	0.01	0.44	2,929.06
2019	OnRoad	OnRoad	T7 Other Port	T7 Other Port	37,384 Annual VMT		Source: Fehr & Peier	1,783.29	0.01	0.28	66.64	0.00	0.01	69.54
2019	OnRoad	OnRoad	T7 POAK	T7 POAK	73,221 Annual VMT		Source: Fehr & Peier	1,826.99	0.01	0.29	133.77	0.00	0.02	139.54
2019	OnRoad	OnRoad	T7 Public	T7 Public	3,927,667 Annual VMT		Source: Fehr & Peier	2,047.21	0.04	0.32	8,040.78	0.14	1.27	8,391.21
2019	OnRoad	OnRoad	T7 Single	T7 Single	2,518,637 Annual VMT		Source: Fehr & Peier	1,759.53	0.04	0.28	4,431.63	0.10	0.70	4,625.86
2019	OnRoad	OnRoad	T7 SWCV	T7 SWCV	1,270,032 Annual VMT		Source: Fehr & Peier	3,200.41	2.78	0.54	4,064.63	3.52	0.69	4,351.77
2019	OnRoad	OnRoad	T7 Tractor	T7 Tractor	1,567,486 Annual VMT		Source: Fehr & Peier	1,684.27	0.03	0.27	2,640.08	0.04	0.42	2,755.00
2019	OnRoad	OnRoad	T7 Utility	T7 Utility	28,454 Annual VMT		Source: Fehr & Peier	1,810.33	0.00	0.28	51.51	0.00	0.01	53.73
2019	OnRoad	OnRoad	T7S	T7S	19,245 Annual VMT		Source: Fehr & Peier	3,079.83	1.10	0.50	59.27	0.02	0.01	62.50
2019	OnRoad	OnRoad	UBUS	UBUS	960,288 Annual VMT		Source: Fehr & Peier	1,577.52	0.89	0.22	1,514.87	0.85	0.21	1,597.11

Year	Emissions Sector	Calculation Sector	Sub-Sector	EMFAC Categories	BAU or Leg-Adjusted?	Activity Growth Method	Activity Growth Factor	Activity Unit	Notes	g CO2 per mi	g CH4 per mi	g N2O per mi	MT CO2	MT CH4	MT N2O	MT CO2e
2030	OnRoad	OnRoad	All Other Buses	All Other Buses	BAU	FehrPeers VMT	1.166	656,847 Annual VMT		1,269.96	0.13	0.20	834.17	0.08	0.13	873.18
2030	OnRoad	OnRoad	LDA	LDA	BAU	FehrPeers VMT	1.166	542,265,838 Annual VMT		315.30	0.02	0.01	170,976.82	9.40	6.53	173,022.77
2030	OnRoad	OnRoad	LD1	LD1	BAU	FehrPeers VMT	1.166	53,336,192 Annual VMT		376.90	0.03	0.02	20,102.62	1.78	1.12	20,659.21
2030	OnRoad	OnRoad	LD2	LD2	BAU	FehrPeers VMT	1.166	222,778,897 Annual VMT		406.09	0.02	0.02	90,462.72	4.37	3.46	91,533.00
2030	OnRoad	OnRoad	LHD1	LHD1	BAU	FehrPeers VMT	1.166	39,597,628 Annual VMT		837.15	0.03	0.06	33,149.27	1.02	2.52	33,865.55
2030	OnRoad	OnRoad	LHD2	LHD2	BAU	FehrPeers VMT	1.166	9,034,440 Annual VMT		888.58	0.02	0.09	8,027.84	0.16	0.82	8,254.95
2030	OnRoad	OnRoad	MCY	MCY	BAU	FehrPeers VMT	1.166	4,307,636 Annual VMT		218.68	0.31	0.05	941.98	1.32	0.22	1,037.99
2030	OnRoad	OnRoad	MDV	MDV	BAU	FehrPeers VMT	1.166	152,486,628 Annual VMT		491.58	0.03	0.02	74,958.85	4.48	3.35	75,998.48
2030	OnRoad	OnRoad	MH	MH	BAU	FehrPeers VMT	1.166	1,205,231 Annual VMT		1,747.51	0.02	0.07	2,106.15	0.03	0.08	2,128.33
2030	OnRoad	OnRoad	Motor Coach	Motor Coach	BAU	FehrPeers VMT	1.166	309,919 Annual VMT		1,841.22	0.01	0.29	570.63	0.00	0.09	595.24
2030	OnRoad	OnRoad	OBUS	OBUS	BAU	FehrPeers VMT	1.166	936,550 Annual VMT		1,870.91	0.04	0.05	1,752.20	0.04	0.04	1,765.37
2030	OnRoad	OnRoad	PFO	PFO	BAU	FehrPeers VMT	1.166	582,879 Annual VMT		2,181.06	0.02	0.34	1,271.29	0.01	0.20	1,326.20
2030	OnRoad	OnRoad	SBUS	SBUS	BAU	FehrPeers VMT	1.166	848,943 Annual VMT		1,181.28	0.09	0.17	1,002.83	0.08	0.15	1,045.18
2030	OnRoad	OnRoad	T6 CAIRP heavy	T6 CAIRP heavy	BAU	FehrPeers VMT	1.166	404,940 Annual VMT		1,058.54	0.00	0.17	428.65	0.00	0.07	447.11
2030	OnRoad	OnRoad	T6 CAIRP small	T6 CAIRP small	BAU	FehrPeers VMT	1.166	107,274 Annual VMT		1,136.97	0.00	0.18	121.97	0.00	0.02	127.22
2030	OnRoad	OnRoad	T6 instate heavy	T6 instate heavy	BAU	FehrPeers VMT	1.166	2,197,069 Annual VMT		1,192.82	0.02	0.19	2,620.70	0.03	0.41	2,734.50
2030	OnRoad	OnRoad	T6 instate small	T6 instate small	BAU	FehrPeers VMT	1.166	7,918,075 Annual VMT		1,248.13	0.01	0.20	9,882.79	0.10	1.56	10,310.28
2030	OnRoad	OnRoad	T6 ODS heavy	T6 ODS heavy	BAU	FehrPeers VMT	1.166	237,212 Annual VMT		1,057.42	0.00	0.17	250.83	0.00	0.04	261.64
2030	OnRoad	OnRoad	T6 ODS small	T6 ODS small	BAU	FehrPeers VMT	1.166	54,209 Annual VMT		1,136.97	0.00	0.18	61.63	0.00	0.01	64.29
2030	OnRoad	OnRoad	T6 Public	T6 Public	BAU	FehrPeers VMT	1.166	4,857,328 Annual VMT		1,373.70	0.05	0.22	6,672.52	0.22	1.06	6,967.58
2030	OnRoad	OnRoad	T6 Utility	T6 Utility	BAU	FehrPeers VMT	1.166	60,979 Annual VMT		1,188.75	0.01	0.19	72.49	0.00	0.01	75.62
2030	OnRoad	OnRoad	T6T5	T6T5	BAU	FehrPeers VMT	1.166	3,452,582 Annual VMT		1,944.20	0.07	0.06	6,712.49	0.25	0.19	6,771.79
2030	OnRoad	OnRoad	T7 CAIRP	T7 CAIRP	BAU	FehrPeers VMT	1.166	4,510,516 Annual VMT		1,719.11	0.03	0.27	7,754.07	0.12	1.22	8,091.56
2030	OnRoad	OnRoad	T7 NNOOS	T7 NNOOS	BAU	FehrPeers VMT	1.166	5,196,314 Annual VMT		1,719.53	0.01	0.27	8,935.23	0.05	1.41	9,320.51
2030	OnRoad	OnRoad	T7 NDOOS	T7 NDOOS	BAU	FehrPeers VMT	1.166	1,889,418 Annual VMT		1,732.19	0.01	0.27	3,272.83	0.01	0.52	3,413.85
2030	OnRoad	OnRoad	T7 Other Port	T7 Other Port	BAU	FehrPeers VMT	1.166	43,572 Annual VMT		1,783.29	0.01	0.28	77.70	0.00	0.01	81.05
2030	OnRoad	OnRoad	T7 POAK	T7 POAK	BAU	FehrPeers VMT	1.166	85,339 Annual VMT		1,826.99	0.01	0.29	155.91	0.00	0.02	162.63
2030	OnRoad	OnRoad	T7 Public	T7 Public	BAU	FehrPeers VMT	1.166	4,577,731 Annual VMT		2,047.21	0.04	0.32	9,371.60	0.16	1.48	9,780.02
2030	OnRoad	OnRoad	T7 Single	T7 Single	BAU	FehrPeers VMT	1.166	2,935,494 Annual VMT		1,759.53	0.04	0.28	5,165.10	0.12	0.82	5,391.48
2030	OnRoad	OnRoad	T7 SWCV	T7 SWCV	BAU	FehrPeers VMT	1.166	1,480,233 Annual VMT		3,200.41	2.78	0.54	4,737.35	4.11	0.81	5,072.03
2030	OnRoad	OnRoad	T7 Tractor	T7 Tractor	BAU	FehrPeers VMT	1.166	1,825,919 Annual VMT		1,684.27	0.03	0.27	3,077.03	0.05	0.49	3,210.98
2030	OnRoad	OnRoad	T7 Utility	T7 Utility	BAU	FehrPeers VMT	1.166	33,163 Annual VMT		1,810.33	0.00	0.28	60.04	0.00	0.01	62.62
2030	OnRoad	OnRoad	T7S	T7S	BAU	FehrPeers VMT	1.166	22,431 Annual VMT		3,079.83	1.10	0.50	69.08	0.02	0.01	72.85
2030	OnRoad	OnRoad	UBUS	UBUS	BAU	FehrPeers VMT	1.166	1,119,224 Annual VMT		1,577.52	0.89	0.22	1,765.59	0.99	0.25	1,861.45
2045	OnRoad	OnRoad	All Other Buses	All Other Buses												



2045 OnRoad	OnRoad	MH	MH	BAU	FehrPeers VMT	1,422	1,470,875	Annual VMT		1,747.51	0.02	0.07	2,570.36	0.03	0.10	2,597.43
2045 OnRoad	OnRoad	Motor Coach	Motor Coach	BAU	FehrPeers VMT	1,422	378,228	Annual VMT		1,841.22	0.01	0.29	696.40	0.00	0.11	726.44
2045 OnRoad	OnRoad	OBUS	OBUS	BAU	FehrPeers VMT	1,422	1,142,974	Annual VMT		1,870.91	0.04	0.05	2,138.40	0.05	0.05	2,154.48
2045 OnRoad	OnRoad	PTO	PTO	BAU	FehrPeers VMT	1,422	711,351	Annual VMT		2,181.06	0.02	0.34	1,951.50	0.01	0.24	1,618.51
2045 OnRoad	OnRoad	SBUS	SBUS	BAU	FehrPeers VMT	1,422	1,036,058	Annual VMT		1,181.28	0.09	0.17	1,275.54	0.10	0.18	1,275.54
2045 OnRoad	OnRoad	T6 CAIRP heavy	T6 CAIRP heavy	BAU	FehrPeers VMT	1,422	494,193	Annual VMT		1,058.54	0.00	0.17	523.12	0.00	0.08	545.66
2045 OnRoad	OnRoad	T6 CAIRP small	T6 CAIRP small	BAU	FehrPeers VMT	1,422	130,918	Annual VMT		1,136.97	0.00	0.18	148.85	0.00	0.02	155.26
2045 OnRoad	OnRoad	T6 instate heavy	T6 instate heavy	BAU	FehrPeers VMT	1,422	2,681,324	Annual VMT		1,192.82	0.02	0.19	2,198.33	0.04	0.50	3,137.20
2045 OnRoad	OnRoad	T6 instate small	T6 instate small	BAU	FehrPeers VMT	1,422	9,663,296	Annual VMT		1,248.13	0.01	0.20	10,261.05	0.12	1.90	12,582.76
2045 OnRoad	OnRoad	T6 OOS heavy	T6 OOS heavy	BAU	FehrPeers VMT	1,422	289,495	Annual VMT		1,057.42	0.00	0.17	306.12	0.00	0.05	319.31
2045 OnRoad	OnRoad	T6 OOS small	T6 OOS small	BAU	FehrPeers VMT	1,422	66,157	Annual VMT		1,136.97	0.00	0.18	75.22	0.00	0.01	78.46
2045 OnRoad	OnRoad	T6 Public	T6 Public	BAU	FehrPeers VMT	1,422	5,927,931	Annual VMT		1,373.70	0.05	0.22	8,143.21	0.27	1.29	8,503.31
2045 OnRoad	OnRoad	T6 Utility	T6 Utility	BAU	FehrPeers VMT	1,422	74,419	Annual VMT		1,188.75	0.01	0.19	88.47	0.00	0.01	92.28
2045 OnRoad	OnRoad	T6T5	T6T5	BAU	FehrPeers VMT	1,422	4,213,565	Annual VMT		1,944.20	0.07	0.06	8,191.99	0.31	0.23	8,264.36
2045 OnRoad	OnRoad	T7 CAIRP	T7 CAIRP	BAU	FehrPeers VMT	1,422	5,504,678	Annual VMT		1,719.11	0.03	0.27	9,463.14	0.14	1.49	9,875.02
2045 OnRoad	OnRoad	T7 NNOOS	T7 NNOOS	BAU	FehrPeers VMT	1,422	6,341,633	Annual VMT		1,719.53	0.01	0.27	10,904.65	0.06	1.72	11,374.85
2045 OnRoad	OnRoad	T7 NDOOS	T7 NDOOS	BAU	FehrPeers VMT	1,422	2,305,864	Annual VMT		1,732.19	0.01	0.27	3,994.19	0.02	0.63	4,166.30
2045 OnRoad	OnRoad	T7 Other Port	T7 Other Port	BAU	FehrPeers VMT	1,422	53,175	Annual VMT		1,783.29	0.01	0.28	94.83	0.00	0.01	98.91
2045 OnRoad	OnRoad	T7 POAK	T7 POAK	BAU	FehrPeers VMT	1,422	104,149	Annual VMT		1,826.99	0.01	0.29	190.28	0.00	0.03	198.48
2045 OnRoad	OnRoad	T7 Public	T7 Public	BAU	FehrPeers VMT	1,422	5,586,707	Annual VMT		2,047.21	0.04	0.32	11,437.19	0.20	1.81	11,935.64
2045 OnRoad	OnRoad	T7 Single	T7 Single	BAU	FehrPeers VMT	1,422	3,582,506	Annual VMT		1,759.53	0.04	0.28	6,303.54	0.15	1.00	6,579.81
2045 OnRoad	OnRoad	T7 SWCV	T7 SWCV	BAU	FehrPeers VMT	1,422	1,806,491	Annual VMT		3,200.41	2.78	0.54	5,781.50	5.01	0.98	6,189.96
2045 OnRoad	OnRoad	T7 Tractor	T7 Tractor	BAU	FehrPeers VMT	1,422	2,229,590	Annual VMT		1,684.27	0.03	0.27	3,755.24	0.06	0.59	3,918.71
2045 OnRoad	OnRoad	T7 Utility	T7 Utility	BAU	FehrPeers VMT	1,422	40,472	Annual VMT		1,810.33	0.00	0.28	73.27	0.00	0.01	76.42
2045 OnRoad	OnRoad	T7T5	T7T5	BAU	FehrPeers VMT	1,422	27,374	Annual VMT		3,079.83	1.10	0.50	84.31	0.03	0.01	88.90
2045 OnRoad	OnRoad	UBUS	UBUS	BAU	FehrPeers VMT	1,422	1,365,912	Annual VMT		1,577.52	0.89	0.22	2,154.75	1.21	0.30	2,271.73
2030 OnRoad	OnRoad	All Other Buses	All Other Buses	Leg-Adjusted	FehrPeers VMT	1,166	656,847	Annual VMT		1,079.67	0.12	0.18	709.18	0.08	0.12	742.83
2030 OnRoad	OnRoad	LDA	LDA	Leg-Adjusted	FehrPeers VMT	1,166	542,265,838	Annual VMT		241.88	0.01	0.01	131,162.67	4.16	3.63	132,609.21
2030 OnRoad	OnRoad	LDT1	LDT1	Leg-Adjusted	FehrPeers VMT	1,166	53,336,192	Annual VMT		322.04	0.01	0.01	17,176.58	0.78	0.58	17,355.68
2030 OnRoad	OnRoad	LDT2	LDT2	Leg-Adjusted	FehrPeers VMT	1,166	222,778,897	Annual VMT		327.27	0.01	0.01	72,909.63	2.15	1.88	73,483.03
2030 OnRoad	OnRoad	LHD1	LHD1	Leg-Adjusted	FehrPeers VMT	1,166	39,597,628	Annual VMT		705.67	0.05	0.05	27,940.01	0.58	2.06	28,221.54
2030 OnRoad	OnRoad	LHD2	LHD2	Leg-Adjusted	FehrPeers VMT	1,166	9,034,440	Annual VMT		756.59	0.01	0.08	6,835.39	0.09	0.74	7,040.73
2030 OnRoad	OnRoad	MCY	MCY	Leg-Adjusted	FehrPeers VMT	1,166	4,307,636	Annual VMT		210.75	0.04	0.04	907.82	1.04	0.18	987.10
2030 OnRoad	OnRoad	MDV	MDV	Leg-Adjusted	FehrPeers VMT	1,166	152,486,628	Annual VMT		395.07	0.01	0.01	60,243.51	1.83	1.58	60,724.52
2030 OnRoad	OnRoad	MH	MH	Leg-Adjusted	FehrPeers VMT	1,166	1,205,231	Annual VMT		1,667.75	0.01	0.07	2,030.03	0.01	0.08	2,032.67
2030 OnRoad	OnRoad	Motor Coach	Motor Coach	Leg-Adjusted	FehrPeers VMT	1,166	309,919	Annual VMT		1,736.15	0.00	0.27	538.07	0.00	0.06	561.33
2030 OnRoad	OnRoad	OBUS	OBUS	Leg-Adjusted	FehrPeers VMT	1,166	936,550	Annual VMT		1,608.57	0.03	0.03	1,506.50	0.03	0.03	1,516.04
2030 OnRoad	OnRoad	PTO	PTO	Leg-Adjusted	FehrPeers VMT	1,166	582,879	Annual VMT		1,729.53	0.00	0.27	1,008.11	0.00	0.16	1,051.48
2030 OnRoad	OnRoad	SBUS	SBUS	Leg-Adjusted	FehrPeers VMT	1,166	848,943	Annual VMT		1,060.36	0.07	0.14	900.19	0.06	0.12	934.72
2030 OnRoad	OnRoad	T6 CAIRP heavy	T6 CAIRP heavy	Leg-Adjusted	FehrPeers VMT	1,166	404,940	Annual VMT		890.40	0.00	0.14	360.56	0.00	0.06	376.07
2030 OnRoad	OnRoad	T6 CAIRP small	T6 CAIRP small	Leg-Adjusted	FehrPeers VMT	1,166	107,274	Annual VMT		927.73	0.00	0.15	99.52	0.00	0.02	103.80
2030 OnRoad	OnRoad	T6 instate heavy	T6 instate heavy	Leg-Adjusted	FehrPeers VMT	1,166	2,197,069	Annual VMT		1,047.02	0.01	0.17	2,300.36	0.03	0.36	2,400.35
2030 OnRoad	OnRoad	T6 instate small	T6 instate small	Leg-Adjusted	FehrPeers VMT	1,166	7,918,075	Annual VMT		1,042.48	0.00	0.16	8,254.44	0.01	1.30	8,609.62
2030 OnRoad	OnRoad	T6 OOS heavy	T6 OOS heavy	Leg-Adjusted	FehrPeers VMT	1,166	237,212	Annual VMT		942.00	0.00	0.15	224.45	0.00	0.04	233.07
2030 OnRoad	OnRoad	T6 OOS small	T6 OOS small	Leg-Adjusted	FehrPeers VMT	1,166	54,209	Annual VMT		1,025.54	0.00	0.16	55.59	0.00	0.01	57.99
2030 OnRoad	OnRoad	T6 Public	T6 Public	Leg-Adjusted	FehrPeers VMT	1,166	4,857,328	Annual VMT		1,117.92	0.11	0.18	5,430.12	0.54	0.88	5,684.48
2030 OnRoad	OnRoad	T6 Utility	T6 Utility	Leg-Adjusted	FehrPeers VMT	1,166	60,979	Annual VMT		942.23	0.00	0.15	57.46	0.00	0.01	59.93
2030 OnRoad	OnRoad	T6T5	T6T5	Leg-Adjusted	FehrPeers VMT	1,166	3,452,582	Annual VMT		1,613.64	0.03	0.02	5,571.22	0.10	0.09	5,597.47
2030 OnRoad	OnRoad	T7 CAIRP	T7 CAIRP	Leg-Adjusted	FehrPeers VMT	1,166	4,510,516	Annual VMT		1,376.20	0.02	0.22	6,207.37	0.10	0.98	6,478.10
2030 OnRoad	OnRoad	T7 NNOOS	T7 NNOOS	Leg-Adjusted	FehrPeers VMT	1,166	5,196,314	Annual VMT		1,414.86	0.00	0.22	7,392.08	0.01	1.16	7,668.69
2030 OnRoad	OnRoad	T7 NDOOS	T7 NDOOS	Leg-Adjusted	FehrPeers VMT	1,166	1,889,418	Annual VMT		1,461.93	0.00	0.23	2,762.20	0.01	0.44	2,881.17
2030 OnRoad	OnRoad	T7 Other Port	T7 Other Port	Leg-Adjusted	FehrPeers VMT	1,166	43,572	Annual VMT		1,465.50	0.00	0.23	63.85	0.00	0.01	66.60
2030 OnRoad	OnRoad	T7 POAK	T7 POAK	Leg-Adjusted	FehrPeers VMT	1,166	85,339	Annual VMT		1,550.84	0.00	0.24	132.35	0.00	0.02	138.04
2030 OnRoad	OnRoad	T7 Public	T7 Public	Leg-Adjusted	FehrPeers VMT	1,166	4,577,716	Annual VMT		1,689.69	0.05	0.27	7,739.95	0.21	1.23	8,075.38
2030 OnRoad	OnRoad	T7 Single	T7 Single	Leg-Adjusted	FehrPeers VMT	1,166	2,935,494	Annual VMT		1,504.62	0.04	0.24	4,438.81	0.13	0.70	4,611.68
2030 OnRoad	OnRoad	T7 SWCV	T7 SWCV	Leg-Adjusted	FehrPeers VMT	1,166	1,480,233	Annual VMT		1,998.96	1.62	0.37	2,958.93	2.40	0.55	3,175.10
2030 OnRoad	OnRoad	T7 Tractor	T7 Tractor	Leg-Adjusted	FehrPeers VMT	1,166	1,826,919	Annual VMT		1,503.74	0.02	0.24	2,747.20	0.04	0.43	2,866.68
2030 OnRoad	OnRoad	T7 Utility	T7 Utility	Leg-Adjusted	FehrPeers VMT	1,166	33,163	Annual VMT		1,554.79	0.00	0.24	51.56	0.00	0.01	53.78
2030 OnRoad	OnRoad	T7T5	T7T5	Leg-Adjusted	FehrPeers VMT	1,166	22,431	Annual VMT		1,804.61	0.11	0.17	40.48	0.00	0.00	41.56
2030 OnRoad	OnRoad	UBUS	UBUS	Leg-Adjusted	FehrPeers VMT	1,166	1,119,224	Annual VMT		1,140.81	2.08	0.14	1,276.82	2.32	0.15	1,383.67
2045 OnRoad	OnRoad	All Other Buses	All Other Buses	Leg-Adjusted	FehrPeers VMT	1,422	801,622	Annual VMT		1,011.36	0.12	0.16	810.73	0.09	0.13	849.47
2045 OnRoad	OnRoad	LDA	LDA	Leg-Adjusted	FehrPeers VMT	1,422	661,786,548	Annual VMT		213.59	0.00	0.01	141,351.70	3.02	3.67	142,438.82
2045 OnRoad	OnRoad	LDT1	LDT1	Leg-Adjusted	FehrPeers VMT	1,422	65,097,012	Annual VMT		275.82	0.01	0.01	17,993.75	0.37	0.44	18,083.13
2045 OnRoad	OnRoad	LDT2	LDT2	Leg-Adjusted	FehrPeers VMT	1,422	271,881,551	Annual VMT		292.90	0.01	0.01	79,632.89	1.79	1.97	80,219.73
2045 OnRoad	OnRoad	LHD1	LHD1	Leg-Adjusted	FehrPeers VMT	1,422	48,325,334	Annual VMT		403.53	0.01	0.03	19,500.72	0.28	1.39	19,886.63
2045 OnRoad	OnRoad	LHD2	LHD2	Leg-Adjusted	FehrPeers VMT	1,422	11,025,720	Annual VMT		444.34	0.00	0.05	4,899.17	0.05	0.56	5,053.13
2045 OnRoad	OnRoad	MCY	MCY	Leg-Adjusted	FehrPeers VMT	1,422	5,257,081	Annual VMT		204.81	0.20	0.04	1,076.73	1.04	0.20	1,160.66
2045 OnRoad	OnRoad	MDV	MDV	Leg-Adjusted	FehrPeers VMT	1,422	180,096,176	Annual VMT		348.23	0.01	0.01	64,804.22	1.32	1.47	65,243.63
2045 OnRoad	OnRoad	MH	MH	Leg-Adjusted	FehrPeers VMT	1,422	1,470,875	Annual VMT		1,638.61	0.00	0.07	2,410.19	0.01	0.11	2,439.91
2045 OnRoad	OnRoad	Motor Coach	Motor Coach	Leg-Adjusted	FehrPeers VMT	1,422	378,228	Annual VMT		1,597.21	0.00	0.25	604.11	0.00	0.10	630.12
2045 OnRoad	OnRoad	OBUS	OBUS	Leg-Adjusted	FehrPeers VMT	1,422	1,142,974	Annual VMT		795.15	0.02	0.02	908.84	0.02	0.02	914.88
2045 OnRoad	OnRoad	PTO	PTO	Leg-Adjusted	FehrPeers VMT	1,422	711,351	Annual VMT		887.43	0.00	0.14	631.27	0.00	0.10	658.43
2045 OnRoad	OnRoad	SBUS	SBUS	Leg-Adjusted	FehrPeers VMT	1,422	1,036,058	Annual VMT		620.26	0.06	0.08	640.65	0.06	0.08	666.58
2045 OnRoad	OnRoad	T6 CAIRP heavy	T6 CAIRP heavy	Leg-Adjusted	FehrPeers VMT	1,422	494,193	Annual VMT		678.95	0.00	0.11	335.53	0.00	0.05	349.97
2045 OnRoad	OnRoad	T6 CAIRP small	T6 CAIRP small	Leg-Adjusted	FehrPeers VMT	1,422	130,918	Annual VMT		418.96	0.00	0.07	54.85	0.00	0.01	57.21
2045 OnRoad	OnRoad	T6 instate heavy	T													

EMFAC Categories	Annual VMT	Notes	g CO2 per mi	g CH4 per mi	g N2O per mi	MT CO2	MT CH4	MT N2O	MT CO2e
All Other Buses	563,571	Source: Fehr & Peers	1,269.96	0.13	0.20	715.71	0.07	0.12	749.18
LDA	465,261,020	Source: Fehr & Peers	315.30	0.02	0.01	146,697.14	8.06	5.61	148,452.56
LDT1	45,762,151	Source: Fehr & Peers	376.90	0.03	0.02	17,247.93	1.53	0.96	17,553.89
LDT2	191,143,033	Source: Fehr & Peers	406.09	0.02	0.02	77,620.79	3.75	2.96	78,534.80
LHD1	33,974,541	Source: Fehr & Peers	837.15	0.03	0.06	28,441.89	0.87	2.16	29,056.45
LHD2	7,751,499	Source: Fehr & Peers	888.58	0.02	0.09	6,887.84	0.14	0.70	7,082.70
MCY	3,695,927	Source: Fehr & Peers	218.68	0.31	0.05	808.21	1.13	0.19	890.59
MDV	130,832,664	Source: Fehr & Peers	491.58	0.03	0.02	64,314.27	3.85	2.87	65,206.26
MH	1,034,081	Source: Fehr & Peers	1,747.51	0.02	0.07	1,807.06	0.02	0.07	1,826.09
Motor Coach	265,909	Source: Fehr & Peers	1,841.22	0.01	0.29	489.60	0.00	0.08	510.71
OBUS	803,554	Source: Fehr & Peers	1,870.91	0.04	0.05	1,503.38	0.03	0.04	1,514.68
PTO	500,107	Source: Fehr & Peers	2,181.06	0.02	0.34	1,090.76	0.01	0.17	1,137.87
SBUS	728,388	Source: Fehr & Peers	1,181.28	0.09	0.17	860.43	0.07	0.13	896.76
T6 CAIRP heavy	347,437	Source: Fehr & Peers	1,058.54	0.00	0.17	367.78	0.00	0.06	383.62
T6 CAIRP small	92,040	Source: Fehr & Peers	1,136.97	0.00	0.18	104.65	0.00	0.02	109.15
T6 instate heavy	1,885,072	Source: Fehr & Peers	1,192.82	0.02	0.19	2,248.55	0.03	0.35	2,346.18
T6 instate small	6,793,663	Source: Fehr & Peers	1,248.13	0.01	0.20	8,479.37	0.09	1.33	8,846.16
T6 OOS heavy	203,526	Source: Fehr & Peers	1,057.42	0.00	0.17	215.21	0.00	0.03	224.49
T6 OOS small	46,511	Source: Fehr & Peers	1,136.97	0.00	0.18	52.88	0.00	0.01	55.16
T6 Public	4,167,560	Source: Fehr & Peers	1,373.70	0.05	0.22	5,724.99	0.19	0.91	5,978.15
T6 Utility	52,319	Source: Fehr & Peers	1,188.75	0.01	0.19	62.19	0.00	0.01	64.88
T6TS	2,962,296	Source: Fehr & Peers	1,944.20	0.07	0.06	5,759.28	0.22	0.16	5,810.16
T7 CAIRP	3,869,997	Source: Fehr & Peers	1,719.11	0.03	0.27	6,652.95	0.10	1.05	6,942.51
T7 NNOOS	4,458,408	Source: Fehr & Peers	1,719.53	0.01	0.27	7,666.38	0.04	1.21	7,996.95
T7 NOOS	1,621,110	Source: Fehr & Peers	1,732.19	0.01	0.27	2,808.07	0.01	0.44	2,929.06
T7 Other Port	37,384	Source: Fehr & Peers	1,783.29	0.01	0.28	66.67	0.00	0.01	69.54
T7 POAK	73,221	Source: Fehr & Peers	1,826.99	0.01	0.29	133.77	0.00	0.02	139.54
T7 Public	3,927,667	Source: Fehr & Peers	2,047.21	0.04	0.32	8,040.78	0.14	1.27	8,391.21
T7 Single	2,518,637	Source: Fehr & Peers	1,759.53	0.04	0.28	4,431.63	0.10	0.70	4,625.86
T7 SWCV	1,270,032	Source: Fehr & Peers	3,200.41	2.78	0.54	4,064.62	3.52	0.69	4,351.77
T7 Tractor	1,567,486	Source: Fehr & Peers	1,684.27	0.03	0.27	2,640.08	0.04	0.42	2,755.00
T7 Utility	28,454	Source: Fehr & Peers	1,810.33	0.00	0.28	51.51	0.00	0.01	53.73
T7IS	19,245	Source: Fehr & Peers	3,079.83	1.10	0.50	59.27	0.02	0.01	62.50
UBUS	960,288	Source: Fehr & Peers	1,577.52	0.89	0.22	1,514.87	0.85	0.21	1,597.11
TOTAL	919,218,798	-	48903.93116	5.854847144	6.73948816	409630.496	24.89998124	24.98193776	417145.2745



**Off-Road Vehicles and Equipment**

Year	Emissions Sector	Calculation Sector	Sub-Sector	Jurisdiction Scaling Method	Jurisdiction Scaling Factor	Notes	CO2 (toms/day)	CH4 (toms/day)	N2O (toms/day)	MT CO2	MT CH4	MT N2O	MT CO2e	Activity	Activity Unit
2019	Offroad	Offroad Equipment	Construction and Mining	Service Population	0.062645243		16.14441404	7.50E-05	4.22E-06	14.64572259	6.81E-05	3.83E-06	5,350	5,350	MT CO2e
2019	Offroad	Offroad Equipment	Entertainment Equipment	Employment	0.087580708		0.162151387	5.32E-07	0.00E+00	0.147283188	4.83E-07	0.00E+00	54	54	MT CO2e
2019	Offroad	Offroad Equipment	Industrial	Employment	0.087580708		4.293360574	1.29E-04	2.17E-05	3.894872312	1.17E-04	1.97E-05	1,426	1,426	MT CO2e
2019	Offroad	Offroad Equipment	Lawn and Garden Equipment	Population	0.051034532		0.411382392	3.09E-05	1.35E-05	0.373199935	2.80E-05	1.22E-05	138	138	MT CO2e
2019	Offroad	Offroad Equipment	Light Commercial Equipment	Employment	0.087580708		2.520745477	5.81E-05	3.60E-05	2.286782485	5.27E-05	3.27E-05	839	839	MT CO2e
2019	Offroad	Offroad Equipment	Portable Equipment	Employment	0.087580708	New from OFFROAD2021	7.475228813	1.62E-05	5.14E-06	6.781415451	1.47E-05	4.67E-06	2,478	2,478	MT CO2e
2019	Offroad	Offroad Equipment	Recreational Equipment	Population	0.051034532		0.235511218	9.30E-05	1.97E-05	0.213652245	8.43E-05	1.79E-05	81	81	MT CO2e
2019	Offroad	Offroad Equipment	Transport Refrigeration Units	Service Population	0.062645243		1.995956464	9.10E-06	5.95E-07	1.810701765	8.26E-06	5.39E-07	661	661	MT CO2e

Year	Emissions Sector	Calculation Sector	Sub-Sector	BAU or Leg-Adjusted?	Jurisdiction Scaling Method	Activity Growth Method	Jurisdiction Scaling Factor	Activity Growth Factor	Legislative Adjustment	Notes	CO2 (toms/day)	CH4 (toms/day)	N2O (toms/day)	MT CO2	MT CH4	MT N2O	MT CO2e	Activity	Activity Unit
2030	Offroad	Offroad Equipment	Construction and Mining	BAU	Service Population	Service Population	0.0697454	1.25049328	1		22.63003146	1.05E-04	5.92E-06	20.5296251	9.54E-05	5.37E-06	7,500	7,500	MT CO2e
2030	Offroad	Offroad Equipment	Entertainment Equipment	BAU	Employment	Employment	0.092452151	1.187324608	1		0.203486521	6.67E-07	0.00E+00	0.18459992	6.05E-07	0.00E+00	67	67	MT CO2e
2030	Offroad	Offroad Equipment	Industrial	BAU	Employment	Employment	0.092452151	1.187324608	1		5.38115376	1.61E-04	2.72E-05	4.88170197	1.46E-04	2.47E-05	1,787	1,787	MT CO2e
2030	Offroad	Offroad Equipment	Lawn and Garden Equipment	BAU	Population	Population	0.092452151	1.187324608	1		0.628766661	4.72E-05	2.06E-05	0.57040768	4.28E-05	1.87E-05	211	211	MT CO2e
2030	Offroad	Offroad Equipment	Light Commercial Equipment	BAU	Employment	Employment	0.092452151	1.187324608	1		3.159417609	7.28E-05	4.51E-05	2.86617626	6.61E-05	4.09E-05	1,052	1,052	MT CO2e
2030	Offroad	Offroad Equipment	Portable Equipment	BAU	Employment	Employment	0.092452151	1.187324608	1		9.369200407	2.03E-05	6.45E-06	8.49959807	1.84E-05	5.85E-06	3,105	3,105	MT CO2e
2030	Offroad	Offroad Equipment	Recreational Equipment	BAU	Population	Population	0.092452151	1.187324608	1		0.359960964	1.42E-04	3.01E-05	0.32655119	1.29E-04	2.73E-05	123	123	MT CO2e
2030	Offroad	Offroad Equipment	Transport Refrigeration Units	BAU	Service Population	Service Population	0.0697454	1.25049328	1		2.797829718	1.28E-05	8.34E-07	2.53814915	1.16E-05	7.56E-07	927	927	MT CO2e
2045	Offroad	Offroad Equipment	Construction and Mining	BAU	Service Population	Service Population	0.07541485	1.502040341	1		29.19209819	1.36E-04	7.63E-06	26.4826336	1.23E-04	6.92E-06	9,675	9,675	MT CO2e
2045	Offroad	Offroad Equipment	Entertainment Equipment	BAU	Employment	Employment	0.096265046	1.358471102	1		0.242419853	7.94E-07	0.00E+00	0.21591965	7.21E-07	0.00E+00	80	80	MT CO2e
2045	Offroad	Offroad Equipment	Industrial	BAU	Employment	Employment	0.096265046	1.358471102	1		6.41073667	1.92E-04	3.24E-05	5.81572415	1.74E-04	2.94E-05	2,129	2,129	MT CO2e
2045	Offroad	Offroad Equipment	Lawn and Garden Equipment	BAU	Population	Population	0.065840207	1.616762442	1		0.858062584	6.44E-05	2.81E-05	0.77842151	5.84E-05	2.55E-05	287	287	MT CO2e
2045	Offroad	Offroad Equipment	Light Commercial Equipment	BAU	Employment	Employment	0.096265046	1.358471102	1		3.76391295	8.68E-05	5.37E-05	3.41456537	7.87E-05	4.88E-05	1,253	1,253	MT CO2e
2045	Offroad	Offroad Equipment	Portable Equipment	BAU	Employment	Employment	0.096265046	1.358471102	1		11.16182129	2.41E-05	7.68E-06	10.1258368	2.19E-05	6.97E-06	3,699	3,699	MT CO2e
2045	Offroad	Offroad Equipment	Recreational Equipment	BAU	Population	Population	0.065840207	1.616762442	1		0.491229982	1.94E-04	4.11E-05	0.44563647	1.76E-04	3.73E-05	168	168	MT CO2e
2045	Offroad	Offroad Equipment	Transport Refrigeration Units	BAU	Service Population	Service Population	0.07541485	1.502040341	1		3.609120915	1.65E-05	1.08E-06	3.27414036	1.49E-05	9.75E-07	1,196	1,196	MT CO2e
2030	Offroad	Offroad Equipment	Construction and Mining	Leg-Adjusted	Service Population	Service Population	0.0697454	1.25049328	1		22.63003146	1.05E-04	5.92E-06	20.5296251	9.54E-05	5.37E-06	7,500	7,500	MT CO2e
2030	Offroad	Offroad Equipment	Entertainment Equipment	Leg-Adjusted	Employment	Employment	0.092452151	1.187324608	1		0.203486521	6.67E-07	0.00E+00	0.18459992	6.05E-07	0.00E+00	67	67	MT CO2e
2030	Offroad	Offroad Equipment	Industrial	Leg-Adjusted	Employment	Employment	0.092452151	1.187324608	1		5.38115376	1.61E-04	2.72E-05	4.88170197	1.46E-04	2.47E-05	1,787	1,787	MT CO2e
2030	Offroad	Offroad Equipment	Lawn and Garden Equipment	Leg-Adjusted	Population	Population	0.092452151	1.187324608	1		0.628766661	4.72E-05	2.06E-05	0.57040768	4.28E-05	1.87E-05	211	211	MT CO2e
2030	Offroad	Offroad Equipment	Light Commercial Equipment	Leg-Adjusted	Employment	Employment	0.092452151	1.187324608	1		3.159417609	7.28E-05	4.51E-05	2.86617626	6.61E-05	4.09E-05	1,052	1,052	MT CO2e
2030	Offroad	Offroad Equipment	Portable Equipment	Leg-Adjusted	Employment	Employment	0.092452151	1.187324608	1		9.369200407	2.03E-05	6.45E-06	8.49959807	1.84E-05	5.85E-06	3,105	3,105	MT CO2e
2030	Offroad	Offroad Equipment	Recreational Equipment	Leg-Adjusted	Population	Population	0.092452151	1.187324608	1		0.359960964	1.42E-04	3.01E-05	0.32655119	1.29E-04	2.73E-05	123	123	MT CO2e
2030	Offroad	Offroad Equipment	Transport Refrigeration Units	Leg-Adjusted	Service Population	Service Population	0.0697454	1.25049328	1		2.797829718	1.28E-05	8.34E-07	2.53814915	1.16E-05	7.56E-07	927	927	MT CO2e
2045	Offroad	Offroad Equipment	Construction and Mining	Leg-Adjusted	Service Population	Service Population	0.07541485	1.502040341	1		29.19209819	1.36E-04	7.63E-06	26.4826336	1.23E-04	6.92E-06	9,675	9,675	MT CO2e
2045	Offroad	Offroad Equipment	Entertainment Equipment	Leg-Adjusted	Employment	Employment	0.096265046	1.358471102	1		0.242419853	7.94E-07	0.00E+00	0.21591965	7.21E-07	0.00E+00	80	80	MT CO2e
2045	Offroad	Offroad Equipment	Industrial	Leg-Adjusted	Employment	Employment	0.096265046	1.358471102	1		6.41073667	1.92E-04	3.24E-05	5.81572415	1.74E-04	2.94E-05	2,129	2,129	MT CO2e
2045	Offroad	Offroad Equipment	Lawn and Garden Equipment	Leg-Adjusted	Population	Population	0.065840207	1.616762442	1		0.858062584	6.44E-05	2.81E-05	0.77842151	5.84E-05	2.55E-05	287	287	MT CO2e
2045	Offroad	Offroad Equipment	Light Commercial Equipment	Leg-Adjusted	Employment	Employment	0.096265046	1.358471102	1		3.76391295	8.68E-05	5.37E-05	3.41456537	7.87E-05	4.88E-05	1,253	1,253	MT CO2e
2045	Offroad	Offroad Equipment	Portable Equipment	Leg-Adjusted	Employment	Employment	0.096265046	1.358471102	1		11.16182129	2.41E-05	7.68E-06	10.1258368	2.19E-05	6.97E-06	3,699	3,699	MT CO2e
2045	Offroad	Offroad Equipment	Recreational Equipment	Leg-Adjusted	Population	Population	0.065840207	1.616762442	1		0.491229982	1.94E-04	4.11E-05	0.44563647	1.76E-04	3.73E-05	168	168	MT CO2e
2045	Offroad	Offroad Equipment	Transport Refrigeration Units	Leg-Adjusted	Service Population	Service Population	0.07541485	1.502040341	1		3.609120915	1.65E-05	1.08E-06	3.27414036	1.49E-05	9.75E-07	1,196	1,196	MT CO2e



Water

Year	Emissions Sector	Sub-Sector	Water District/Provider	Location	Extraction and Conveyance	Treatment	Water Use (M/Year)	Percent of Source Inside Jurisdiction	Utility (if applicable)	Notes	Activity	Activity Unit	Energy Use (BblTU)	MT CO2	MT CH4	MT N2O	MT CO2e
2019	Water	Water	Sacramento County Water Agency Zone 40	Sacramento River	Local Deliveries	Conventional Potable Treatment	14,016	0%	SMUD	Source: City of Sacto, Condonia Water Supply, Source: City of Sacto	7,106,007	kWh	24,246,701	1,649	0.106	0	1,655.80
2019	Water	Water	Sacramento County Water Agency Zone 41	Sacramento River	Groundwater	Conventional Potable Treatment	11,174	0%	SMUD	Source: City of Sacto, Condonia Water Supply, Source: City of Sacto	7,687,375	kWh	26,210,410	1,784	0	0	1,791
2019	Water	Water	Sacramento County Water Agency Zone 42	Sacramento River	Recycled Water	Tertiary Treatment + Disinfection	1,289	0%	SMUD	Source: City of Sacto, Condonia Water Supply, Source: City of Sacto	741,124	kWh	2,528,819	172	0	0	173
2019	Water	Water	Golden State Water Company	Sacramento River	Local Deliveries	Conventional Potable Treatment	15,000	0%	SMUD	Source: City of Sacto, Condonia Water Supply, Source: City of Sacto	7,605,000	kWh	25,949,336	1,765	0	0	1,772
2019	Water	Water	Golden State Water Company	Sacramento River	Groundwater	Conventional Potable Treatment	10,751	0%	SMUD	Source: City of Sacto, Condonia Water Supply, Source: City of Sacto	7,396,688	kWh	25,238,546	1,717	0	0	1,724
2019	Water	Water	California American Water	Sacramento River	Groundwater	Conventional Potable Treatment	8,773	0%	SMUD	Source: City of Sacto, Condonia Water Supply, Source: City of Sacto	6,036,145	kWh	20,596,180	1,401	0	0	1,407
2019	Water	Water	California American Water	Sacramento River	Local Deliveries	Conventional Potable Treatment	4,642	0%	SMUD	Source: City of Sacto, Condonia Water Supply, Source: City of Sacto	2,353,443	kWh	8,030,279	546	0	0	548

Year	Emissions Sector	Sub-Sector	Water District/Provider	Location	Extraction and Conveyance	Treatment	Activity Growth Method	Activity Growth Factor	BAU or Leg-Adjusted?	Legislative Adjustment (27 Years)	Water Use (M/Year)	Percent of Source Inside Jurisdiction	Utility (if applicable)	Notes	Activity	Activity Unit	Energy Use (BblTU)	MT CO2	MT CH4	MT N2O	MT CO2e
2030	Water	Water	Sacramento County Water Agency Zone 40	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.316362515	BAU	1	18,450	0%	SMUD		9,354,081	kWh	31,917,448	2,171	0	0	2,180
2030	Water	Water	Sacramento County Water Agency Zone 41	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.316362515	BAU	1	14,708	0%	SMUD		10,119,371.89	kWh	34,528,728.58	2,349	0	0	2,357.96
2030	Water	Water	Sacramento County Water Agency Zone 42	Sacramento River	Recycled Water	Recycled Water - Tertiary Treatment + Disinfection	Population	1.316362515	BAU	1	1,697	0%	SMUD		975,587.52	kWh	3,328,842.65	226	0	0	227.31
2030	Water	Water	Golden State Water Company	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.316362515	BAU	1	19,745	0%	SMUD		10,010,936.93	kWh	34,158,733.15	2,324	0	0	2,332.60
2030	Water	Water	Golden State Water Company	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.316362515	BAU	1	14,152	0%	SMUD		9,746,722.82	kWh	33,223,075.81	2,240	0	0	2,248.80
2030	Water	Water	California American Water	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.316362515	BAU	1	11,549	0%	SMUD		7,945,754.71	kWh	27,112,899.23	1,844	0	0	1,851.48
2030	Water	Water	California American Water	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.316362515	BAU	1	6,110	0%	SMUD		3,097,883.54	kWh	10,570,758	719	0	0	722
2030	Water	Water	Sacramento County Water Agency Zone 40	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.616762442	BAU	1	22,660	0%	SMUD		11,488,725	kWh	39,201,155	2,667	0	0	2,677
2030	Water	Water	Sacramento County Water Agency Zone 41	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.616762442	BAU	1	18,065	0%	SMUD		12,428,658.69	kWh	42,408,341.85	2,885	0	0	2,896.06
2030	Water	Water	Sacramento County Water Agency Zone 42	Sacramento River	Recycled Water	Recycled Water - Tertiary Treatment + Disinfection	Population	1.616762442	BAU	1	2,084	0%	SMUD		1,198,221.04	kWh	4,088,499.72	278	0	0	279.20
2030	Water	Water	Golden State Water Company	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.616762442	BAU	1	24,251	0%	SMUD		12,295,478.37	kWh	41,953,911.77	2,854	0	0	2,865.03
2030	Water	Water	Golden State Water Company	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.616762442	BAU	1	17,382	0%	SMUD		11,958,687.35	kWh	40,804,733.17	2,776	0	0	2,786.55
2030	Water	Water	California American Water	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.616762442	BAU	1	14,185	0%	SMUD		9,759,012.16	kWh	33,290,130.18	2,265	0	0	2,273.99
2030	Water	Water	California American Water	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.616762442	BAU	1	7,505	0%	SMUD		3,804,957.50	kWh	12,983,053	883	0	0	887
2030	Water	Water	Sacramento County Water Agency Zone 40	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.772697998	BAU	1	24,846	0%	SMUD		12,596,804	kWh	42,982,078	2,924	0	0	2,935
2030	Water	Water	Sacramento County Water Agency Zone 41	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.772697998	BAU	1	19,807	0%	SMUD		13,627,393.74	kWh	46,498,595.43	3,163	0	0	3,175.38
2030	Water	Water	Sacramento County Water Agency Zone 42	Sacramento River	Recycled Water	Recycled Water - Tertiary Treatment + Disinfection	Population	1.772697998	BAU	1	2,285	0%	SMUD		1,333,788.59	kWh	4,482,822.53	305	0	0	306.13
2030	Water	Water	Golden State Water Company	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.772697998	BAU	1	26,590	0%	SMUD		13,481,368.28	kWh	46,000,335.90	3,129	0	0	3,141.36
2030	Water	Water	Golden State Water Company	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.772697998	BAU	1	19,058	0%	SMUD		13,112,094.01	kWh	44,740,319.86	3,043	0	0	3,055.11
2030	Water	Water	California American Water	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.772697998	BAU	1	15,553	0%	SMUD		10,700,261.75	kWh	36,510,806.95	2,484	0	0	2,493.32
2030	Water	Water	California American Water	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.772697998	BAU	1	8,229	0%	SMUD		4,171,942.87	kWh	14,235,259	968	0	0	972
2030	Water	Water	Sacramento County Water Agency Zone 40	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.316362515	Leg-Adjusted	1	18,450	0%	SMUD		9,354,081.01	kWh	31,917,447.83	-	-	-	-
2030	Water	Water	Sacramento County Water Agency Zone 41	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.316362515	Leg-Adjusted	1	14,708	0%	SMUD		10,119,371.89	kWh	34,528,728.58	-	-	-	-
2030	Water	Water	Sacramento County Water Agency Zone 42	Sacramento River	Recycled Water	Recycled Water - Tertiary Treatment + Disinfection	Population	1.316362515	Leg-Adjusted	1	1,697	0%	SMUD		975,587.52	kWh	3,328,842.65	-	-	-	-
2030	Water	Water	Golden State Water Company	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.316362515	Leg-Adjusted	1	19,745	0%	SMUD		10,010,936.93	kWh	34,158,733.15	-	-	-	-
2030	Water	Water	Golden State Water Company	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.316362515	Leg-Adjusted	1	14,152	0%	SMUD		9,746,722.82	kWh	33,223,075.81	-	-	-	-
2030	Water	Water	California American Water	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.316362515	Leg-Adjusted	1	11,549	0%	SMUD		7,945,754.71	kWh	27,112,899.23	-	-	-	-
2030	Water	Water	California American Water	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.316362515	Leg-Adjusted	1	6,110	0%	SMUD		3,097,883.54	kWh	10,570,758.13	-	-	-	-
2030	Water	Water	Sacramento County Water Agency Zone 40	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.616762442	Leg-Adjusted	1	22,660	0%	SMUD		11,488,724.94	kWh	39,201,154.93	-	-	-	-
2030	Water	Water	Sacramento County Water Agency Zone 41	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.616762442	Leg-Adjusted	1	18,065	0%	SMUD		12,428,658.69	kWh	42,408,341.85	-	-	-	-
2030	Water	Water	Sacramento County Water Agency Zone 42	Sacramento River	Recycled Water	Recycled Water - Tertiary Treatment + Disinfection	Population	1.616762442	Leg-Adjusted	1	2,084	0%	SMUD		1,198,221.04	kWh	4,088,499.72	-	-	-	-
2030	Water	Water	Golden State Water Company	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.616762442	Leg-Adjusted	1	24,251	0%	SMUD		12,295,478.37	kWh	41,953,911.77	-	-	-	-
2030	Water	Water	Golden State Water Company	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.616762442	Leg-Adjusted	1	17,382	0%	SMUD		11,958,687.35	kWh	40,804,733.17	-	-	-	-
2030	Water	Water	California American Water	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.616762442	Leg-Adjusted	1	14,185	0%	SMUD		9,759,012.16	kWh	33,290,130.18	-	-	-	-
2030	Water	Water	California American Water	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.616762442	Leg-Adjusted	1	7,505	0%	SMUD		3,804,957.50	kWh	12,983,053.32	-	-	-	-
2030	Water	Water	Sacramento County Water Agency Zone 40	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.772697998	Leg-Adjusted	1	24,846	0%	SMUD		12,596,804.07	kWh	42,982,077.67	-	-	-	-
2030	Water	Water	Sacramento County Water Agency Zone 41	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.772697998	Leg-Adjusted	1	19,807	0%	SMUD		13,627,393.74	kWh	46,498,595.43	-	-	-	-
2030	Water	Water	Sacramento County Water Agency Zone 42	Sacramento River	Recycled Water	Recycled Water - Tertiary Treatment + Disinfection	Population	1.772697998	Leg-Adjusted	1	2,285	0%	SMUD		1,333,788.59	kWh	4,482,822.53	-	-	-	-
2030	Water	Water	Golden State Water Company	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.772697998	Leg-Adjusted	1	26,590	0%	SMUD		13,481,368.28	kWh	46,000,335.90	-	-	-	-
2030	Water	Water	Golden State Water Company	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.772697998	Leg-Adjusted	1	19,058	0%	SMUD		13,112,094.01	kWh	44,740,319.86	-	-	-	-
2030	Water	Water	California American Water	Sacramento River	Groundwater	Conventional Potable Treatment	Population	1.772697998	Leg-Adjusted	1	15,553	0%	SMUD		10,700,261.75	kWh	36,510,806.95	-	-	-	-
2030	Water	Water	California American Water	Sacramento River	Local Deliveries	Conventional Potable Treatment	Population	1.772697998	Leg-Adjusted	1	8,229	0%	SMUD		4,171,942.87	kWh	14,235,259.32	-	-	-	-



Wastewater Process Emissions																									
Year	Emission Sector	Sub-Sector	WWT Name	WWT Process	WW Equation	Digester Gas (R3/Day)	Fraction of CH4 in Biogas	Population Served	BTU Content of Biogas	Area of Incinerated Biosolids	PP	RDS Load (kg RDS/Day)	N Load (kg N/Day)	Method Load (MT CO2e/Day)	Design Treatment Type	P_influent	PF_effluent	N uptake	Natural Gas (therms)	Electricity (MWh)	GHG (if appl) MT CO2e	MT CH4	MT N2O	MT CO2e	
2019	Wastewater	WWT	SASD/BRCD	Wastewater Treatment Plants without	WW.1a	139,571	60%	139,571								1.25	0.005					0.109	-	-	3.0
2019	Wastewater	WWT	SASD/BRCD	Wastewater Treatment Plants without	WW.8																	-	0.56	-	152
2019	Wastewater	WWT	SASD/BRCD	Effluent Discharge	WW.12																	-	10.41	-	2,843.50
2019	Wastewater	WWT	SASD/BRCD	with Wastewater Collection and	WW.15																1,484	346,513	0.022	0.003	345.9
2019	Wastewater	WWT	SASD/BRCD	Energy related Emissions Associated	WW.15																10,068	2,937	0	0	2,346
2019	Wastewater	WWT	SASD/BRCD	Treatment	WW.15																				
Year	Emission Sector	Sub-Sector	WWT Name	WWT Process	WW Equation	Activity Growth Method	Activity Growth Factor	BAU or Leg-Adjusted	Notes	MT CO2	MT CH4	MT N2O	MT CO2e												
2030	Wastewater	WWT	SASD/BRCD	Wastewater Treatment Plants without	WW.1a	Population		1.31632555	BAU	-	0.14	-	4.00												
2030	Wastewater	WWT	SASD/BRCD	Process Nitrous Oxide Emissions from	WW.8	Population		1.31632555	BAU	-	-	0.73	200.63												
2030	Wastewater	WWT	SASD/BRCD	Wastewater Treatment Plants without	WW.12	Population		1.31632555	BAU	-	-	13.71	3,742.49												
2030	Wastewater	WWT	SASD/BRCD	Effluent Discharge	WW.12	Population		1.31632555	BAU	-	-	16.84	4,596.14												
2030	Wastewater	WWT	SASD/BRCD	Energy related Emissions Associated	WW.15	Population		1.31632555	BAU	3,529.45	0.23	0.03	3,543.33												
2030	Wastewater	WWT	SASD/BRCD	with Wastewater Collection and	WW.15	Population		1.31632555	BAU	4,834.89	0.28	0.03	4,851.94												
2030	Wastewater	WWT	SASD/BRCD	Treatment	WW.15	Population		1.31632555	BAU	4,834.89	0.28	0.03	4,851.94												
2045	Wastewater	WWT	SASD/BRCD	Process Nitrous Oxide Emissions from	WW.8	Population		1.61672442	BAU	-	-	0.90	246.41												
2045	Wastewater	WWT	SASD/BRCD	Wastewater Treatment Plants without	WW.12	Population		1.61672442	BAU	-	-	16.84	4,596.14												
2045	Wastewater	WWT	SASD/BRCD	Effluent Discharge	WW.12	Population		1.61672442	BAU	-	-	16.84	4,596.14												
2045	Wastewater	WWT	SASD/BRCD	Energy related Emissions Associated	WW.15	Population		1.61672442	BAU	4,834.89	0.28	0.03	4,851.94												
2045	Wastewater	WWT	SASD/BRCD	with Wastewater Collection and	WW.15	Population		1.61672442	BAU	4,834.89	0.28	0.03	4,851.94												
2045	Wastewater	WWT	SASD/BRCD	Treatment	WW.15	Population		1.61672442	BAU	4,834.89	0.28	0.03	4,851.94												
2030	Wastewater	WWT	SASD/BRCD	Process Nitrous Oxide Emissions from	WW.8	Population		1.31632555	Leg-Adjusted	-	0.14	-	4.00												
2030	Wastewater	WWT	SASD/BRCD	Wastewater Treatment Plants without	WW.12	Population		1.31632555	Leg-Adjusted	-	-	0.73	200.63												
2030	Wastewater	WWT	SASD/BRCD	Effluent Discharge	WW.12	Population		1.31632555	Leg-Adjusted	-	-	13.71	3,742.49												
2030	Wastewater	WWT	SASD/BRCD	Energy related Emissions Associated	WW.15	Population		1.31632555	Leg-Adjusted	3,529.45	0.23	0.03	3,543.33												
2030	Wastewater	WWT	SASD/BRCD	with Wastewater Collection and	WW.15	Population		1.31632555	Leg-Adjusted	4,834.89	0.28	0.03	4,851.94												
2030	Wastewater	WWT	SASD/BRCD	Treatment	WW.15	Population		1.31632555	Leg-Adjusted	4,834.89	0.28	0.03	4,851.94												
2045	Wastewater	WWT	SASD/BRCD	Process Nitrous Oxide Emissions from	WW.8	Population		1.61672442	Leg-Adjusted	-	-	0.90	246.41												
2045	Wastewater	WWT	SASD/BRCD	Wastewater Treatment Plants without	WW.12	Population		1.61672442	Leg-Adjusted	-	-	16.84	4,596.14												
2045	Wastewater	WWT	SASD/BRCD	Effluent Discharge	WW.12	Population		1.61672442	Leg-Adjusted	-	-	16.84	4,596.14												
2045	Wastewater	WWT	SASD/BRCD	Energy related Emissions Associated	WW.15	Population		1.61672442	Leg-Adjusted	4,834.89	0.28	0.03	4,851.94												
2045	Wastewater	WWT	SASD/BRCD	with Wastewater Collection and	WW.15	Population		1.61672442	Leg-Adjusted	4,834.89	0.28	0.03	4,851.94												
2045	Wastewater	WWT	SASD/BRCD	Treatment	WW.15	Population		1.61672442	Leg-Adjusted	4,834.89	0.28	0.03	4,851.94												

**Waste Generation**

Year	Emissions Sector	Sub-Sector	Landfill Name	Annual Waste Tonnage Delivered from Jurisdiction	Annual ADC Tonnage Delivered from Jurisdiction	Activity	Activity Unit	Percent of year under LFG collection	LFG Collection Efficiency	Oxidation Rate	Notes	MT CO2	MT CH4	MT NZO	MT CO2e
2019	Solid Waste	Waste Generation	Community-Generated Solid Waste Disposed of Outside Jurisdiction	56,877		2587	59,464 tons	100%	75%	10%			802.76		22,397

Year	Emissions Sector	Sub-Sector	Landfill Name	BAU or Leg-Adjusted?	Activity Growth Method	Activity Growth Factor	Legislative Adjustment	Annual Waste Tonnage Delivered from Jurisdiction	Annual ADC Tonnage Delivered from Jurisdiction	Activity	Activity Unit	Percent of year under LFG collection	LFG Collection Efficiency	Oxidation Rate	Notes	MT CO2	MT CH4	MT NZO	MT CO2e
2030	Solid Waste	Waste Generation	Community-Generated Solid Waste Disposed of Outside Jurisdiction	BAU	Population	1.316362515	1	74,871	3,405	78,276 tons		100%	75%	10%	Total of all tonnage sent to		1,056.73		29,483
2045	Solid Waste	Waste Generation	Community-Generated Solid Waste Disposed of Outside Jurisdiction	BAU	Population	1.616762442	1	91,957	4,183	96,139 tons		100%	75%	10%	Total of all tonnage sent to		1,297.88		36,211
2050	Solid Waste	Waste Generation	Community-Generated Solid Waste Disposed of Outside Jurisdiction	BAU	Population	1.772697998	1	100,826	4,586	105,412 tons		100%	75%	10%	Total of all tonnage sent to		1,423.06		39,703
2030	Solid Waste	Waste Generation	Community-Generated Solid Waste Disposed of Outside Jurisdiction	Leg-Adjusted	Population	1.316362515	1	74,871	3,405	78,276 tons		100%	75%	10%	Total of all tonnage sent to		1,056.73		29,483
2045	Solid Waste	Waste Generation	Community-Generated Solid Waste Disposed of Outside Jurisdiction	Leg-Adjusted	Population	1.616762442	1	91,957	4,183	96,139 tons		100%	75%	10%	Total of all tonnage sent to		1,297.88		36,211
2050	Solid Waste	Waste Generation	Community-Generated Solid Waste Disposed of Outside Jurisdiction	Leg-Adjusted	Population	1.772697998	1	100,826	4,586	105,412 tons		100%	75%	10%	Total of all tonnage sent to		1,423.06		39,703

## Assumptions and Emission Factors

Conversion Factors		Value	Source/notes		
g/MT		1000000			
g/ton		907184.74			
g/lb		453.592			
lb/ton		2000			
lb/MT		2204.622622			
kg/MT		1000			
lb/kg		2.20462			
MT/ton		0.907185			
kWh/MWh		1000			
MWh/GWh		1000			
Btu/therm		100000			
kBTU/MMBTU		1000			
MMBTU/therm		0.1			
MMBTU/MWh		3.41214148	Onlineconversion.com		
gal/cubic foot		7.480519481	Onlineconversion.com		
gal/Liter		3.785411784	Onlineconversion.com		
Liter/gal		0.264172052			
gallon/acrefoot		325851.429	Onlineconversion.com		
million gal/acre-feet		0.325851429	Onlineconversion.com		
gal/barrel		42	Onlineconversion.com		
kBTU/MJ		0.947817078	Onlineconversion.com		
days/year		365.25			
Energy Type	KBTU	per Unit			
Electricity		3.41 kWh	Onlineconversion.com		
Electricity		3412.14 MWh			
Natural Gas		99.98 therm	Onlineconversion.com		
Natural Gas		1.03 scf	<a href="https://www.theclimaterestory.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Documents.pdf?mc_cid=4b45d12237&amp;mc_eid=5f138d1baa">https://www.theclimaterestory.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Documents.pdf?mc_cid=4b45d12237&amp;mc_eid=5f138d1baa</a>		
CNG		99.98 therm	Onlineconversion.com		
LPG		91.33 gal			
LPG		2.52 scf	<a href="https://www.theclimaterestory.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Documents.pdf?mc_cid=4b45d12237&amp;mc_eid=5f138d1baa">https://www.theclimaterestory.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Documents.pdf?mc_cid=4b45d12237&amp;mc_eid=5f138d1baa</a>		
Propane		91.00 gal			
Diesel		138.10 gal	Calculated from Table 13.1 in 2017 Climate Registry Default Emission Factors		
Gasoline		125.00 gal	Calculated from Table 13.1 in 2017 Climate Registry Default Emission Factors		
Hydrogen		113.74 kg			
Renewable Diesel		122.88 gal	CARB LCFS Quarterly Summary April 2018 (129.65 MJ/gal)		
Heating Oil		139.00 gal	<a href="https://www.engineeringtoolbox.com/energy-content-d_868.html">https://www.engineeringtoolbox.com/energy-content-d_868.html</a>		
Fuel Wood		1000.00 MMBTU			
B2		137.90 gal	Calculated from Diesel and B100 energy densities, assuming 2 percent biodiesel		
B5		137.60 gal	Calculated from Diesel and B100 energy densities, assuming 5 percent biodiesel		
B20		136.10 gal	Calculated from Diesel and B100 energy densities, assuming 20 percent biodiesel		
B100		128.10 gal	Calculated from Table 13.1 in 2017 Climate Registry Default Emission Factors		
GWP Factors	Value	Comment			
CO2	1	Carbon Dioxide			included in CARB Inventory
CH4	27.9	Methane	Short Lived Climate Pollutant		included in CARB Inventory
N2O	273	Nitrous Oxide			included in CARB Inventory
SF6	22800	Sulphur Hexafluoride			included in CARB Inventory
NF3	17200	Nitrogen Trifluoride			included in CARB Inventory
C2F6	12200	Hexafluoroethane (PFC-116)			included in CARB Inventory
C3F8	8830	Octafluoropropane (PFC-218)			included in CARB Inventory
C4F8	10300	Octafluorocyclobutane (PFC-318)			included in CARB Inventory
CF4	7390	Tetrafluoromethane (PFC-14)			included in CARB Inventory
HFC-125	3500	Hydrofluorocarbon 125	Short Lived Climate Pollutant		included in CARB Inventory
HFC-134a	1430	Hydrofluorocarbon 134a	Short Lived Climate Pollutant		included in CARB Inventory
HFC-143a	4470	Hydrofluorocarbon 143a	Short Lived Climate Pollutant		included in CARB Inventory
HFC-152a	124	Hydrofluorocarbon 152a	Short Lived Climate Pollutant		included in CARB Inventory
HFC-227ea	3220	Hydrofluorocarbon 227ea	Short Lived Climate Pollutant		included in CARB Inventory
HFC-23	14800	Hydrofluorocarbon 23	Short Lived Climate Pollutant		included in CARB Inventory
HFC-236fa	9810	Hydrofluorocarbon 236fa			included in CARB Inventory
HFC-245fa	1030	Hydrofluorocarbon 245fa	Short Lived Climate Pollutant		included in CARB Inventory
HFC-32	675	Hydrofluorocarbon 32	Short Lived Climate Pollutant		included in CARB Inventory
HFC-365mfc	794	Hydrofluorocarbon 365mfc	Short Lived Climate Pollutant		included in CARB Inventory
HFC-43-10mee	1640	Hydrofluorocarbon 43-10mee	Short Lived Climate Pollutant		included in CARB Inventory
BC	900	Black Carbon	Short Lived Climate Pollutant	CARB uses AR5 values.	included in CARB Inventory
SO2F2	4630	Sulfuryl Fluoride	Short Lived Climate Pollutant (unofficial)		Not in CARB Inventory
CH3Br	2.43	Methyl Bromide			Not in CARB Inventory
CFC-11	4660	Trifluoromethane			Not in CARB Inventory
Source for GWP factors except for CH4 and N2O: <a href="https://ww2.arb.ca.gov/ghg-gwps">https://ww2.arb.ca.gov/ghg-gwps</a> (100-year IPCC AR4 GWP Values)					
Source	CO2 GWP	CH4 GWP	N2O GWP		
IPCC Fourth Assessment Report (w/o climate)	1	25	265		
IPCC Fourth Assessment Report (with climate)	1	34	298		
IPCC Fourth Assessment Report (Avg)	1	25	298		
IPCC Fifth Assessment Report (Avg)	1	28	265		
IPCC Third Assessment Report	1	23	296		
IPCC Second Assessment Report	1	21	310		
IPCC Sixth Assessment Report	1	27.9	273	Source: <a href="https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter_07_Supplementary_Material.pdf">https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter_07_Supplementary_Material.pdf</a>	

Building Energy Efficiency Assumptions				
Sector	% Reduction	Code	Notes	Source
Residential	25%	Energy efficiency improvement of 2013 code above 2008 code		<a href="http://www.energy.ca.gov/releases/2014_releases/2014-07-01_new_title24_standards_nr.html">http://www.energy.ca.gov/releases/2014_releases/2014-07-01_new_title24_standards_nr.html</a>
	28%	Energy efficiency improvement of 2016 code above 2013 code	Lighting, heating, cooling, ventilation, and water heating	<a href="http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/2016_Building_Energy_Efficiency_Standards_FAQ.pdf">http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/2016_Building_Energy_Efficiency_Standards_FAQ.pdf</a>
	53%	Energy efficiency improvement of 2019 code above 2016 code	Includes onsite solar requirement	
Commercial	30%	Energy efficiency improvement of 2013 code above 2008 code		<a href="http://www.energy.ca.gov/commission/accomplishments/2014_cec_accomplishments.pdf">http://www.energy.ca.gov/commission/accomplishments/2014_cec_accomplishments.pdf</a>
	5%	Energy efficiency improvement of 2016 code above 2013 code		<a href="http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/2015-06-10_hearing/2015-06-10_Adoption_Hearing_Presentation.pdf">http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/2015-06-10_hearing/2015-06-10_Adoption_Hearing_Presentation.pdf</a>
	30%	Energy efficiency improvement of 2019 code above 2016 code		
Combined % Reduction from 2008 code				
Residential	75%			
Non-Residential	53%			

**Agricultural Emission Factors**

Activity	
<b>Lime Fertilizer</b>	
Emission Factor MT C/MT lime	0.12
Molecular Mass of CO2	44.01
Atomic Mass of C	12.01
Molecular Mass Ratio	3.66
g CO2 per Ton of Lime Applied	398,886.47

Source: IPCC 2006 Equation 11.12 and 11.13. Note, the IPCC 2019 Refinement did not update these equations or emission factor

Nitrogen Fertilizer	
Nitrogen Volatilization (g N2O/g N)	0.0125
g N2O per ton of Nitrogen applied	11,339.81

Open Burning	
g CO2 per ton of open burning <sup>1</sup>	1,454,669.54
g CH4 per ton of open burning <sup>1</sup>	7,529.63
g CO2 per acre of open burning <sup>2</sup>	
g CH4 per acre of open burning <sup>2</sup>	
g CH4 per acre of open burning <sup>3</sup>	

Sources: 1. Emission factors from National Wildfire Coordinating Group, 2018, Smoke Management Guide for Prescribed Fire

Diesel Irrigation Pumps	
MBARD Emissions (CO2 tons/day) (CARB 2006)	122
MBARD Number of Pumps (CARB 2006)	647
MBARD Emission Factor (avg tpd/pump)	0.1886

Source: California Air Resources Board 2006. Rulemaking to Consider Proposed Amendments to the Stationary Diesel Engine Control Measure - Appendix D: Emission Inventory Methodology Agricultural Irrigation Pumps - Diesel. Available at: <http://www.arb.ca.gov/regact/agen06/append.pdf>; Table D-2

**Waste Emission Factors**

Table SW.5 CH4 Yield for Solid Waste Components		
Waste Component	Emissions Factor, EFi (mt CH4/wet short)	Source
Mixed MSW*	0.06	U.S. EPA AP-42

\* - Mixed MSW factor may be used for entire MSW waste stream if waste composition data is unavailable.  
U.S. EPA AP-42 - U.S. EPA Emission Factor Database, Chapter 2.4 Municipal Solid Waste Landfills (1998)  
WARM - Documentation for Greenhouse Gas Emissions and Energy Factors Used in the Waste Reduction Model (WARM) 2006



**Demographics**

City of Rancho Cordova Greenhouse Gas Inventory and Forecasts



Area	Population					Employment					Service Population					VMT					Dwelling Units				
	2016	2019	2030	2040	2045	2016	2019	2030	2040	2045	2016	2019	2030	2040	2045	2016	2019	2030	2040	2045	2016	2019	2030	2040	2045
City	72,320	77,579	102,122	114,394	125,427	59,503	61,991	73,604	79,410	84,213	131,823	139,571	175,726	193,804	209,641	879,625,366	919,218,798	1,071,357,646	1,307,495,381	26,859	28,926	38,574	43,398	47,780	
Total County	1,476,573	1,520,133	1,723,410	1,825,049	1,905,025	688,897	707,820	796,129	840,284	874,809	2,165,470	2,227,952	2,519,540	2,665,333	2,779,833	-	-	-	-	-	-	-	-	-	-

Source: SACOG

Source: SACOG

Source: SACOG

Source: SACOG

Source: SACOG

Growth Rates	Population					Employment					Service Population					VMT				
	2016	2019	2030	2040	2045	2016	2019	2030	2040	2045	2016	2019	2030	2040	2045	2016	2019	2030	2040	2045
Percent Growth from 2019	NA	NA	31.64%	47.45%	62%	NA	NA	18.73%	28.10%	36%	NA	NA	25.90%	38.86%	50.20%	NA	NA	16.55%	42%	
Percent of Total County	4.90%	5.10%	5.93%	6.27%	7%	8.64%	8.76%	9.25%	9.45%	10%	6.09%	6.26%	6.97%	7.27%	7.54%	-	-	-	-	

Year	Fuel Type	Utility (if applicable)	Percent GHG-Free	Unit	MT CO2 per unit	MT CH4 per unit	MT N2O per unit	MTCO2e per unit	MT CO2 per kBTU	MT CH4 per kBTU	MT N2O per kBTU	Notes	Source
2009	Electricity	eGRID CAMX		MWh	4.11E-01	2.30E-05	3.13E-06	4.13E-01	1.21E-04	6.73E-09	9.70E-10		<a href="https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egridd">https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egridd</a>
2010	Electricity	eGRID CAMX	55%	MWh	3.97E-01	2.38E-05	3.45E-06	3.98E-01	1.16E-04	6.98E-09	1.01E-09		<a href="https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egridd">https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egridd</a>
2011	Electricity	eGRID CAMX	55%	MWh	3.97E-01	2.38E-05	3.45E-06	3.98E-01	1.16E-04	6.98E-09	1.01E-09		2010 values
2012	Electricity	eGRID CAMX	62%	MWh	4.00E-01	2.31E-05	3.13E-06	4.01E-01	1.17E-04	6.77E-09	9.17E-10		<a href="https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egridd">https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egridd</a>
2013	Electricity	eGRID CAMX	62%	MWh	4.00E-01	2.31E-05	3.13E-06	4.01E-01	1.17E-04	6.77E-09	9.17E-10		2012 values
2014	Electricity	eGRID CAMX	62%	MWh	3.83E-01	2.35E-05	2.86E-06	3.85E-01	1.12E-04	6.87E-09	8.37E-10		<a href="https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egridd">https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egridd</a>
2015	Electricity	eGRID CAMX	62%	MWh	3.83E-01	2.35E-05	2.86E-06	3.85E-01	1.12E-04	6.87E-09	8.37E-10		2014 values
2016	Electricity	eGRID CAMX	50%	MWh	2.05E-01	1.18E-05	1.36E-06	2.06E-01	6.02E-05	3.46E-09	3.99E-10		<a href="https://www.epa.gov/sites/production/files/2018-02/egridd2016_summarytables.xlsx">https://www.epa.gov/sites/production/files/2018-02/egridd2016_summarytables.xlsx</a>
2017	Electricity	eGRID CAMX	50%	MWh	2.05E-01	1.18E-05	1.36E-06	2.06E-01	6.02E-05	3.46E-09	3.99E-10		2016 values
2018	Electricity	eGRID CAMX	50%	MWh	2.25E-01	1.54E-05	1.81E-06	2.26E-01	6.60E-05	4.52E-09	5.32E-10		<a href="https://www.epa.gov/sites/production/files/2020-01/documents/egridd2018_summary_tables.pdf">https://www.epa.gov/sites/production/files/2020-01/documents/egridd2018_summary_tables.pdf</a>
2019	Electricity	eGRID CAMX	52%	MWh	2.06E-01	1.50E-05	1.81E-06	2.06E-01	6.02E-05	4.39E-09	5.32E-10		2019 values
2020	Electricity	eGRID CAMX	54%	MWh	1.98E-01	1.44E-05	1.74E-06	1.99E-01	5.79E-05	4.22E-09	5.11E-10		
2021	Electricity	eGRID CAMX	56%	MWh	1.90E-01	1.38E-05	1.67E-06	1.91E-01	5.56E-05	4.05E-09	4.91E-10		
2022	Electricity	eGRID CAMX	58%	MWh	1.82E-01	1.32E-05	1.61E-06	1.83E-01	5.33E-05	3.88E-09	4.70E-10		
2023	Electricity	eGRID CAMX	60%	MWh	1.74E-01	1.27E-05	1.54E-06	1.75E-01	5.10E-05	3.71E-09	4.50E-10		
2024	Electricity	eGRID CAMX	61%	MWh	1.66E-01	1.21E-05	1.47E-06	1.67E-01	4.87E-05	3.54E-09	4.29E-10		
2025	Electricity	eGRID CAMX	63%	MWh	1.58E-01	1.15E-05	1.40E-06	1.59E-01	4.63E-05	3.37E-09	4.09E-10		
2026	Electricity	eGRID CAMX	65%	MWh	1.50E-01	1.09E-05	1.33E-06	1.51E-01	4.40E-05	3.21E-09	3.89E-10		
2027	Electricity	eGRID CAMX	67%	MWh	1.42E-01	1.04E-05	1.26E-06	1.43E-01	4.17E-05	3.04E-09	3.68E-10		
2028	Electricity	eGRID CAMX	69%	MWh	1.34E-01	9.79E-06	1.19E-06	1.35E-01	3.94E-05	2.87E-09	3.48E-10		
2029	Electricity	eGRID CAMX	71%	MWh	1.27E-01	9.21E-06	1.12E-06	1.27E-01	3.71E-05	2.70E-09	3.27E-10		
2030	Electricity	eGRID CAMX	72%	MWh	1.19E-01	8.64E-06	1.05E-06	1.19E-01	3.48E-05	2.53E-09	3.07E-10		
2031	Electricity	eGRID CAMX	74%	MWh	1.11E-01	8.06E-06	9.77E-07	1.11E-01	3.24E-05	2.36E-09	2.86E-10		
2032	Electricity	eGRID CAMX	76%	MWh	1.03E-01	7.48E-06	9.07E-07	1.03E-01	3.01E-05	2.19E-09	2.66E-10		
2033	Electricity	eGRID CAMX	78%	MWh	9.49E-02	6.91E-06	8.37E-07	9.53E-02	2.78E-05	2.02E-09	2.45E-10		
2034	Electricity	eGRID CAMX	80%	MWh	8.70E-02	6.33E-06	7.68E-07	8.74E-02	2.55E-05	1.86E-09	2.25E-10		
2035	Electricity	eGRID CAMX	82%	MWh	7.91E-02	5.76E-06	6.98E-07	7.94E-02	2.32E-05	1.69E-09	2.05E-10		
2036	Electricity	eGRID CAMX	83%	MWh	7.12E-02	5.18E-06	6.28E-07	7.15E-02	2.09E-05	1.52E-09	1.84E-10		
2037	Electricity	eGRID CAMX	85%	MWh	6.33E-02	4.61E-06	5.58E-07	6.35E-02	1.85E-05	1.35E-09	1.64E-10		
2038	Electricity	eGRID CAMX	87%	MWh	5.53E-02	4.03E-06	4.88E-07	5.56E-02	1.62E-05	1.18E-09	1.43E-10		
2039	Electricity	eGRID CAMX	89%	MWh	4.73E-02	3.45E-06	4.19E-07	4.77E-02	1.39E-05	1.01E-09	1.23E-10		
2040	Electricity	eGRID CAMX	91%	MWh	3.95E-02	2.88E-06	3.49E-07	3.97E-02	1.16E-05	8.44E-10	1.02E-10		
2041	Electricity	eGRID CAMX	93%	MWh	3.16E-02	2.30E-06	2.79E-07	3.18E-02	9.27E-06	6.75E-10	8.18E-11		
2042	Electricity	eGRID CAMX	94%	MWh	2.37E-02	1.73E-06	2.09E-07	2.38E-02	6.95E-06	5.06E-10	6.14E-11		
2043	Electricity	eGRID CAMX	96%	MWh	1.58E-02	1.15E-06	1.40E-07	1.59E-02	4.63E-06	3.37E-10	4.09E-11		
2044	Electricity	eGRID CAMX	98%	MWh	7.91E-03	5.76E-07	6.98E-08	7.94E-03	2.32E-06	1.69E-10	2.05E-11		
2045	Electricity	eGRID CAMX	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		SB100
2016	Electricity	SMUD	43%	MWh	3.05E-01	1.18E-05	1.36E-06	3.06E-01	8.94E-05	3.46E-09	3.99E-10		
2017	Electricity	SMUD	54%	MWh	2.33E-01	1.18E-05	1.36E-06	2.34E-01	6.84E-05	3.46E-09	3.99E-10		
2018	Electricity	SMUD	36%	MWh	2.39E-01	1.54E-05	1.81E-06	2.40E-01	7.02E-05	4.52E-09	5.32E-10		
2019	Electricity	SMUD	69%	MWh	0.232101704	1.49685E-05	1.81437E-06	0.233014649	6.80E-05	4.39E-09	5.32E-10		
2020	Electricity	SMUD	72%	MWh	2.11E-01	1.35E-05	1.65E-06	2.12E-01	6.18E-05	3.99E-09	4.83E-10		
2021	Electricity	SMUD	75%	MWh	1.90E-01	1.22E-05	1.49E-06	1.91E-01	5.57E-05	3.59E-09	4.35E-10		
2022	Electricity	SMUD	78%	MWh	1.69E-01	1.09E-05	1.32E-06	1.69E-01	4.95E-05	3.19E-09	3.87E-10		
2023	Electricity	SMUD	81%	MWh	1.48E-01	9.53E-06	1.15E-06	1.48E-01	4.33E-05	2.79E-09	3.38E-10		
2024	Electricity	SMUD	83%	MWh	1.27E-01	8.16E-06	9.90E-07	1.27E-01	3.71E-05	2.39E-09	2.90E-10		
2025	Electricity	SMUD	86%	MWh	1.06E-01	6.80E-06	8.25E-07	1.06E-01	3.09E-05	1.99E-09	2.42E-10		
2026	Electricity	SMUD	89%	MWh	8.44E-02	5.44E-06	6.60E-07	8.47E-02	2.47E-05	1.60E-09	1.93E-10		
2027	Electricity	SMUD	92%	MWh	6.33E-02	4.08E-06	4.95E-07	6.35E-02	1.86E-05	1.20E-09	1.45E-10		
2028	Electricity	SMUD	94%	MWh	4.22E-02	2.72E-06	3.30E-07	4.24E-02	1.24E-05	7.98E-10	9.67E-11		
2029	Electricity	SMUD	97%	MWh	2.11E-02	1.36E-06	1.65E-07	2.12E-02	6.18E-06	3.99E-10	4.83E-11		
2030	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2031	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2032	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2033	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2034	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2035	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2036	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2037	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2038	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2039	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2040	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2041	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2042	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2043	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2044	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2045	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2019	Electricity	SMUD	100%	MWh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
2019	Electricity	TPPA	not available	MWh	2.25E-01	1.50E-05	1.81E-06	2.26E-01	6.60E-05	4.39E-09	5.32E-10		Same as eGRID
2030	Electricity	TPPA	not available	MWh	1.23E-01	8.64E-06	1.05E-06	1.24E-01	3.62E-05	2.53E-09	3.07E-10		Same as eGRID
2040	Electricity	TPPA	not available	MWh	3.95E-02	2.88E-06	3.49E-07	3.97E-02	1.16E-05	8.44E-10	1.02E-10		Same as eGRID
2050	Electricity	TPPA	not available	MWh	3.95E-02	2.88E-06	3.49E-07	3.97E-02	1.16E-05	8.44E-10	1.02E-10		Same as eGRID
2019	Heating Oil	NA	not available	gal	7.27E-04	6.87E-09	1.59E-09	7.28E-04	5.23E-06	4.94E-11	1.14E-11		3. The Climate Registry, 2020 Default Emission Factors
2030	Heating Oil	NA	not available	gal	7.27E-04	6.87E-09	1.59E-09	7.28E-04	5.23E-06	4.94E-11	1.14E-11		3. The Climate Registry, 2020 Default Emission Factors
2040	Heating Oil	NA	not available	gal	7.27E-04	6.87E-09	1.59E-09	7.28E-04	5.23E-06	4.94E-11	1.14E-11		3. The Climate Registry, 2020 Default Emission Factors
2045													

**Water Energy Intensity Factors (kWh/AF)**

**Extraction and Conveyance**

Water Activity	Activity Type	North Coast	San Francisco	Central Coast	South Coast	Sacramento River	San Joaquin River	Tulare Lake	North Lahontan	South Lahontan	Colorado River	Source
Extraction and Conveyance	Ocean Water Desalination	342	342	342	342	342	342	342	342	342	342	342
Extraction and Conveyance	Brackish Desalination	168	342	461	566	181	231	389	167	352	466	1
Extraction and Conveyance	Recycled Water	0	0	0	0	0	0	0	0	0	0	1
Extraction and Conveyance	Groundwater	178	352	471	576	191	241	399	177	362	476	1
Extraction and Conveyance	Local Deliveries	10	10	10	10	10	10	10	10	10	10	1
Extraction and Conveyance	Local Imported	10	43	n/a	10	n/a	n/a	n/a	n/a	n/a	n/a	1
Extraction and Conveyance	Colorado River Aqueduct	n/a	n/a	n/a	2500	n/a	n/a	n/a	n/a	n/a	0	1
Extraction and Conveyance	Central Valley Project and Other Federal Deliveries	0	273	254	0	15	75	174	n/a	n/a	n/a	1
Extraction and Conveyance	State Water Project	n/a	926	2155	3214	0	287	495	n/a	3495	4468	1

1: Table 7: Navigant CPUC Water/Energy Cost-Effectiveness Analysis 2015

**Treatment and Distribution**

Water Activity	Activity Type	North Coast	San Francisco	Central Coast	South Coast	Sacramento River	San Joaquin River	Tulare Lake	North Lahontan	South Lahontan	Colorado River	Source
Treatment	Conventional Potable Treatment	443	443	443	443	443	443	443	443	443	443	2
Treatment	Chlorination	3	3	3	3	3	3	3	3	3	3	2
Treatment	Recycled Water - Membrane Treatment	1303	1303	1303	1303	1303	1303	1303	1303	1303	1303	2
Treatment	Recycled Water - Tertiary Treatment + Disinfection	521	521	521	521	521	521	521	521	521	521	2
Treatment	Brackish Desalination	2715	2715	2715	2715	2715	2715	2715	2715	2715	2715	2
Treatment	Ocean Desalination	4546	4546	4546	4546	4546	4546	4546	4546	4546	4546	2
Distribution	Distribution	501	977	501	501	54	54	54	54	54	501	3

2: Table 8: Navigant CPUC Water/Energy Cost-Effectiveness Analysis 2015

3: Table 9: Navigant CPUC Water/Energy Cost-Effectiveness Analysis 2015



**Wastewater Equations**

ICLEI Wastewater Equation	WW.1.a	WW.1.b	WW.1(alt)	WW.2.a	WW.2.b	WW.2(alt)	WW.4	WW.5	WW.6	WW.6 (alt)	WW.7	WW.8	WW.9	WW.11	WW.11(alt)	WW.12	WW.12(alt)	WW.15	WW.152	WW.153	
Digester Gas (ft <sup>3</sup> /day)	x	x		x	x																
Fraction of CH <sub>4</sub> in Biogas	x			x																	
Population Served			x			x				x	x	x			x		x				
BTU Content of biogas		x			x																
Mass of incinerated biosolids							x	x													
BOD <sub>5</sub> Load (kg BOD <sub>5</sub> /day)									x					x							
FP									x												
N Load (kg N/day)																		x			
Methanol Load (MT CH <sub>3</sub> OH/day)													x								
Sludge Treatment Type													x								
F_ind-com									x	x	x										
EF_effluent																				x	
N Uptake																				x	
Pollutant	CH <sub>4</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	N <sub>2</sub> O	CH <sub>4</sub>	N <sub>2</sub> O	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	
Natural Gas (therms)																			x	x	x
Electricity (kWh)																			x	x	x

- WW.1a Stationary Methane Emissions from Combustion of Digester Gas (Fraction CH<sub>4</sub> known)
- WW.1b Stationary Methane Emissions from Combustion of Digester Gas (Heat Content known)
- WW.1(alt) Stationary Methane Emissions from Combustion of Digester Gas (population method)
- WW.2a Stationary Nitrous Oxide Emissions from Combustion of Digester Gas (Fraction CH<sub>4</sub> known)
- WW.2b Stationary Nitrous Oxide Emissions from Combustion of Digester Gas (Heat Content known)
- WW.2(alt) Stationary Nitrous Oxide Emissions from Combustion of Digester Gas (population method)
- WW.3 Stationary CO<sub>2</sub> Emissions from Digester Gas Combustion
- WW.4 Stationary Methane Emissions from Combustion of Biosolids and Sludges
- WW.5 Stationary Nitrous Oxide Emissions from Combustion of Biosolids and Sludges
- WW.6 Process Methane Emissions from Wastewater Treatment Lagoons (BOD<sub>5</sub> Load and Fraction BOD<sub>5</sub> Removed in Primary Treatment Known)
- WW.6(alt) Process Methane Emissions from Wastewater Treatment Lagoons (population method)
- WW.7 Process Nitrous Oxide Emissions from Wastewater Treatment Plants with Nitrification or Denitrification
- WW.8 Process Nitrous Oxide Emissions from Wastewater Treatment Plants without Nitrification or Denitrification
- WW.9 Process Carbon Dioxide Emissions from the Use of Fossil-Fuel-Derived Methanol for Biological Nitrogen Removal
- WW.11 Fugitive Methane Emissions from Septic Systems (BOD<sub>5</sub> Load Known)
- WW.11(alt) Fugitive Methane Emissions from Septic Systems (population method)
- WW.12 Fugitive Nitrous Oxide Emissions from Effluent Discharge
- WW.12(alt) Fugitive Nitrous Oxide Emissions from Effluent Discharge (population method)
- WW.15 Energy-related Emissions Associated with Wastewater Collection and Treatment



Category	Year	Month	Day	Season	Agency	Code	Equipment	Fuel	MaxHP	Class	C/R	Pre	Hand	Port	County	Air Basin	Air Dist.	Population	Activity	Consumption	NOx Exhaust	CO Exhaust	NOx Exhaust	CO Exhaust	SO2 Exhaust	PM Exhaust	N2O Exhaust	CH4 Exhaust
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001011 Off-Road Motorcycles Inactive	G2	25	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	3.85E+02	1.42E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001011 Off-Road Motorcycles Inactive	G2	25	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	3.31E+02	1.23E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001011 Off-Road Motorcycles Inactive	G2	25	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	1.94E+02	5.34E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001011 Off-Road Motorcycles Inactive	G2	25	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	1.29E+03	4.77E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001021 Snowmobiles Inactive	G2	25	Recreational Equipment	U	N	NH	P	Sacramento	SAC	4.30E+01	6.77E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001021 Snowmobiles Inactive	G2	25	Recreational Equipment	U	N	NH	P	Sacramento	SAC	2.03E+02	3.19E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001031 All Terrain Vehicles (ATVs) Inactive	G2	15	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	2.82E+02	1.04E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001031 All Terrain Vehicles (ATVs) Inactive	G2	15	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	2.41E+02	8.93E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001011 Off-Road Motorcycles Inactive	G4	50	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	7.50E+02	2.78E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001011 Off-Road Motorcycles Inactive	G4	50	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	1.22E+02	1.95E+01	1.47E+01	8.56E+03	2.98E+02	7.05E+04	6.28E+02	1.09E+06	2.79E+04	6.03E+05	5.32E+04	
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001011 Off-Road Motorcycles Inactive	G4	50	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	1.26E+03	4.67E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001031 All Terrain Vehicles (ATVs) Inactive	G4	15	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	2.30E+02	8.51E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001031 All Terrain Vehicles (ATVs) Inactive	G4	15	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	3.20E+03	1.18E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001011 Off-Road Motorcycles Inactive	G4	50	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	9.61E+02	3.56E+03	1.35E+02	1.36E+01	4.17E+02	4.59E+01	3.63E+04	1.55E+03	1.52E+04	8.63E+03		
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001010 Off-Road Motorcycles Active	G2	25	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	8.27E+02	3.06E+03	1.16E+02	1.17E+01	1.82E+01	3.58E+05	3.88E+01	5.86E+04	1.42E+03	1.31E+04	7.26E+03	
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001010 Off-Road Motorcycles Active	G2	25	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	6.73E+03	2.49E+04	9.44E+02	9.51E+01	1.49E+02	2.92E+04	3.16E+02	7.55E+03	1.15E+02	1.07E+03	5.93E+02	
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001010 Off-Road Motorcycles Active	G2	25	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	3.72E+03	1.19E+04	4.52E+02	4.55E+01	7.11E+01	1.40E+04	1.51E+03	5.31E+03	5.52E+03	5.10E+04	2.83E+02	
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001020 Snowmobiles Active	G2	25	Recreational Equipment	U	N	NH	P	Sacramento	SAC	5.82E+02	9.17E+01	1.32E+02	1.37E+02	6.67E+02	6.31E+03	5.61E+01	2.97E+02	2.50E+03	4.00E+04	4.77E+03	
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001020 Snowmobiles Active	G2	25	Recreational Equipment	U	N	NH	P	Sacramento	SAC	1.06E+03	1.67E+02	4.07E+02	2.35E+01	8.21E+01	1.97E+02	1.75E+02	4.86E+02	7.72E+03	1.40E+04	1.46E+02	
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001030 All Terrain Vehicles (ATVs) Active	G2	15	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	9.28E+02	3.43E+03	1.30E+02	1.31E+01	2.05E+01	4.02E+05	4.35E+01	3.34E+04	1.59E+03	1.47E+04	8.15E+03	
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001030 All Terrain Vehicles (ATVs) Active	G2	15	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	6.04E+02	2.24E+03	8.47E+01	8.53E+02	1.33E+01	2.62E+05	2.83E+01	3.86E+04	1.04E+03	9.57E+03	5.30E+03	
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001010 Off-Road Motorcycles Active	G2	25	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	7.95E+02	2.94E+03	1.12E+02	1.49E+01	7.6E+01	3.45E+05	3.95E+01	6.67E+04	1.96E+03	1.24E+04	6.98E+03	
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001010 Off-Road Motorcycles Active	G2	25	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	3.20E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Recreational Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226001050 Golf Carts	G2	15	Recreational Equipment	U	N	NH	NP	Sacramento	SAC	1.68E+03	3.05E+02	1.12E+02	4.05E+03	3.07E+01	3.11E+03	5.87E+01	2.42E+05	2.21E+04	4.82E+04	2.52E+04	
Construction Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226002005 Tamper/Rammers	G2	15	Construction and Mining Equipment	U	P	NH	NP	Sacramento	SAC	1.08E+02	5.39E+01	1.09E+01	6.86E+04	2.94E+02	5.35E+04	5.62E+02	2.31E+06	4.71E+04	8.40E+05	4.27E+05	
Construction Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226002029 Plate Compactors	G4	15	Construction and Mining Equipment	U	P	NH	NP	Sacramento	SAC	2.27E+02	3.21E+01	1.0E+00	4.47E+05	2.85E+03	3.20E+05	2.64E+02	5.47E+05	1.57E+06	4.57E+05	4.15E+06	
Industrial Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226003040 Other General Industrial Equipment	G2	15	Industrial Equipment	U	N	NH	NP	Sacramento	SAC	1.10E+00	1.13E+00	4.44E+01	2.00E+05	1.21E+03	1.52E+05	2.31E+03	9.52E+08	1.08E+06	2.07E+06	1.24E+06	
Lawn and Gas Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226004010 Lawn Mowers	G2	15	Lawn and Garden Equipment	C	N	NH	NP	Sacramento	SAC	1.88E+03	1.16E+03	1.32E+02	1.49E+02	2.68E+01	4.00E+03	7.94E+01	3.77E+03	2.50E+03	6.07E+03	9.26E+04	
Lawn and Gas Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226004010 Lawn Mowers	G2	15	Lawn and Garden Equipment	R	N	NH	NP	Sacramento	SAC	1.40E+04	5.93E+02	7.53E+01	9.28E+03	1.82E+01	1.97E+03	4.04E+01	1.66E+05	1.13E+03	4.95E+04	5.77E+04	
Lawn and Gas Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226004020 Chainsaws	G2	2	Lawn and Garden Equipment	C	N	NH	NP	Sacramento	SAC	3.23E+02	2.64E+03	1.57E+02	1.32E+01	2.38E+01	2.08E+03	4.64E+01	2.65E+05	3.75E+04	1.07E+03	8.13E+03	
Lawn and Gas Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226004020 Chainsaws	G2	2	Lawn and Garden Equipment	R	N	NH	NP	Sacramento	SAC	1.25E+04	5.03E+02	2.48E+01	2.21E+03	4.09E+02	4.99E+04	1.23E+01	5.05E+06	1.22E+04	2.05E+04	1.27E+04	
Lawn and Gas Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226004020 Chainsaws	G2	2	Lawn and Garden Equipment	C	N	NH	NP	Sacramento	SAC	2.35E+03	1.85E+03	2.68E+02	2.24E+01	4.05E+01	3.55E+03	1.10E+00	4.51E+05	6.38E+04	1.20E+03	1.39E+02	
Lawn and Gas Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226004020 Chainsaws	G2	2	Lawn and Garden Equipment	R	N	NH	NP	Sacramento	SAC	2.64E+04	3.54E+02	4.08E+01	1.51E+02	8.12E+02	6.93E+04	2.09E+01	8.06E+06	2.31E+04	9.38E+04		
Lawn and Gas Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226004021 Chainsaws Preempt	G2	2	Lawn and Garden Equipment	C	P	NH	NP	Sacramento	SAC	3.29E+03	2.31E+03	3.34E+02	2.79E+01	5.05E+01	4.42E+03	1.36E+00	5.67E+05	1.02E+04	1.50E+03	1.73E+02	
Lawn and Gas Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226004021 Chainsaws Preempt	G2	2	Lawn and Garden Equipment	R	N	NH	NP	Sacramento	SAC	9.28E+02	5.41E+02	5.34E+01	2.15E+02	1.10E+01	8.06E+04	2.66E+01	1.07E+05	2.07E+04	2.78E+03	3.37E+03	
Lawn and Gas Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226004025 Trimmers/Edgers/Brush Cutters	G2	2	Lawn and Garden Equipment	C	N	NH	NP	Sacramento	SAC	2.14E+02	3.61E+00	8.64E+02	1.36E+01	8.45E+01	2.49E+03	2.48E+01	6.84E+02	4.84E+02	5.37E+03	3.37E+03	
Lawn and Gas Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226004025 Trimmers/Edgers/Brush Cutters	G2	2	Lawn and Garden Equipment	R	N	NH	NP	Sacramento	SAC	1.22E+05	7.13E+03	3.02E+02	1.36E+01	5.62E+01	4.92E+03	1.52E+00	6.25E+05	8.84E+04	2.68E+03	8.43E+03	
Lawn and Gas Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226004030 Leaf Blowers/Vacuums	G2	2	Lawn and Garden Equipment	C	N	NH	P	Sacramento	SAC	1.62E+04	8.72E+03	4.65E+02	3.21E+01	7.64E+01	6.69E+03	2.06E+00	8.52E+05	1.20E+03	3.47E+03	2.00E+02	
Lawn and Gas Gasoline	2019	Annual	Mon-Sun	2019	Annual	Mon-Sun	226004030 Leaf Blowers/Vacuums	G2	2	Lawn and Garden Equipment	R	N	NH	P	Sacramento	SAC	4.18E+04											



agricultural of Gasoline	2019	Annual	Mon-Sun	226500510 2-Wheel Tractors	G4	25	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	8.155E+01	7.422E+01	7.406E+01	5.715E+05	2.19E+03	3.72E+05	3.49E+03	8.83E+08	2.92E+05	2.67E+06	3.23E+06
agricultural of Gasoline	2019	Annual	Mon-Sun	226500515 Agricultural Tractors	G4	120	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	9.75E+00	1.47E+01	7.25E+01	1.17E+03	3.62E+02	2.86E+03	6.38E+01	6.17E+06	4.99E+05	9.51E+05	6.63E+05
agricultural of Gasoline	2019	Annual	Mon-Sun	226500520 Agricultural Tractors	G4	175	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	1.34E+00	2.02E+00	1.43E+01	1.47E+04	4.87E+03	6.73E+04	1.30E+01	1.29E+06	1.03E+05	1.72E+05	8.31E+06
agricultural of Gasoline	2019	Annual	Mon-Sun	226500525 Combines	G4	120	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	2.44E+00	2.02E+00	1.43E+01	1.47E+04	4.87E+03	6.73E+04	1.30E+01	1.29E+06	1.03E+05	1.72E+05	8.31E+06
agricultural of Gasoline	2019	Annual	Mon-Sun	226500530 Combines	G4	175	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	1.34E+00	2.02E+00	1.43E+01	1.47E+04	4.87E+03	6.73E+04	1.30E+01	1.29E+06	1.03E+05	1.72E+05	8.31E+06
agricultural of Gasoline	2019	Annual	Mon-Sun	226500535 Balers	G4	250	Agricultural Equipment	U	N	NH	NP	Sacrament SV	SAC	2.50E+01	8.59E+02	1.09E+00	2.88E+06	3.28E+04	3.04E+05	9.95E+03	1.02E+07	8.47E+06	8.76E+07	1.63E+07
agricultural of Gasoline	2019	Annual	Mon-Sun	226500540 Balers	G4	50	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	3.56E+01	6.64E+00	1.29E+01	2.00E+04	8.74E+03	3.54E+04	1.10E+01	1.34E+06	8.45E+06	2.72E+05	1.13E+05
agricultural of Gasoline	2019	Annual	Mon-Sun	226500545 Agricultural Mowers	G4	15	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	2.22E+01	1.34E+01	5.01E+00	3.77E+04	1.44E+02	2.80E+04	2.43E+02	6.94E+07	2.04E+04	3.02E+05	2.13E+05
agricultural of Gasoline	2019	Annual	Mon-Sun	226500550 Agricultural Mowers	G4	25	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	2.71E+01	1.09E+01	9.51E+00	7.32E+04	2.81E+02	4.77E+04	4.48E+02	1.14E+06	3.73E+04	6.65E+04	1.14E+05
agricultural of Gasoline	2019	Annual	Mon-Sun	226500555 Sprayers	G4	5	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	3.02E+02	2.76E+01	4.64E+00	6.26E+04	1.03E+02	1.56E+04	2.62E+02	9.04E+07	8.53E+06	4.25E+05	3.54E+05
agricultural of Gasoline	2019	Annual	Mon-Sun	226500560 Sprayers	G4	15	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	1.03E+01	8.60E+00	2.99E+00	2.43E+04	8.72E+03	1.56E+04	1.43E+02	4.06E+07	1.19E+04	1.80E+05	1.37E+05
agricultural of Gasoline	2019	Annual	Mon-Sun	226500565 Sprayers	G4	50	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	6.70E+00	1.47E+00	2.46E+00	3.87E+05	1.71E+03	6.79E+05	2.10E+02	2.55E+07	1.60E+06	4.67E+06	2.19E+06
agricultural of Gasoline	2019	Annual	Mon-Sun	226500570 Sprayers	G4	120	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	1.13E+01	2.48E+00	7.78E+00	7.08E+05	1.81E+03	5.75E+04	7.18E+02	6.95E+07	1.08E+05	2.57E+06	4.00E+06
agricultural of Gasoline	2019	Annual	Mon-Sun	226500575 Sprayers	G4	175	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	2.55E+00	5.59E+01	3.54E+00	2.00E+05	1.04E+03	1.30E+04	3.25E+02	3.23E+07	2.59E+06	3.75E+06	1.13E+06
agricultural of Gasoline	2019	Annual	Mon-Sun	226500580 Trainers	G4	25	Agricultural Equipment	U	N	NH	NP	Sacrament SV	SAC	5.42E+01	6.82E+02	3.32E+02	2.01E+02	9.89E+01	1.29E+02	1.60E+00	4.57E+05	2.89E+04	1.45E+03	1.54E+03
agricultural of Gasoline	2019	Annual	Mon-Sun	226500585 Swathers	G4	175	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	3.65E+01	9.51E+00	4.02E+01	4.58E+05	1.37E+03	1.63E+03	3.72E+01	3.59E+06	2.88E+05	4.87E+05	2.12E+05
agricultural of Gasoline	2019	Annual	Mon-Sun	226500590 Swathers	G4	175	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	2.80E+01	7.29E+00	4.43E+01	2.57E+04	1.31E+02	1.64E+03	4.06E+01	4.03E+06	3.23E+05	4.81E+05	1.45E+05
agricultural of Gasoline	2019	Annual	Mon-Sun	226500595 Hydro Power Units	G4	5	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	6.20E+00	2.98E+00	6.89E+01	9.66E+05	1.49E+03	4.36E+05	3.90E+03	1.32E+06	1.29E+06	5.56E+06	5.46E+06
agricultural of Gasoline	2019	Annual	Mon-Sun	226500600 Hydro Power Units	G4	15	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	1.24E+01	1.57E+01	6.89E+00	5.33E+04	1.98E+02	3.97E+04	3.84E+02	9.52E+07	2.80E+04	3.93E+05	3.02E+05
agricultural of Gasoline	2019	Annual	Mon-Sun	226500605 Hydro Power Units	G4	50	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	3.34E+01	4.12E+01	9.08E+01	1.01E+05	7.33E+04	1.44E+05	3.92E+02	5.80E+07	1.22E+06	5.73E+07	5.73E+07
agricultural of Gasoline	2019	Annual	Mon-Sun	226500610 Hydro Power Units	G4	120	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	4.17E+02	5.15E+02	1.74E+01	7.67E+07	3.43E+05	1.76E+06	1.63E+03	1.57E+08	1.26E+07	1.51E+07	4.34E+08
agricultural of Gasoline	2019	Annual	Mon-Sun	226500615 Other Agricultural Equipment	G4	5	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	4.32E+00	1.72E+00	3.18E+01	4.26E+05	7.09E+04	1.92E+05	1.79E+03	6.18E+08	5.84E+07	2.78E+06	2.41E+06
agricultural of Gasoline	2019	Annual	Mon-Sun	226500620 Other Agricultural Equipment	G4	15	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	3.78E+00	1.50E+00	8.06E+01	6.00E+05	2.31E+03	4.46E+05	3.91E+03	1.12E+07	3.28E+05	4.09E+06	3.40E+06
agricultural of Gasoline	2019	Annual	Mon-Sun	226500625 Other Agricultural Equipment	G4	25	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	9.63E+01	3.83E+01	7.29E+01	6.44E+05	3.37E+03	6.63E+05	2.49E+03	2.49E+08	2.09E+05	1.63E+06	1.54E+06
agricultural of Gasoline	2019	Annual	Mon-Sun	226500630 Other Agricultural Equipment	G4	50	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	1.11E+00	3.76E+01	6.12E+01	8.60E+06	4.37E+04	1.38E+05	5.13E+03	6.30E+07	3.97E+07	1.07E+06	4.86E+07
agricultural of Gasoline	2019	Annual	Mon-Sun	226500635 Other Agricultural Equipment	G4	120	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	6.41E+00	2.18E+00	7.40E+00	5.62E+05	1.67E+03	1.72E+04	6.86E+02	5.31E+06	8.31E+06	3.18E+06	
agricultural of Gasoline	2019	Annual	Mon-Sun	226500640 Other Agricultural Equipment	G4	175	Agricultural Equipment	U	P	NH	NP	Sacrament SV	SAC	7.30E+01	2.49E+01	1.68E+00	8.20E+06	5.00E+04	4.35E+05	1.54E+02	1.53E+07	1.23E+06	1.44E+06	4.64E+07
Light Common Gasoline	2019	Annual	Mon-Sun	226500605 Generator Sets	G4	5	Light Commercial Equipment	C	N	NH	P	Sacrament SV	SAC	7.72E+02	2.84E+02	6.29E+01	9.95E+03	1.29E+01	2.62E+03	3.66E+01	1.24E+05	1.29E+03	4.11E+04	5.63E+04
Light Common Gasoline	2019	Annual	Mon-Sun	226500605 Generator Sets	G4	15	Light Commercial Equipment	R	N	NH	P	Sacrament SV	SAC	6.07E+02	1.50E+02	3.41E+01	5.69E+03	2.25E+02	1.49E+03	1.93E+01	6.88E+06	6.84E+04	3.22E+04	
Light Common Gasoline	2019	Annual	Mon-Sun	226500605 Generator Sets	G4	25	Light Commercial Equipment	C	N	NH	P	Sacrament SV	SAC	2.12E+03	7.80E+02	4.63E+02	2.68E+02	1.34E+00	1.91E+02	2.26E+00	6.45E+05	1.24E+03	1.91E+03	1.52E+03
Light Common Gasoline	2019	Annual	Mon-Sun	226500605 Generator Sets	G4	15	Light Commercial Equipment	R	N	NH	P	Sacrament SV	SAC	1.67E+03	4.12E+02	2.50E+02	1.81E+02	7.33E+01	1.09E+02	1.19E+04	3.41E+05	6.65E+04	1.05E+03	1.02E+03
Light Common Gasoline	2019	Annual	Mon-Sun	226500605 Generator Sets	G4	25	Light Commercial Equipment	C	N	NH	P	Sacrament SV	SAC	1.14E+03	3.29E+02	5.40E+02	2.99E+02	2.23E+02	2.56E+00	6.50E+05	1.41E+03	1.56E+03	1.69E+03	
Light Common Gasoline	2019	Annual	Mon-Sun	226500605 Generator Sets	G4	50	Light Commercial Equipment	U	N	NH	P	Sacrament SV	SAC	8.96E+02	2.22E+02	2.90E+02	1.98E+02	8.70E+01	1.22E+02	1.36E+00	3.43E+05	7.54E+04	8.36E+04	1.12E+03
Light Common Gasoline	2019	Annual	Mon-Sun	226500605 Generator Sets	G4	120	Light Commercial Equipment	U	N	NH	P	Sacrament SV	SAC	3.79E+02	1.19E+02	2.70E+02	4.34E+03	2.18E+01	8.38E+03	2.24E+00	2.73E+05	1.27E+04	4.89E+04	2.46E+04
Light Common Gasoline	2019	Annual	Mon-Sun	226500605 Generator Sets	G4	175	Light Commercial Equipment	U	N	NH	P	Sacrament SV	SAC	6.33E+01	2.31E+01	1.21E+02	1.12E+03	3.35E+02	5.20E+03	1.11E+00	1.07E+05	8.61E+05	1.72E+04	6.35E+05
Light Common Gasoline	2019	Annual	Mon-Sun	226500605 Generator Sets	G4	175	Light Commercial Equipment	U	N	NH	P	Sacrament SV	SAC	9.92E+00	3.85E+00	1.96E+01	6.00E+05	3.16E+03	9.17E+04	1.80E+01	1.78E+06	1.43E+05	2.27E+05	6.28E+06
Light Common Gasoline	2019	Annual	Mon-Sun	226500610 Pumps	G4	5	Light Commercial Equipment	C	N	NH	P	Sacrament SV	SAC	2.15E+02	1.02E+02	1.72E+01	2.92E+03	3.47E+02	1.19E+03	1.00E+01	3.46E+06	7.42E+05	1.69E+04	1.65E+04
Light Common Gasoline	2019	Annual	Mon-Sun	226500610 Pumps	G4	15	Light Commercial Equipment	C	P	NH	P	Sacrament SV	SAC	2.97E+02	2.10E+02	1.13E+02	8.73E+03	3.24E+01	6.50E+03	5.84E+01	1.56E+06	4.60E+03	5.84E+04	4.94E+04
Light Common Gasoline	2019	Annual	Mon-Sun	226500610 Pumps	G4	25	Light Commercial Equipment	R	P	NH	P	Sacrament SV	SAC	2.33E+02	1.11E+02	5.99E+01	4.70E+03	1.72E+01	3.44E+03	2.90E+01	8.26E+06	2.43E+03	3.09E+04	2.66E+04
Light Common Gasoline	2019	Annual	Mon-Sun	226500610 Pumps	G4	15	Light Commercial Equipment	R	P	NH	P	Sacrament SV	SAC	7.62E+01	9.21E+01	6.34E+01	3.45E+03	1.98E+01	2.98E+03	2.95E+01	9.97E+06	2.13E+03	2.19E+04	1.54E+04
Light Common Gasoline	2019	Annual	Mon-Sun	226500610 Pumps	G4	25	Light Commercial Equipment	R	P	NH	P	Sacrament SV	SAC	5.98E+01	2.84E+01	3.35E+01	2.63E+03	9.89E+02	1.71E+03	1.58E+01	3.99E+06	1.32E+03	1.13E+04	1.49E+04
Light Common Gasoline	2019	Annual	Mon-Sun	226500610 Pumps	G4	50	Light Commercial Equipment	U	N	NH	P	Sacrament SV	SAC	3.03E+01	1.83E+01	4.17E+01	6.84E+04	3.89E+02	1.01E+03	3.91E+01	1.21E+06	2.59E+05	6.33E+05	3.87E+05
Light Common Gasoline	2019	Annual	Mon-Sun	226500610 Pumps	G4	120	Light Commercial Equipment	U	P	NH	P	Sacrament SV	SAC	3.84E+01	2.32E+01	1.40E+02	1.29E+03	4.34E+02	3.69E+03	1.27E+00	4.33E+06	9.87E+05	1.33E+04	7.32E+05
Light Common Gasoline	2019	Annual	Mon-Sun	226500610 Pumps	G4	175	Light Commercial Equipment	U	P	NH	P	Sacrament SV	SAC	1.16E+00	7.01E+01	6.33E+00	4.01E+05	1.96E+03	1.88E+04	5.78E+02	5.74			















Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010015 Generator (Workover)	D	750 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	5.79E+01	1.95E+00	2.84E+01	1.14E-04	5.98E-04	2.95E-04	3.14E-01	3.09E-06	1.08E-05	0.00E+00	1.03E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010015 Generator (Workover)	D	9999 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	7.72E-02	2.61E-01	1.20E+01	5.09E-05	2.52E-04	6.21E-04	1.32E-01	1.30E-06	8.42E-06	0.00E+00	4.59E-06
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010020 Swivel	D	175 Oil Drilling	U	P	NHH	P	Sacramento SV	SAC	1.97E+00	1.65E+00	3.00E+01	1.28E-04	1.93E-03	3.85E-04	3.30E-01	3.71E-05	1.75E-05	0.00E+00	1.16E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010020 Swivel	D	250 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	4.25E-01	1.43E+00	1.05E+01	4.20E-05	2.31E-04	1.14E-04	1.16E-01	1.20E-06	4.02E-06	0.00E+00	3.78E-06
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010020 Swivel	D	500 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	1.16E-01	2.70E-02	3.58E-01	5.56E-07	6.52E-06	3.29E-06	3.96E-03	3.89E-08	9.98E-08	0.00E+00	5.02E-08
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010030 Other Workover Equipment	D	175 Oil Drilling	U	P	NHH	P	Sacramento SV	SAC	1.93E+00	6.51E+00	3.37E+01	1.44E-04	2.17E-03	4.32E-04	3.70E-01	4.16E-06	1.96E-05	0.00E+00	1.30E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010030 Other Workover Equipment	D	250 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	6.56E-01	2.22E+00	1.62E+01	6.50E-05	3.57E-04	1.76E-04	1.79E-01	2.01E-06	6.22E-06	0.00E+00	5.86E-06
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010030 Other Workover Equipment	D	750 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	3.05E+00	1.03E+01	1.44E+02	5.77E-04	3.03E-03	1.50E-03	1.59E+00	1.56E-05	5.49E-05	0.00E+00	5.20E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010030 Other Workover Equipment	D	1000 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	7.72E-01	2.60E+00	8.70E+01	3.55E-04	1.83E-03	4.52E-03	9.62E-01	9.44E-06	6.13E-05	0.00E+00	3.20E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010035 Lift (Drilling)	D	175 Oil Drilling	U	P	NHH	P	Sacramento SV	SAC	7.72E-02	2.60E-01	1.31E+00	5.61E-06	8.46E-05	1.69E-05	1.44E-02	1.67E-07	7.65E-07	0.00E+00	5.06E-07
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010035 Lift (Drilling)	D	250 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	3.86E-01	1.30E+00	9.97E+00	4.00E-05	2.20E-04	1.08E-04	1.10E-01	1.24E-06	3.83E-06	0.00E+00	3.61E-06
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010035 Lift (Drilling)	D	500 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	2.66E+00	8.98E+00	1.17E+02	4.68E-04	2.46E-03	1.20E-03	1.29E+00	1.27E-05	4.43E-05	0.00E+00	4.22E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010040 Pump (Drilling)	D	1000 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	1.43E-01	2.84E+01	1.85E+03	2.98E-03	3.42E-02	8.21E-02	2.04E+01	2.06E-04	6.63E-04	0.00E+00	2.60E-04
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010040 Pump (Drilling)	D	175 Oil Drilling	U	P	NHH	P	Sacramento SV	SAC	1.62E+00	5.47E+00	2.70E+01	1.15E-04	1.74E-03	3.46E-04	2.96E-01	3.33E-06	1.57E-05	0.00E+00	1.04E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010040 Pump (Drilling)	D	250 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	2.51E+00	8.47E+00	6.62E+01	2.66E-04	1.46E-03	7.21E-04	7.32E-01	8.24E-06	2.55E-05	0.00E+00	2.40E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010040 Pump (Drilling)	D	500 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	5.48E+00	1.85E+01	2.46E+02	9.82E-04	5.17E-03	2.52E-03	2.72E+00	3.06E-05	9.31E-05	0.00E+00	8.86E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010040 Pump (Drilling)	D	750 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	5.25E+00	1.77E+01	3.54E+02	1.41E-03	7.44E-03	3.67E-03	3.91E+00	3.84E-05	1.35E-04	0.00E+00	1.28E-04
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010040 Pump (Drilling)	D	9999 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	5.40E-01	1.82E+00	6.55E+01	2.79E-04	1.38E-03	3.40E-03	7.24E-01	7.11E-06	4.61E-05	0.00E+00	2.51E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010045 Generator (Drilling)	D	175 Oil Drilling	U	P	NHH	P	Sacramento SV	SAC	1.20E+00	4.04E+00	1.88E+01	8.02E-05	1.21E-03	2.41E-04	2.06E-01	2.32E-06	1.09E-05	0.00E+00	7.24E-06
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010045 Generator (Drilling)	D	250 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	8.49E-01	2.87E+00	1.87E+01	7.51E-05	4.13E-04	2.04E-04	2.07E-01	2.33E-06	7.19E-06	0.00E+00	6.78E-06
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010045 Generator (Drilling)	D	500 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	4.25E-01	2.48E+00	3.13E+01	1.37E-04	6.73E-04	3.24E-04	3.46E-01	3.39E-06	1.21E-05	0.00E+00	1.24E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010045 Generator (Drilling)	D	750 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	4.63E-01	1.56E+00	2.08E+01	8.25E-05	4.34E-04	2.14E-04	2.28E-01	2.24E-06	7.86E-06	0.00E+00	7.44E-06
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010055 Drill Rig	D	175 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	1.75E-01	1.37E+01	9.44E+01	1.52E-04	5.15E-03	4.79E-04	1.04E+00	1.17E-05	1.68E-05	0.00E+00	1.37E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010055 Drill Rig	D	250 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	5.10E+00	1.01E+01	9.25E+01	1.49E-04	1.73E-03	4.71E-04	1.02E+00	1.15E-05	1.63E-05	0.00E+00	1.35E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010055 Drill Rig	D	500 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	1.39E+01	2.76E+01	4.57E+02	7.39E-04	8.46E-03	2.33E-03	5.06E+00	4.97E-05	8.05E-05	0.00E+00	6.67E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010055 Drill Rig	D	750 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	3.55E+00	7.06E+00	1.81E+02	2.93E-04	3.35E-03	9.25E-04	2.01E+00	2.02E-05	3.19E-05	0.00E+00	2.64E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010055 Drill Rig	D	1000 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	1.43E-01	2.84E+01	1.85E+03	2.98E-03	3.42E-02	8.21E-02	2.04E+01	2.06E-04	6.63E-04	0.00E+00	2.60E-04
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010057 Drill Rig (Mobile)	D	175 Oil Drilling	U	N	NHH	NP	Sacramento SV	SAC	3.72E-02	6.00E-01	3.86E+00	3.33E-05	2.67E-04	1.73E-04	4.23E-02	4.67E-07	9.64E-06	0.00E+00	3.00E-06
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010057 Drill Rig (Mobile)	D	250 Oil Drilling	U	N	NHH	NP	Sacramento SV	SAC	3.86E-02	3.00E-01	2.55E+00	1.86E-05	6.91E-05	1.05E-04	2.82E-02	3.17E-07	4.07E-06	0.00E+00	1.68E-06
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010057 Drill Rig (Mobile)	D	500 Oil Drilling	U	N	NHH	NP	Sacramento SV	SAC	1.16E-01	9.00E-01	1.27E+01	8.85E-05	3.80E-04	4.71E-04	1.40E-01	1.37E-06	1.85E-05	0.00E+00	7.99E-06
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010057 Drill Rig (Mobile)	D	750 Oil Drilling	U	N	NHH	NP	Sacramento SV	SAC	7.72E-02	6.00E-01	1.67E+01	1.17E-04	5.00E-04	6.33E-04	1.84E-01	1.85E-06	2.46E-05	0.00E+00	1.05E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010057 Drill Rig (Mobile)	D	1000 Oil Drilling	U	N	NHH	NP	Sacramento SV	SAC	1.16E-01	8.99E-01	3.78E+01	2.77E-04	1.19E-03	2.88E-03	4.17E-01	4.19E-06	6.96E-05	0.00E+00	2.50E-05
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010058 Workover Rig (Mobile)	D	175 Oil Drilling	U	N	NHH	NP	Sacramento SV	SAC	3.17E-01	2.46E+01	1.58E+02	1.36E-03	1.09E-02	7.10E-03	1.73E+00	1.95E-05	3.95E-04	0.00E+00	1.23E-04
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010058 Workover Rig (Mobile)	D	250 Oil Drilling	U	N	NHH	NP	Sacramento SV	SAC	2.74E+00	2.13E+01	1.81E+02	1.32E-03	4.90E-03	7.43E-03	2.00E+00	2.25E-05	2.89E-04	0.00E+00	1.19E-04
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010058 Workover Rig (Mobile)	D	500 Oil Drilling	U	N	NHH	NP	Sacramento SV	SAC	6.06E+00	4.71E+01	6.64E+02	4.63E-03	1.99E-02	2.47E-02	7.32E+00	7.19E-05	9.69E-04	0.00E+00	4.18E-04
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010058 Workover Rig (Mobile)	D	750 Oil Drilling	U	N	NHH	NP	Sacramento SV	SAC	3.17E+00	2.46E+01	6.85E+02	4.79E-03	2.05E-02	2.59E-02	7.66E+00	7.60E-05	1.01E-03	0.00E+00	4.33E-04
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010058 Workover Rig (Mobile)	D	1000 Oil Drilling	U	N	NHH	NP	Sacramento SV	SAC	5.33E+00	4.14E+01	1.74E+03	1.28E-02	5.47E-02	1.32E-01	1.92E+01	1.93E-04	3.20E-03	0.00E+00	1.15E-03
Oil Drilling	Diesel	2030 Annual	Mon-Sun	2270010060 Pressure Washers	D	250 Oil Drilling	U	N	NHH	P	Sacramento SV	SAC	3.86E-02	1.30E-01	8.44E-01	1.63E-06	1.62E-05	4.37E-06	9.34E-03	1.05E-07	1.55E-07	0.00E+00	1.47E-07
Military Tactic Diesel	2030 Annual	Mon-Sun	2270011005 A/C unit	D	250 Military Tactical Support Equip	U	N	NHH	P	Sacramento SV	SAC	1.42E-01	1.17E-01	8.26E-01	1.87E-06	1.59E-05	8.40E-06	9.14E-03	1.03E-07	2.67E-07	0.00E+00	1.69E-07	
Military Tactic Diesel	2030 Annual	Mon-Sun	2270011005 A/C unit	D	500 Military Tactical Support Equip	U	N	NHH	P	Sacramento SV	SAC	9.81E-02	4.62E-02	4.94E-01	1.17E-06	9.36E-06	4.74E-06	3.47E-03	5.37E-08	1.57E-07	0.00E+00	1.00E-07	
Military Tactic Diesel	2030 Annual	Mon-Sun	2270011010 Aircraft Support	D	175 Military Tactical Support Equip	U	P	NHH	P	Sacramento SV	SAC	1.32E-01	1.09E-01	5.20E-01	1.28E-06	2.93E-05	6.24E-06	5.72E-03	6.84E-08	2.45E-07	0.00E+00	1.15E-07	
Military Tactic Diesel	2030 Annual	Mon-Sun	2270011015 Cart	D	175 Military Tactical Support Equip	U	P	NHH	P	Sacramento SV	SAC	9.90E-03	8.15E-03	4.26E-02	1.05E-07	2.40E-06	5.11E-07	4.69E-04	5.27E-09	2.01E-08	0.00E+00	9.44E-09	
Military Tactic Diesel	2030 Annual	Mon-Sun	2270011015 Cart	D	250 Military Tactical Support Equip	U	N	NHH	P	Sacramento SV	SAC	3.30E-02	2.72E-02	1.82E-01	4.12E-07	3.51E-06	1.85E-06	2.01E-03	2.26E-08	5.87E-08	0.00E+00	3.72E-08	
Military Tactic Diesel	2030 Annual	Mon-Sun	2270011025 Compressor (Military)	D	175 Military Tactical Support Equip	U	P	NHH	P	Sacramento SV	SAC	1.32E-02	1.09E-02	6.20E-02	1.52E-07	3.49E-06	7.44E-07	6.82E-04	7.68E-09	2.92E-08	0.00E+00	1.37E-08	
Military Tactic Diesel	2030 Annual	Mon-Sun	2270011025 Compressor (Military)	D	250 Military Tactical Support Equip	U	N	NHH	P	Sacramento SV	SAC	2.64E-02	2.17E-02	1.65E-01	3.73E-07	3.18E-06	1.67E-0						



Model Output: OFFROAD2021 (v1.0.1) Emissions Inventory

READ COMMENT

Region Type: County

Region: Sacramento

Calendar Year: 2019, 2030

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

OFFROADClass	Region	CalYr	VehClass	MidYr	HP_Bin	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2.5_tpd	SOx_tpd	NH3_tpd	Fuel_gpy	Total_Activity_h	Total_Population	Horsepower_Hours_hlpy
Construction and MI Sacramento		2019	Construction and Mining - Bore/Drill Rigs	Aggregate	Aggregate	Diesel	0.00070134	0.00084862	0.0010099	0.00810989	0.01098517	2.720429631	0.000399518	0.0003676	2.5131E-05	2.2204E-05	88261.34337	15469.76233	44.72691956	3409958.368
Construction and MI Sacramento		2019	Construction and Mining - Cranes	Aggregate	Aggregate	Diesel	0.00438525	0.00530615	0.0063148	0.03449744	0.06044235	6.47405953	0.00278457	0.0025617	5.9724E-05	5.284E-05	210043.7316	60960.69814	134.557096	1410784.38
Construction and MI Sacramento		2019	Construction and Mining - Crawler Tractors	Aggregate	Aggregate	Diesel	0.01034099	0.0125126	0.014891	0.07283891	0.13953573	16.00087506	6.87E-03	6.32E-03	0.00014763	0.0001306	519130.7694	110113.8625	247.8523667	2338284.04
Construction and MI Sacramento		2019	Construction and Mining - Excavators	Aggregate	Aggregate	Diesel	0.01015177	0.0128358	0.0146185	0.10328553	0.1767604	28.79110071	0.00528521	0.0048627	0.00025588	0.00023499	934095.5354	298219.2549	481.7322684	4702996.09
Construction and MI Sacramento		2019	Construction and Mining - Graders	Aggregate	Aggregate	Diesel	0.0007288	0.00923084	0.0109855	0.04434349	0.10393565	10.83116584	0.004518532	0.004157	9.9911E-05	8.8403E-05	351405.2473	88096.67927	155.7355279	16601213.98
Construction and MI Sacramento		2019	Construction and Mining - Misc - Asphalt Pavers	Aggregate	Aggregate	Gasoline	0.00029129	0.00027718	0.0003206	0.01326808	0.00044156	0.011299459	4.81263E-05	6.36E-05	1.2729E-06	1.7709E-06	5054.66987	1697.25	5.27819575	71777.25
Construction and MI Sacramento		2019	Construction and Mining - Misc - Bore/Drill Rigs	Aggregate	Aggregate	Gasoline	0.00011459	0.00010771	0.0001261	0.00406783	0.00038261	0.098990876	1.79E-05	1.35E-05	9.92E-07	1.40E-06	3989.264491	618.85	6.455500574	52786.3
Construction and MI Sacramento		2019	Construction and Mining - Misc - Pavers	Aggregate	Aggregate	Diesel	7.2362E-06	8.7036E-06	1.04E-05	3.185E-05	5.4934E-05	1.27527E-02	1.85317E-06	1.4E-06	7.86E-06	6.77E-10	2.695424578	0	0.438906219	0
Construction and MI Sacramento		2019	Construction and Mining - Misc - Cement And Mortar Mixers	Aggregate	Aggregate	Gasoline	0.0016915	0.00166564	0.0018148	0.04601248	0.0008973	1.66812E-06	0.000401207	0.0003031	7.62E-07	1.05E-06	2911.505609	0	146.8867284	0
Construction and MI Sacramento		2019	Construction and Mining - Misc - Concrete/Industrial Saws	Aggregate	Aggregate	Diesel	8.8424E-06	1.0635E-05	1.271E-05	5.1381E-05	6.6275E-05	1.5762E-07	2.39208E-06	1.807E-06	1.15E-09	9.87E-10	3.928420222	0	3.018082304	0
Construction and MI Sacramento		2019	Construction and Mining - Misc - Concrete/Industrial Saws	Aggregate	Aggregate	Gasoline	0.00138429	0.00137997	0.0015233	0.05204422	0.00120806	0.264204045	0.000471415	0.0003562	3.49E-06	4.64E-06	13243.35002	3117.1	25.63213335	144288.15
Construction and MI Sacramento		2019	Construction and Mining - Misc - Cranes	Aggregate	Aggregate	Diesel	5.1519E-05	6.1327E-05	7.418E-05	0.00037864	0.00035806	0.045708748	1.98E-05	1.82E-05	5.91E-07	3.87E-07	1537.084898	1102.3	1.909053975	36375.9
Construction and MI Sacramento		2019	Construction and Mining - Misc - Cranes	Aggregate	Aggregate	Gasoline	1.45E-04	1.33E-04	1.59E-04	0.00588125	3.71E-04	0.087998157	6.13E-06	4.63E-06	8.94E-07	1.29E-06	3682.85	1262.9	2.97	80004.35
Construction and MI Sacramento		2019	Construction and Mining - Misc - Crushing/Proc. Equipment	Aggregate	Aggregate	Gasoline	8.10E-06	8.18E-06	8.91E-06	2.84E-04	5.61E-06	1.04E-08	3.38E-06	2.56E-06	4.50E-09	6.21E-09	17.672011	0	0.119784516	0
Construction and MI Sacramento		2019	Construction and Mining - Misc - Dumpers/Tenders	Aggregate	Aggregate	Gasoline	0.00094513	0.00088493	0.0010401	0.0307938	0.0064277	5.10E-02	0.000343323	0.0002594	1.42E-06	1.36E-06	3878.385472	9880.55	76.00824684	91622.3
Construction and MI Sacramento		2019	Construction and Mining - Misc - Dumpers/Tenders	Aggregate	Aggregate	Diesel	8.81E-07	1.06E-06	1.27E-06	3.61E-06	6.70E-06	1.54E-08	2.31E-07	1.74E-07	9.18E-11	0.314603218	0	0.127124071	0	
Construction and MI Sacramento		2019	Construction and Mining - Misc - Excavators	Aggregate	Aggregate	Diesel	6.3001E-06	7.5776E-06	9.056E-06	2.5864E-05	4.7885E-05	1.0528E-07	1.61031E-06	1.217E-06	6.57E-10	5.66E-10	2.251644511	0	0.200153491	0
Construction and MI Sacramento		2019	Construction and Mining - Misc - Other	Aggregate	Aggregate	Gasoline	5.47E-05	5.04E-05	6.02E-05	4.66E-03	1.82E-04	0.141263295	1.01E-05	7.65E-06	1.40E-06	1.97E-06	5624.65	1029.3	2.959643544	129691.8
Construction and MI Sacramento		2019	Construction and Mining - Misc - Other	Aggregate	Aggregate	Diesel	1.89E-04	2.26E-04	2.73E-04	0.00131677	1.68E-03	0.210126339	6.47E-05	5.87E-05	3.16E-06	1.76E-06	7095.366073	14537.95	22.97034646	197402.95
Construction and MI Sacramento		2019	Construction and Mining - Misc - Pavers	Aggregate	Aggregate	Diesel	1.65E-06	1.99E-06	2.38E-06	6.7815E-06	1.26E-05	2.90E-08	4.38E-07	3.31E-07	1.72E-10	1.48E-10	0.590750265	0	0.078621841	0
Construction and MI Sacramento		2019	Construction and Mining - Misc - Paving Equipment	Aggregate	Aggregate	Gasoline	0.00267996	0.00269678	0.0028491	0.08327192	0.0019566	0.100826816	0.000794502	6.00E-04	2.38E-06	3.19E-06	9050.229051	1682.65	113.8728066	72207.95
Construction and MI Sacramento		2019	Construction and Mining - Misc - Paving Equipment	Aggregate	Aggregate	Diesel	2.81E-06	3.38E-06	4.04E-06	1.16E-05	2.14E-05	4.34E-08	7.16E-07	5.41E-07	2.93E-10	2.53E-10	1.005653868	0	0.195981905	0
Construction and MI Sacramento		2019	Construction and Mining - Misc - Plate Compactors	Aggregate	Aggregate	Gasoline	6.49E-03	6.07E-03	0.0071408	2.03E-01	4.45E-03	3.28E-01	2.06E-03	1.56E-03	1.05E-05	8.93E-06	25463.64101	74945.44	44.2811438	495958.4
Construction and MI Sacramento		2019	Construction and Mining - Misc - Plate Compactors	Aggregate	Aggregate	Diesel	5.62E-05	6.70E-05	8.09E-05	0.00041705	4.98E-04	0.062120668	1.93E-05	1.75E-05	9.67E-07	5.22E-07	2076.009954	10519.3	19.2866619	84154.4
Construction and MI Sacramento		2019	Construction and Mining - Misc - Rollers	Aggregate	Aggregate	Gasoline	1.16E-03	1.11E-03	1.28E-03	0.04473046	0.00180751	0.317633662	2.10E-04	1.59E-04	5.50E-06	5.20E-06	14830.9636	3540.5	16.26610008	218795.6
Construction and MI Sacramento		2019	Construction and Mining - Misc - Rollers	Aggregate	Aggregate	Diesel	4.15E-05	5.00E-05	5.97E-05	2.18E-04	3.14E-04	7.43E-07	1.08E-05	8.17E-06	5.04E-09	4.34E-09	17.28416958	0	5.293564991	0
Construction and MI Sacramento		2019	Construction and Mining - Misc - Rough Terrain Forklifts	Aggregate	Aggregate	Gasoline	0.00092783	0.00085342	0.001021	0.03221088	0.00269562	0.636943162	4.44566E-05	3.359E-05	6.22E-06	9.15E-06	15.78E-06	5139.2	12.32	433364.5
Construction and MI Sacramento		2019	Construction and Mining - Misc - Rubber Tired Loaders	Aggregate	Aggregate	Gasoline	5.08E-04	4.67E-04	5.59E-04	0.01979474	1.29E-03	3.31E-01	2.31E-05	1.74E-05	3.27E-06	4.83E-06	13786.05	3850.75	7.498680088	261252.4
Construction and MI Sacramento		2019	Construction and Mining - Misc - Rubber Tired Loaders	Aggregate	Aggregate	Diesel	1.0264E-06	1.2345E-06	1.475E-06	4.2137E-06	7.8014E-06	1.80072E-08	2.62321E-07	1.982E-07	1.07E-10	9.22E-11	0.36683678	0	0.54193926	0
Construction and MI Sacramento		2019	Construction and Mining - Misc - Signal Boards	Aggregate	Aggregate	Gasoline	1.64E-04	1.53E-04	1.80E-04	0.00649922	0.00012929	0.009639888	8.03E-05	6.07E-05	2.91E-07	2.72E-07	776.988139	1255.6	5.613976362	9814.85
Construction and MI Sacramento		2019	Construction and Mining - Misc - Signal Boards	Aggregate	Aggregate	Diesel	0.00090331	0.00107264	0.0012962	0.00067972	0.007394	0.991098228	0.000309737	0.0002809	1.54E-05	8.32E-06	33091.03346	115387.45	169.1954367	705110.65
Construction and MI Sacramento		2019	Construction and Mining - Misc - Skid Steer Loaders	Aggregate	Aggregate	Gasoline	1.45E-03	1.40E-03	1.59E-03	0.07048887	0.00125056	9.10E-01	3.30E-04	2.49E-04	1.01E-05	1.36E-05	38773.22092	13362.65	50.8942052	667804
Construction and MI Sacramento		2019	Construction and Mining - Misc - Skid Steer Loaders	Aggregate	Aggregate	Diesel	0.00033503	0.00040297	0.0004816	0.00159552	0.0025273	5.29131E-06	9.06E-05	6.84E-05	3.47E-08	2.99E-08	118.9273143	0	20.80542839	0
Construction and MI Sacramento		2019	Construction and Mining - Misc - Surfacing Equipment	Aggregate	Aggregate	Gasoline	1.39E-03	1.40E-03	1.53E-03	0.03657478	0.0099305	1.38416E-06	4.16E-04	3.14E-04	5.95E-07	8.22E-07	2324.719355	0	28.14863484	0
Construction and MI Sacramento		2019	Construction and Mining - Misc - Tampers/Rammers	Aggregate	Aggregate	Gasoline	8.34E-04	7.78E-04	9.17E-04	3.77E-02	7.02E-04	6.20E-02	5.38E-04	4.06E-04	2.56E-06	4.709.954835	20593.3	129.9647081	86899.2	
Construction and MI Sacramento		2019	Construction and Mining - Misc - Tractors/Loaders/Backhoes	Aggregate	Aggregate	Gasoline	2.00E-04	1.84E-04	2.21E-04	0.01229016	5.13E-04	0.214097499	1.49E-05	1.13E-05	2.07E-06	3.10E-06	8862.2	3025.85	3.544438504	190628.55
Construction and MI Sacramento		2019	Construction and Mining - Misc - Tractors/Loaders/Backhoes	Aggregate	Aggregate	Diesel	3.0022E-05	3.611E-05	4.216E-05	0.00012323	0.00022822	5.26631E-07	7.80E-06	5.89E-06	3.13E-09	2.70E-09	10.72894335	0	1.46682002	0
Construction and MI Sacramento		2019	Construction and Mining - Misc - Trenchers	Aggregate	Aggregate	Gasoline	0.00210747	0.00209117	0.0023191	0.00951532	0.00301079	0.58324077	0.000383508	0.0002898	6.94E-06	9.71E-06	27719.55243	9632.35	32.21787457	374531.7
Construction and MI Sacramento		2019	Construction and Mining - Misc - Trenchers	Aggregate	Aggregate	Diesel	3.7903E-05	4.5589E-05	5.449E-05	0.00017457	0.00020875	6.70E-07	9.7674E-06	7.38E-06	4.23E-09	14.51284163	0	2.29235269	0	
Construction and MI Sacramento		2019	Construction and Mining - Off-Highway Tractors	Aggregate	Aggregate	Diesel	0.00335281	0.0040569	0.004828	0.02760565	0.03422662	6.09E-00	0.01866086	0.0017168	5.62E-05	4.97E-05	197483.5005	69912.4531	109.6448646	867011.1
Construction and MI Sacramento		2019	Construction and Mining - Off-Highway Trucks	Aggregate	Aggregate	Diesel	0.00164835	0.0194727	0.0237389	0.13199686	0.22482599	36.51576755	0.007221272	0.0071044	3.37E-04	2.98E-04	1184713.87	148799.564	114.7786411	5939316.28
Construction and MI Sacramento		2019	Construction and Mining - Other	Aggregate	Aggregate	Diesel	4.41E-03	5.34E-03	6.35E-03	0.03417684	5.51E-02	8.150349434	2.74E-03	2.52E-03	7.52E-05	6.65E-05	264429.1114	71090.95651	165.768525	1229652.64
Construction and MI Sacramento		2019	Construction and Mining - Pavers	Aggregate	Aggregate	Diesel	1.01E-03	1.23E-03	1.46E-03	0.00925348	0.01278512	1.92E-00	6.86E-04	6.31E-04	1.77E-05	1.57E-05	62284.75331	22337.57349	58.9049887	289273.



Construction and Mi Sacramento	2030 Construction and Mining - Rollers	Aggregate	Aggregate	Diesel	2.29E-03	2.77E-03	3.30E-03	0.04034501	2.35E-02	6.821916695	9.13E-04	8.40E-04	6.30E-05	5.57E-05	221329.5742	138822.2689	386.903596	11151744
Construction and Mi Sacramento	2030 Construction and Mining - Rough Terrain Forklifts	Aggregate	Aggregate	Diesel	0.00132542	0.00160375	1.91E-03	0.04365606	0.02053388	7.41E+00	0.000494127	4.55E-04	6.84E-05	6.05E-05	240330.5817	114759.8014	389.77639	11531966.35
Construction and Mi Sacramento	2030 Construction and Mining - Rubber Tired Dozers	Aggregate	Aggregate	Diesel	0.00225428	0.00272768	0.0032462	0.02293308	0.0231384	4.362702324	0.001068302	0.0009828	4.03E-05	3.56E-05	141543.0722	27683.79845	34.4611044	6863122.199
Construction and Mi Sacramento	2030 Construction and Mining - Rubber Tired Loaders	Aggregate	Aggregate	Diesel	1.72E-02	2.08E-02	2.47E-02	0.21038354	0.12326782	6.03E+01	4.81E-03	0.0044223	5.57E-04	4.92E-04	1955163.52	517028.7392	505.1746882	104700342.4
Construction and Mi Sacramento	2030 Construction and Mining - Scrapers	Aggregate	Aggregate	Diesel	0.01158205	0.01401428	0.0166782	0.12013713	0.10853046	39.22223939	0.004567902	0.0042025	3.62E-04	3.20E-04	1275222.361	138719.5296	283.8312112	50935064.34
Construction and Mi Sacramento	2030 Construction and Mining - Skid Steer Loaders	Aggregate	Aggregate	Diesel	0.00159716	0.00193257	0.0022999	0.04363949	0.0249121	7.18285566	0.000547084	0.0005033	6.63E-05	5.8626E-05	233039.8414	183596.2095	505.4477356	12009452.96
Construction and Mi Sacramento	2030 Construction and Mining - Surfacing Equipment	Aggregate	Aggregate	Diesel	0.000142	0.00017182	0.0002045	0.00220997	0.00172841	0.824484801	5.66825E-05	5.215E-05	7.62E-06	6.73E-06	26748.3204	6512.016158	23.210728	1714112.388
Construction and Mi Sacramento	2030 Construction and Mining - Tractors/Loaders/Backhoes	Aggregate	Aggregate	Diesel	0.01512145	0.01829696	0.0217749	0.31573369	0.16347133	55.05266434	4.80E-03	4.41E-03	5.09E-04	4.49E-04	1786123.065	951614.7255	1524.541967	93242553.61
Construction and Mi Sacramento	2030 Construction and Mining - Trenchers	Aggregate	Aggregate	Diesel	0.0010726	0.00129785	0.0015445	0.01239908	0.01149524	2.265649572	5.00E-04	4.60E-04	2.09E-05	1.85E-05	73506.5052	34650.45125	91.58880202	2724378.704
Construction and Mi Sacramento	2030 Construction and Mining - Bore/Drill Rigs	Aggregate	Aggregate	Diesel	5.85E-04	7.08E-04	8.43E-04	1.26E-02	5.59E-02	4.37E+00	1.09E-04	1.00E-04	4.04E-05	3.56E-05	141696.9118	24691.02019	62.01668684	5459400.391
Construction and Mi Sacramento	2045 Construction and Mining - Crawlers	Aggregate	Aggregate	Diesel	2.40E-03	2.91E-03	3.46E-03	3.28E-02	1.89E-02	1.03E+01	7.77E-04	7.15E-04	9.54E-05	8.43E-05	335071.524	97296.97922	185.5717254	22486431.47
Construction and Mi Sacramento	2045 Construction and Mining - Crawler Tractors	Aggregate	Aggregate	Diesel	5.68E-03	6.87E-03	8.18E-03	8.59E-02	4.25E-02	2.55E+01	1.56E-03	1.44E-03	2.36E-04	2.08E-04	827515.4514	175746.9597	343.6624872	37328079.97
Construction and Mi Sacramento	2045 Construction and Mining - Excavators	Aggregate	Aggregate	Diesel	8.06E-03	9.76E-03	1.16E-02	1.55E-01	5.34E-02	4.60E+01	1.15E-03	1.06E-03	4.25E-04	3.75E-04	1490953.49	475973.8292	667.9515477	7501787.8
Construction and Mi Sacramento	2045 Construction and Mining - Graders	Aggregate	Aggregate	Diesel	4.00E-03	4.84E-03	5.76E-03	6.04E-02	2.06E-02	1.73E+01	8.55E-04	7.86E-04	1.59E-04	1.41E-04	560109.2595	140610.2887	215.9365295	26450596.72
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Asphalt Pavers	Aggregate	Aggregate	Gasoline	2.59E-04	2.50E-04	2.85E-04	1.50E-02	3.04E-04	1.12E-01	6.10E-05	4.61E-05	1.29E-06	1.80E-06	5148.708436	1689.95	5.530873302	71226.1
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Bore/Drill Rigs	Aggregate	Aggregate	Gasoline	7.64E-05	7.31E-05	8.40E-05	3.89E-03	1.36E-04	9.90E-02	2.07E-05	1.56E-05	9.95E-07	1.40E-06	3989.60079	620.5	6.65117814	53173.2
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Bore/Drill Rigs	Aggregate	Aggregate	Diesel	9.28E-06	1.12E-05	1.33E-05	4.09E-05	7.05E-05	1.64E-07	2.38E-06	1.80E-06	1.01E-09	8.70E-10	3.461256104	0	0.565255746	0
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Cement And Mortar Mixers	Aggregate	Aggregate	Gasoline	2.00E-03	2.02E-03	2.20E-03	6.11E-02	1.30E-03	2.29E-06	5.52E-04	4.17E-04	9.90E-07	1.37E-06	3841.303662	0	201.9518295	0
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Cement And Mortar Mixers	Aggregate	Aggregate	Diesel	1.14E-05	1.37E-05	1.63E-05	6.66E-05	8.58E-05	2.05E-07	2.99E-06	2.26E-06	1.48E-09	1.28E-09	5.077855962	0	3.925908282	0
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Concrete/Industrial Saws	Aggregate	Aggregate	Gasoline	1.82E-03	1.82E-03	2.01E-03	6.63E-02	1.52E-03	2.64E-01	6.39E-04	4.83E-04	3.71E-06	4.96E-06	14138.48353	3117.1	33.250906	144288.15
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Concrete/Industrial Saws	Aggregate	Aggregate	Diesel	2.86E-05	3.40E-05	4.12E-05	4.42E-04	3.31E-04	5.94E-02	1.93E-06	1.71E-06	7.67E-07	4.99E-07	1982.472469	1434.45	2.589268419	47336.85
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Cranes	Aggregate	Aggregate	Gasoline	7.80E-05	7.18E-05	8.59E-05	5.98E-03	1.66E-04	8.80E-02	6.13E-06	4.63E-06	8.94E-07	1.29E-06	3690.15	1270.2	2.94	80460.6
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Crushing/Proc. Equipment	Aggregate	Aggregate	Gasoline	1.06E-05	1.07E-05	1.17E-05	3.72E-04	7.35E-06	1.37E-08	4.44E-06	3.35E-06	5.90E-09	8.15E-09	23.18758841	0	0.157082028	0
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Dumpers/Tenders	Aggregate	Aggregate	Gasoline	8.28E-04	7.81E-04	9.11E-04	2.83E-02	5.99E-04	4.49E-02	3.20E-04	2.42E-04	1.27E-06	1.23E-06	3513.402192	8562.9	70.96325294	17917.45
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Dumpers/Tenders	Aggregate	Aggregate	Diesel	1.15E-06	1.38E-06	1.65E-06	4.72E-06	8.74E-06	2.02E-08	2.94E-07	2.22E-07	1.20E-10	1.03E-10	0.410692423	0	0.16597694	0
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Excavators	Aggregate	Aggregate	Diesel	8.19E-06	9.85E-06	1.18E-05	3.36E-05	6.23E-05	1.44E-07	2.09E-06	1.58E-06	8.54E-10	7.36E-10	2.928064315	0	0.260281885	0
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Other	Aggregate	Aggregate	Gasoline	5.48E-05	5.04E-05	6.03E-05	4.66E-03	1.82E-04	1.41E-01	1.01E-05	7.65E-06	1.40E-06	1.97E-06	5628.3	1029.3	2.968029832	129691.8
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Other	Aggregate	Aggregate	Diesel	2.47E-04	2.94E-04	3.55E-04	1.71E-03	2.19E-03	2.73E-01	8.42E-05	7.64E-05	4.11E-06	2.29E-06	9110.4803	18881.45	29.85371668	256394.25
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Pavers	Aggregate	Aggregate	Diesel	2.18E-06	2.62E-06	3.14E-06	8.95E-06	1.66E-05	3.83E-08	5.58E-07	4.21E-07	2.27E-10	1.96E-10	0.779547405	0	0.103813079	0
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Paving Equipment	Aggregate	Aggregate	Gasoline	3.62E-03	3.65E-03	3.99E-03	1.12E-01	2.56E-03	1.01E-01	1.09E-03	8.22E-04	2.84E-06	3.82E-06	1686.3	152.8155563	72448.85	0
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Paving Equipment	Aggregate	Aggregate	Diesel	3.58E-06	4.30E-06	5.14E-06	1.47E-05	2.72E-05	6.27E-08	9.14E-07	6.91E-07	3.73E-10	3.21E-10	1.278298219	0	0.249114859	0
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Plate Compactors	Aggregate	Aggregate	Gasoline	6.13E-03	5.77E-03	6.75E-03	1.92E-01	4.17E-03	2.84E-01	1.92E-03	1.45E-03	9.34E-06	8.09E-06	23056.69055	64973.65	414.5281825	398769.8
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Plate Compactors	Aggregate	Aggregate	Diesel	7.30E-05	8.70E-05	1.05E-04	5.42E-04	6.47E-04	8.07E-02	2.50E-05	2.27E-05	1.26E-06	6.78E-07	2693.703576	13665.6	25.01108702	109324.8
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Rollers	Aggregate	Aggregate	Gasoline	1.05E-03	1.02E-03	1.15E-03	5.27E-02	1.20E-03	3.18E-01	2.81E-04	2.12E-04	3.59E-06	5.36E-06	15284.4422	3536.85	20.11776413	218833.15
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Rollers	Aggregate	Aggregate	Diesel	5.28E-05	6.35E-05	7.59E-05	2.77E-04	3.99E-04	9.44E-07	1.37E-05	1.04E-05	6.41E-09	5.52E-09	21.96207814	0	6.727274324	0
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Rough Terrain Forklifts	Aggregate	Aggregate	Gasoline	4.63E-04	4.26E-04	5.10E-04	3.14E-02	1.14E-03	6.37E-01	4.45E-05	3.36E-05	6.22E-06	9.12E-06	26031.8	5088.1	12.24	425830.9
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Rubber Tired Dozers	Aggregate	Aggregate	Gasoline	2.80E-04	2.57E-04	3.08E-04	2.06E-02	6.58E-04	3.31E-01	2.31E-05	1.74E-05	3.27E-06	4.84E-06	13807.95	3869	7.572102584	262566.4
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Rubber Tired Loaders	Aggregate	Aggregate	Diesel	1.46E-06	1.76E-06	2.10E-06	5.99E-06	1.11E-05	2.56E-08	3.72E-07	2.82E-07	1.52E-10	1.31E-10	0.521552253	0	0.065675527	0
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Signal Boards	Aggregate	Aggregate	Gasoline	1.54E-04	1.45E-04	1.70E-04	6.08E-03	1.21E-04	8.36E-03	7.48E-05	5.66E-05	2.59E-07	2.46E-07	702.3978173	1080.4	5.05004428	8457.05
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Signal Boards	Aggregate	Aggregate	Diesel	1.15E-03	1.37E-03	1.66E-03	8.65E-03	1.02E-02	1.29E+00	3.92E-04	3.55E-04	2.00E-05	1.08E-05	42966.51801	149821.55	219.7396723	915336.05
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Skid Steer Loaders	Aggregate	Aggregate	Gasoline	1.69E-03	1.64E-03	1.86E-03	7.77E-02	1.98E-03	9.10E-01	4.14E-04	3.13E-04	1.02E-05	1.37E-05	39239.30244	13359	53.35954088	667336.8
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Skid Steer Loaders	Aggregate	Aggregate	Diesel	4.04E-04	4.86E-04	5.81E-04	1.66E-03	3.07E-03	7.09E-06	1.03E-04	7.81E-05	4.22E-08	3.63E-08	144.4938464	0	25.62396030	0
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Surfacing Equipment	Aggregate	Aggregate	Gasoline	1.91E-03	1.93E-03	2.10E-03	5.03E-02	1.37E-03	1.90E-06	5.72E-04	4.32E-04	8.19E-07	1.13E-06	3196.531497	0	38.70358871	0
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Tampers/Rammers	Aggregate	Aggregate	Gasoline	7.85E-04	7.38E-04	8.64E-04	3.52E-02	6.58E-04	5.38E-02	5.01E-04	3.79E-04	2.26E-06	1.49E-06	4236.454604	17852.15	121.2554663	75332.35
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Tractors/Loaders/Backhoes	Aggregate	Aggregate	Gasoline	1.76E-04	1.62E-04	1.94E-04	1.24E-02	4.53E-04	2.14E-01	1.49E-05	1.13E-05	2.07E-06	3.10E-06	8862.2	3033.15	3.509623104	191088.45
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Tractors/Loaders/Backhoes	Aggregate	Aggregate	Diesel	3.93E-05	4.73E-05	5.66E-05	1.62E-04	2.99E-04	6.90E-07	1.01E-05	7.60E-06	4.10E-09	3.53E-09	14.06091029	0	1.019656234	0
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Trenchers	Aggregate	Aggregate	Diesel	1.95E-03	1.90E-03	2.15E-03	1.05E-01	2.03E-03	5.83E-01	5.12E-04	3.97E-04	7.11E-06	1.00E-05	28559.84241	9628.7	35.3359092	375190.8
Construction and Mi Sacramento	2045 Construction and Mining - Misc - Trenchers	Aggregate	Aggregate	Diesel	4.26E-05	5.13E-05	6.13E-05	1.96E-04	3.23E-04	7.54E-07	1.10E-05	8.30E-06	4.75E-09	4.10E-09	16.29542441	0	2.5	



Original OFFROAD Classifications	Consolidated Classes
Agricultural	agricultural offroad
Agricultural Equipment	agricultural offroad
Airport Ground Support Equipment	Airport Ground Support
Commercial Harbor Craft	Commercial Harbor Craft
Construction and Mining	Construction and Mining
Construction and Mining Equipment	Construction and Mining
Entertainment Equipment	Entertainment Equipment
Industrial	Industrial
Industrial Equipment	Industrial
Lawn and Garden Equipment	Lawn and Garden Equipment
Light Commercial Equipment	Light Commercial Equipment
Locomotive - Line haul	Railyard Operations
Locomotive - Passenger	Railyard Operations
Locomotive - Short line	Railyard Operations
Logging Equipment	Logging
Military Tactical Support Equip	Military Tactical Support
Ocean Going Vessels	Ocean Going Vessels
OFFROAD - Airport Ground Support	Airport Ground Support
OFFROAD - Agricultural	agricultural offroad
OFFROAD - Construction and Mining	Construction and Mining
OFFROAD - Industrial	Industrial
OFFROAD - Light Commercial	Light Commercial Equipment
OFFROAD - Logging	Logging
OFFROAD - Military Tactical Support	Military Tactical Support
Oil Drilling	Oil Drilling
Pleasure Craft	Pleasure Craft
Portable Equipment	Portable Equipment
Other Portable Equipment	Other Portable Equipment
Railyard Operations	Railyard Operations
Recreational Equipment	Recreational Equipment
Transport Refrigeration Units	Transport Refrigeration Units
Transportation Refridgeration Unit	Transport Refrigeration Units
Agricultural - Agricultural Tractors	agricultural offroad
Agricultural - ATVs	agricultural offroad
Agricultural - Bale Wagons (Self Propelled)	agricultural offroad
Agricultural - Balers (Self Propelled)	agricultural offroad
Agricultural - Combine Harvesters	agricultural offroad
Agricultural - Construction Equipment	agricultural offroad
Agricultural - Cotton Pickers	agricultural offroad
Agricultural - Forage & Silage Harvesters	agricultural offroad
Agricultural - Forklifts	agricultural offroad
Agricultural - Hay Squeeze/Stack Retriever	agricultural offroad
Agricultural - Nut Harvester	agricultural offroad
Agricultural - Other Harvesters	agricultural offroad
Agricultural - Sprayers/Spray Rigs	agricultural offroad
Agricultural - Swathers/Windrowers/Hay Conditior	agricultural offroad

Airport Ground Support - A/C Tug Narrow Body	Airport Ground Support
Airport Ground Support - A/C Tug Wide Body	Airport Ground Support
Airport Ground Support - Baggage Tug	Airport Ground Support
Airport Ground Support - Belt Loader	Airport Ground Support
Airport Ground Support - Bobtail	Airport Ground Support
Airport Ground Support - Cargo Loader	Airport Ground Support
Airport Ground Support - Cargo Tractor	Airport Ground Support
Airport Ground Support - Forklift	Airport Ground Support
Airport Ground Support - Lift	Airport Ground Support
Airport Ground Support - Misc - A/C Tug Narrow B	Airport Ground Support
Airport Ground Support - Misc - A/C Tug Wide Boc	Airport Ground Support
Airport Ground Support - Misc - Air Conditioner	Airport Ground Support
Airport Ground Support - Misc - Air Start Unit	Airport Ground Support
Airport Ground Support - Misc - Baggage Tug	Airport Ground Support
Airport Ground Support - Misc - Belt Loader	Airport Ground Support
Airport Ground Support - Misc - Bobtail	Airport Ground Support
Airport Ground Support - Misc - Cargo Loader	Airport Ground Support
Airport Ground Support - Misc - Cargo Tractor	Airport Ground Support
Airport Ground Support - Misc - Cart	Airport Ground Support
Airport Ground Support - Misc - Catering Truck	Airport Ground Support
Airport Ground Support - Misc - Deicer	Airport Ground Support
Airport Ground Support - Misc - Forklift	Airport Ground Support
Airport Ground Support - Misc - Fuel Truck	Airport Ground Support
Airport Ground Support - Misc - Generator	Airport Ground Support
Airport Ground Support - Misc - Ground Power Uni	Airport Ground Support
Airport Ground Support - Misc - Hydrant Truck	Airport Ground Support
Airport Ground Support - Misc - Lav Cart	Airport Ground Support
Airport Ground Support - Misc - Lav Truck	Airport Ground Support
Airport Ground Support - Misc - Lift	Airport Ground Support
Airport Ground Support - Misc - Maint. Truck	Airport Ground Support
Airport Ground Support - Misc - Other	Airport Ground Support
Airport Ground Support - Misc - Passenger Stand	Airport Ground Support
Airport Ground Support - Misc - Service Truck	Airport Ground Support
Airport Ground Support - Misc - Sweeper	Airport Ground Support
Airport Ground Support - Misc - Water Truck	Airport Ground Support
Airport Ground Support - Other	Airport Ground Support
Airport Ground Support - Passenger Stand	Airport Ground Support
Commercial Harbor Craft - AE - Commercial Fishing	Commercial Harbor Craft
Commercial Harbor Craft - AE - Commercial Passer	Commercial Harbor Craft
Commercial Harbor Craft - AE - Excursion	Commercial Harbor Craft
Commercial Harbor Craft - AE - Research Boat	Commercial Harbor Craft
Commercial Harbor Craft - AE - Tugboat-Push/Tow	Commercial Harbor Craft
Commercial Harbor Craft - AE - Work Boat	Commercial Harbor Craft
Commercial Harbor Craft - ME - Commercial Fishin	Commercial Harbor Craft
Commercial Harbor Craft - ME - Commercial Passe	Commercial Harbor Craft
Commercial Harbor Craft - ME - Dredge	Commercial Harbor Craft
Commercial Harbor Craft - ME - Excursion	Commercial Harbor Craft

Commercial Harbor Craft - ME - Research Boat	Commercial Harbor Craft
Commercial Harbor Craft - ME - Tugboat-Push/Tow	Commercial Harbor Craft
Commercial Harbor Craft - ME - Work Boat	Commercial Harbor Craft
Construction and Mining - Bore/Drill Rigs	Construction and Mining
Construction and Mining - Cranes	Construction and Mining
Construction and Mining - Crawler Tractors	Construction and Mining
Construction and Mining - Excavators	Construction and Mining
Construction and Mining - Graders	Construction and Mining
Construction and Mining - Misc - Asphalt Pavers	Construction and Mining
Construction and Mining - Misc - Bore/Drill Rigs	Construction and Mining
Construction and Mining - Misc - Cement And Mor	Construction and Mining
Construction and Mining - Misc - Concrete/Industri	Construction and Mining
Construction and Mining - Misc - Cranes	Construction and Mining
Construction and Mining - Misc - Crushing/Proc. Ec	Construction and Mining
Construction and Mining - Misc - Dumpers/Tender:	Construction and Mining
Construction and Mining - Misc - Excavators	Construction and Mining
Construction and Mining - Misc - Other	Construction and Mining
Construction and Mining - Misc - Pavers	Construction and Mining
Construction and Mining - Misc - Paving Equipmen	Construction and Mining
Construction and Mining - Misc - Plate Compactors	Construction and Mining
Construction and Mining - Misc - Rollers	Construction and Mining
Construction and Mining - Misc - Rough Terrain Fo	Construction and Mining
Construction and Mining - Misc - Rubber Tired Loa	Construction and Mining
Construction and Mining - Misc - Signal Boards	Construction and Mining
Construction and Mining - Misc - Skid Steer Loader	Construction and Mining
Construction and Mining - Misc - Surfacing Equipm	Construction and Mining
Construction and Mining - Misc - Tampers/Ramme	Construction and Mining
Construction and Mining - Misc - Tractors/Loaders,	Construction and Mining
Construction and Mining - Misc - Trenchers	Construction and Mining
Construction and Mining - Off-Highway Tractors	Construction and Mining
Construction and Mining - Off-Highway Trucks	Construction and Mining
Construction and Mining - Other	Construction and Mining
Construction and Mining - Pavers	Construction and Mining
Construction and Mining - Paving Equipment	Construction and Mining
Construction and Mining - Rollers	Construction and Mining
Construction and Mining - Rough Terrain Forklifts	Construction and Mining
Construction and Mining - Rubber Tired Dozers	Construction and Mining
Construction and Mining - Rubber Tired Loaders	Construction and Mining
Construction and Mining - Scrapers	Construction and Mining
Construction and Mining - Skid Steer Loaders	Construction and Mining
Construction and Mining - Surfacing Equipment	Construction and Mining
Construction and Mining - Tractors/Loaders/Backh	Construction and Mining
Construction and Mining - Trenchers	Construction and Mining
Industrial - Aerial Lifts	Industrial
Industrial - Forklifts	Industrial
Industrial - Misc - Aerial Lifts	Industrial
Industrial - Misc - Forklifts	Industrial

Industrial - Misc - Other General Industrial Equipment	Industrial
Industrial - Misc - Other Material Handling Equipment	Industrial
Industrial - Misc - Sweepers/Scrubbers	Industrial
Industrial - Other General Industrial Equipment	Industrial
Industrial - Other Material Handling Equipment	Industrial
Lawn and Garden - Misc - Chainsaws	Lawn and Garden Equipment
Lawn and Garden - Misc - Chainsaws Preempt	Lawn and Garden Equipment
Lawn and Garden - Misc - Chippers/Stump Grinder	Lawn and Garden Equipment
Lawn and Garden - Misc - Lawn Mowers	Lawn and Garden Equipment
Lawn and Garden - Misc - Leaf Blowers/Vacuums	Lawn and Garden Equipment
Lawn and Garden - Misc - Other	Lawn and Garden Equipment
Lawn and Garden - Misc - Rear Engine Riding Mow	Lawn and Garden Equipment
Lawn and Garden - Misc - Snowblowers	Lawn and Garden Equipment
Lawn and Garden - Misc - Tillers	Lawn and Garden Equipment
Lawn and Garden - Misc - Trimmers/Edgers/Brush	Lawn and Garden Equipment
Lawn and Garden - Misc - Wood Splitters	Lawn and Garden Equipment
Light Commercial - Misc - Air Compressors	Light Commercial Equipment
Light Commercial - Misc - Gas Compressors	Light Commercial Equipment
Light Commercial - Misc - Generator Sets	Light Commercial Equipment
Light Commercial - Misc - Pressure Washers	Light Commercial Equipment
Light Commercial - Misc - Pumps	Light Commercial Equipment
Light Commercial - Misc - Welders	Light Commercial Equipment
Locomotive - Line Haul	Railyard Operations
Locomotive - Passenger	Railyard Operations
Locomotive - Switcher	Railyard Operations
Military Tactical Support - Misc - A/C Unit	Military Tactical Support
Military Tactical Support - Misc - Aircraft Support	Military Tactical Support
Military Tactical Support - Misc - Cart	Military Tactical Support
Military Tactical Support - Misc - Communications	Military Tactical Support
Military Tactical Support - Misc - Compressor	Military Tactical Support
Military Tactical Support - Misc - Crane	Military Tactical Support
Military Tactical Support - Misc - Deicer	Military Tactical Support
Military Tactical Support - Misc - Generator	Military Tactical Support
Military Tactical Support - Misc - Hydraulic Unit	Military Tactical Support
Military Tactical Support - Misc - Lift	Military Tactical Support
Military Tactical Support - Misc - Light	Military Tactical Support
Military Tactical Support - Misc - Other Tactical Support	Military Tactical Support
Military Tactical Support - Misc - Pressure Washers	Military Tactical Support
Military Tactical Support - Misc - Pump	Military Tactical Support
Military Tactical Support - Misc - Start Cart	Military Tactical Support
Military Tactical Support - Misc - Test Stand	Military Tactical Support
Military Tactical Support - Misc - Welder	Military Tactical Support
Ocean Going Vessels - Vessels (Other)	Ocean Going Vessels
Oil Drilling - Drill Rig (Mobile)	Oil Drilling
Oil Drilling - Workover Rig (Mobile)	Oil Drilling
Oil Drilling - Misc - Compressors (Workover)	Oil Drilling
Oil Drilling - Misc - Generator (Drilling)	Oil Drilling

Pleasure Craft - Personal Water Craft	Pleasure Craft
Pleasure Craft - Sailboat Auxiliary Inboard Engine	Pleasure Craft
Pleasure Craft - Vessels W/Inboard Engines	Pleasure Craft
Pleasure Craft - Vessels W/Inboard Jet Engines	Pleasure Craft
Pleasure Craft - Vessels W/Outboard Engines	Pleasure Craft
Pleasure Craft - Vessels W/Sterndrive Engines	Pleasure Craft
Portable Equipment - Non-Rental Compressor	Portable Equipment
Portable Equipment - Non-Rental Generator	Portable Equipment
Portable Equipment - Non-Rental Other	Portable Equipment
Portable Equipment - Non-Rental Pump	Portable Equipment
Portable Equipment - Rental Compressor	Portable Equipment
Portable Equipment - Rental Generator	Portable Equipment
Portable Equipment - Rental Other	Portable Equipment
Portable Equipment - Rental Pump	Portable Equipment
Recreational - All Terrain Vehicles (Atvs) Active	Recreational Equipment
Recreational - Golf Carts	Recreational Equipment
Recreational - Minibikes	Recreational Equipment
Recreational - Off-Road Motorcycles Active	Recreational Equipment
Recreational - Snowmobiles Active	Recreational Equipment
Transportation Refridgeration Unit - Instate Gense	Transport Refrigeration Units
Transportation Refridgeration Unit - Instate Trailer	Transport Refrigeration Units
Transportation Refridgeration Unit - Instate Truck	Transport Refrigeration Units
Transportation Refridgeration Unit - Out-Of-State (	Transport Refrigeration Units
Transportation Refridgeration Unit - Out-Of-State 1	Transport Refrigeration Units
Transportation Refridgeration Unit - Railcar TRU	Transport Refrigeration Units

OFFROAD 2007 Fuel Type	Fuel Type
G2	Gasoline
G4	Gasoline
C4	CNG
D	Diesel

EMFAC2011 Categories
All Other Buses
LDA
LDT1
LDT2
LHD1
LHD2
MCY
MDV
MH
Motor Coach
OBUS
PTO
SBUS
T6 CAIRP heavy
T6 CAIRP small
T6 instate construction heavy
T6 instate construction small
T6 instate heavy
T6 instate small
T6 OOS heavy
T6 OOS small
T6 Public
T6 utility
T6TS
T7 Ag
T7 CAIRP
T7 CAIRP construction
T7 NNOOS
T7 NOOS
T7 POAK
T7 Public
T7 Single
T7 single construction
T7 SWCV
T7 tractor
T7 tractor construction
T7 utility
T7IS
UBUS

Project Vehicle Category	EMFAC2011 Category Match
Countywide	All Other Buses
Countywide	LDA
Countywide	LDT1
Countywide	LDT2
Countywide	LHD1
Countywide	LHD2
Countywide	MCY
Countywide	MDV
Countywide	MH
Countywide	Motor Coach
Countywide	OBUS
Countywide	PTO
Countywide	SBUS
Countywide	T6 CAIRP heavy
Countywide	T6 CAIRP small
Countywide	T6 instate construction heavy
Countywide	T6 instate construction small
Countywide	T6 instate heavy
Countywide	T6 instate small
Countywide	T6 OOS heavy
Countywide	T6 OOS small
Countywide	T6 Public
Countywide	T6 utility
Countywide	T6TS
Countywide	T7 Ag
Countywide	T7 CAIRP
Countywide	T7 CAIRP construction
Countywide	T7 NNOOS
Countywide	T7 NOOS
Countywide	T7 POAK
Countywide	T7 Public
Countywide	T7 Single
Countywide	T7 single construction
Countywide	T7 SWCV
Countywide	T7 tractor
Countywide	T7 tractor construction
Countywide	T7 utility
Countywide	T7IS
Countywide	UBUS
TCT Annual Vehicle Revenue Miles	OBUS
TCT Annual Vehicle Revenue Miles	UBUS
TCT Annual Vehicle Revenue Miles	SBUS
TCT Annual Vehicle Revenue Miles	All Other Buses
YART Annual Vehicle Revenue Miles	OBUS
YART Annual Vehicle Revenue Miles	UBUS
YART Annual Vehicle Revenue Miles	SBUS
YART Annual Vehicle Revenue Miles	All Other Buses



Source: EMFAC2011 (v1.0.1) Emissions Inventory  
 Region Type: County  
 Region: Sacramento  
 Calendar Year: 2019, 2030, 2045, 2050  
 Season: Annual  
 Vehicle Classification: EMFAC2011 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

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CO2_TOTEX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	CH4_TOTEX	N2O_RUNEX	N2O_IDLEX	N2O_STREX	N2O_TOTEX	
Sacramento	2019	All Other Buses	Aggregate	Aggregate	Diesel	515.8184894	7047726.976	7047726.976	0	1340509.09	9915.727421	109.9576472	0	10025.68507	0.451942592	0.004254504	0	0.456197096	1.5608221	0.017308294	0	1.578130394	
Sacramento	2019	All Other Buses	Aggregate	Aggregate	Natural Gas	56.91029722	722042.3756	722042.3756	0	9592.428043	837.0939162	14.01176977	0	851.11686	0.580797892	0.056999573	0	0.637797465	0.170647071	0.002857614	0	0.173504685	
Sacramento	2019	LDA	Aggregate	Aggregate	Gasoline	515366.5271	671809974.2	671809974.2	0	87784031.7	2134014.771	17444.42794	2205459.194	31.6801791	0	90.30339429	121.9835734	49.4462023	0	34.51448841	0.839606071	0	83.9606071
Sacramento	2019	LDA	Aggregate	Aggregate	Diesel	2136.79467	2235895.32	2235895.32	0	3651.3074	6045.3074	0	0	0	0	0	0	0	0	0.04368566	0.051584198	0	0.051584198
Sacramento	2019	LDA	Aggregate	Aggregate	Electricity	6451.801432	75639907.03	0	75639907.03	0	1148835.71	0	0	0	0	0	0	0	0	0	0	0	0
Sacramento	2019	LDA	Aggregate	Aggregate	Plug-in Hyt	6433.377117	98305951.6	5309395.79	45216555.81	9230988.989	17182.90286	0	700.2788223	17883.18168	0.75815011	0	0.430213192	0.48833703	0.073574102	0	0.212928383	0.286502939	0
Sacramento	2019	LD1	Aggregate	Aggregate	Gasoline	59235.93728	629669815.3	629669815.3	0	90911643.7	252293.2986	0	9762.638254	262055.9368	0.058405033	0	15.47071027	23.261083	10.032144	0	4.612367515	14.64450272	0
Sacramento	2019	LD1	Aggregate	Aggregate	Diesel	35.36231965	133798.0977	133798.0977	0	38689.86836	63.10668469	0	63.10668469	0.002047049	0	0	0	0.002047049	0.009933543	0	0	0.009933543	0
Sacramento	2019	LD1	Aggregate	Aggregate	Electricity	124.6165284	1096520.274	0	1096520.274	0	1096520.274	0	0	0	0	0	0	0	0	0	0	0	0
Sacramento	2019	LD1	Aggregate	Aggregate	Plug-in Hyt	0.506744026	7967.21037	4317.206189	3650.005848	727.0991138	1.397306062	0	0.063032144	1.460338206	4.745456	0	3.402596	5.87713105	0.62278E-06	0	1.69017E-05	2.29244E-05	0
Sacramento	2019	LD2	Aggregate	Aggregate	Gasoline	213897.0762	2624094168	2624094168	0	346109598.2	1138291.537	0	3925.46192	1176216.999	14.31011378	0	42.696079	57.00619278	26.93775216	0	17.6698752	44.60727442	0
Sacramento	2019	LD2	Aggregate	Aggregate	Diesel	542.3295588	7418531.542	7418531.542	0	907661.7691	2759.944237	0	0	2759.944237	0.007791172	0	0	0	0.007791172	0.434439828	0	0	0.434439828
Sacramento	2019	LD2	Aggregate	Aggregate	Electricity	13.79122798	145870.3313	1098470.3313	0	145870.3313	23300.54822	0	0	0	0	0	0	0	0	0	0	0	0
Sacramento	2019	LD2	Aggregate	Aggregate	Plug-in Hyt	216.3666897	3569150.691	1898414.02	1670736.648	910652.6619	614.4402964	0	28.30922715	642.7495236	0.002094109	0	0.014578412	0.016672521	0.002666015	0	0.007263218	0.009292933	0
Sacramento	2019	LHD1	Aggregate	Aggregate	Gasoline	24545.37007	284248994.1	284248994.1	0	119580447.4	297560.3668	1091.882998	3411.598578	302063.8483	4.440027312	1.093623229	5.274508878	10.80816852	5.212509262	0.027410704	7.122898919	12.36299016	0
Sacramento	2019	LHD1	Aggregate	Aggregate	Diesel	15788.07032	184147210.1	184147210.1	0	69440258.69	129379.751	793.8116483	0	130173.5626	2.448933964	0.029012939	0	2.478846903	20.36550281	0.029012939	0	20.36550281	0
Sacramento	2019	LHD2	Aggregate	Aggregate	Gasoline	3308.554868	40758587.61	40758587.61	0	16118659.86	46498.0193	168.7080203	469.3485676	47.13613861	0.540470558	0.14892161	0.663164179	1.32556347	0.16508080	0.003820803	0.958975859	1.577864742	0
Sacramento	2019	LHD2	Aggregate	Aggregate	Diesel	5186.061845	66108839.15	66108839.15	0	21331561.8	57125.79275	414.0021506	0	75295.7949	0.150470558	0.009531654	0	0.150470558	8.992098715	0.009531654	0	8.992098715	0
Sacramento	2019	MCY	Aggregate	Aggregate	Gasoline	26524.19585	50954561.7	50954561.7	0	18407791.92	11075.46316	0	1207.065951	12282.5728	12.55010242	0	4.643782679	17.1938851	2.602249326	0	0.226608726	2.828858052	0
Sacramento	2019	MDV	Aggregate	Aggregate	Gasoline	154813.5932	1764478605	1764478605	0	245782569.7	927486.2709	0	32985.47052	960471.7415	16.21743424	0	18.216734424	58.4063102	6.26473614	0	14.69346245	41.17072565	0
Sacramento	2019	MDV	Aggregate	Aggregate	Diesel	2386.724958	33353564.42	33353564.42	0	503592.066	1589.05534	0	0	1589.05534	0.027875304	0	0	0.027875304	2.94250649	0	0	2.94250649	0
Sacramento	2019	MDV	Aggregate	Aggregate	Electricity	7.846754749	61783.9147	0	61783.9147	10084.07965	0	0	0	0	0	0	0	0	0	0	0	0	0
Sacramento	2019	MDV	Aggregate	Aggregate	Plug-in Hyt	367.2485072	5872405.02	3173104.655	2699045.897	1027.035526	0	59.78035808	1086.815884	0.003493992	0	0.024699114	0.00441235	0	0.024699114	0.02228602	0.016272256	0	0.016272256
Sacramento	2019	MH	Aggregate	Aggregate	Gasoline	3815.595406	10917583.17	10917583.17	0	124590.7301	23485.39089	0	4.625926248	23490.01681	0.308568716	0	0.005992651	0.134561367	0.394137346	0	0.005316477	0.399453823	0
Sacramento	2019	MH	Aggregate	Aggregate	Diesel	1114.195752	3338961.539	3338961.539	0	36434.2011	3972.306202	0	3972.306202	0.024958549	0	0.024958549	0.62527569	0	0.024958549	0.052431343	0	0.052431343	0
Sacramento	2019	Motor Coach	Aggregate	Aggregate	Diesel	93.17614943	3665996.94	3665996.94	0	625227.1728	7107.421385	333.0904337	0	7440.51819	0.03331188	0.008795636	0	0.042107516	1.118770622	0.008795636	0	1.118770622	0
Sacramento	2019	OBUS	Aggregate	Aggregate	Gasoline	702.177799	11078346.09	11078346.09	0	459480.953	22582.72107	98.39769202	166.0351668	22847.15393	0.27371487	0.048799798	0.192050392	0.514565061	0.048799798	0.001283554	0.156623959	0.576593325	0
Sacramento	2019	POT	Aggregate	Aggregate	Diesel	0	689411.075	689411.075	0	0	16576.54929	0	0	16576.54929	0.128971538	0	0	0.128971538	2.609293638	0	0	2.609293638	0
Sacramento	2019	SBUS	Aggregate	Aggregate	Gasoline	173.0249428	2779900.44	2779900.44	0	226316.6252	2671.3988	165.6177999	17.38092561	2854.39725	0.484896837	0.130689827	0.026891184	0.642567848	0.280795126	0.004100038	0.009866158	0.298761321	0
Sacramento	2019	SBUS	Aggregate	Aggregate	Diesel	945.1029375	7136443.497	7136443.497	0	4475024.605	9247.754107	790.6932765	0	10038.44778	0.030561136	0.003006288	0	0.033367424	1.455677266	0.124462028	0	1.455677266	0
Sacramento	2019	SBUS	Aggregate	Aggregate	Natural Gas	14.94165549	126516.9311	126516.9311	0	17917.5526	1978.92408	23.930315	0	183.2420611	0.304407243	0.057741622	0	0.321488685	0.032476742	0.004878351	0	0.032476742	
Sacramento	2019	CAIRP heavy	Aggregate	Aggregate	Diesel	72.2691976	4789996.81	4789996.81	0	51187195.12	5772.995499	16.27738516	0	5899.177884	0.007295933	0.0001312	0	0.020930813	0.877231083	0.032054332	0	0.877231083	
Sacramento	2019	CAIRP small	Aggregate	Aggregate	Diesel	61.93200968	1268932.566	1268932.566	0	442037.6457	1576.386218	13.9638102	0	1590.350028	0.005199942	0.000103355	0	0.005003276	0.248136959	0.002189026	0	0.248136959	
Sacramento	2019	CAIRP heavy	Aggregate	Aggregate	Diesel	1597.805117	25791034.02	25791034.02	0	5921033.312	32631.32971	1319.6901	0	93051.01981	0.244949094	0.001184394	0	0.262784928	5.138456299	0.207730748	0	5.138456299	
Sacramento	2019	CAIRP heavy	Aggregate	Aggregate	Natural Gas	5.920495241	197854.6711	197854.6711	0	30064.06629	206.6663104	13.98240703	0	220.6487174	0.132213404	0.053202474	0	0.18553877	0.042130279	0.002850405	0	0.042130279	
Sacramento	2019	CAIRP small	Aggregate	Aggregate	Diesel	7785.752606	93662058.04	93662058.04	0	29978276.35	122473.3176	6389.538978	0	128862.8566	1.242088103	0.067321774	0	1.309495979	10.005769241	0.002850405	0	10.005769241	
Sacramento	2019	CAIRP small	Aggregate	Aggregate	Diesel	36.52038804	2809551.143	2809551.143	0	262842.0589	3622.432214	1.988842336	0	3270.632057	0.013485956	6.72288E-05	0	0.013535183	0.513535482	0.001290569	0	0.513535482	
Sacramento	2019	CAIRP small	Aggregate	Aggregate	Diesel	31.296258	641232.8804	641232.8804	0	214286.6588	796.5992069	7.056367321	0	803.6555742	0.0026277	5.07024E-05	0	0.002678402	0.011931673	0.001107334	0	0.011931673	
Sacramento	2019	CAIRP small	Aggregate	Aggregate	Diesel	4888.602273	55744636.09	55744636.09	0	7824501.254	78991.25257	5790.15682	0	84781.40939	0.380704512	0.04167943	0	0.422389942	12.43991307	0.911421255	0	12.43991307	
Sacramento	2019	Public	Aggregate	Aggregate	Natural Gas	11.91249465	721281.191	721281.191	0	17917.5526	1978.92408	23.930315	0	183.2420611	0.304407243	0.057741622	0	0.321488685	0.032476742	0.004878351	0	0.032476742	
Sacramento	2019	Public	Aggregate	Aggregate	Diesel	54.63475099	717813.7451																







CY	Season	AvgDays	Code	Equipment		MaxHP	Class	C/R	Pre	Hand	Port	County	Air Basin	Air Dist.	Population	Activity	Consumption	ROG Exhaust	CO Exhaust	NOX Exhaust	CO2 Exhaust	SO2 Exhaust	PM Exhaust	N2O Exhaust	CH4 Exhaust	
				t	Fuel																					
2019	Annual	Mon-Sun	2260001011	Off-Road M/G2	15	Recreation U	N	NHH	NP		Monterey	NCC	MBU	1.23E+02	4.57E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2019	Annual	Mon-Sun	2260001011	Off-Road M/G2	25	Recreation U	N	NHH	NP		Monterey	NCC	MBU	1.06E+02	3.93E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2019	Annual	Mon-Sun	2260001011	Off-Road M/G2	50	Recreation U	N	NHH	NP		Monterey	NCC	MBU	8.65E+02	3.20E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2019	Annual	Mon-Sun	2260001011	Off-Road M/G2	120	Recreation U	N	NHH	NP		Monterey	NCC	MBU	4.14E+02	1.53E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2019	Annual	Mon-Sun	2260001021	Snowmobi G2	25	Recreation U	N	NHH	P		Monterey	NCC	MBU	1.96E+00	3.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2019	Annual	Mon-Sun	2260001021	Snowmobi G2	50	Recreation U	N	NHH	P		Monterey	NCC	MBU	9.26E+00	1.46E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2019	Annual	Mon-Sun	2260001021	Snowmobi G2	120	Recreation U	N	NHH	P		Monterey	NCC	MBU	1.68E+01	2.65E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2019	Annual	Mon-Sun	2260001031	All Terrain G2	15	Recreation U	N	NHH	NP		Monterey	NCC	MBU	1.02E+02	3.78E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2019	Annual	Mon-Sun	2260001031	All Terrain G2	25	Recreation U	N	NHH	NP		Monterey	NCC	MBU	6.65E+01	2.46E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2019	Annual	Mon-Sun	2260001031	All Terrain G2	50	Recreation U	N	NHH	NP		Monterey	NCC	MBU	8.76E+01	3.24E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2019	Annual	Mon-Sun	2265001011	Off-Road M/G4	15	Recreation U	N	NHH	NP		Monterey	NCC	MBU	2.41E+02	8.91E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2019	Annual	Mon-Sun	2265001011	Off-Road M/G4	25	Recreation U	N	NHH	NP		Monterey	NCC	MBU	3.88E+02	1.44E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2019	Annual	Mon-Sun	2265001011	Off-Road M/G4	50	Recreation U	N	NHH	NP		Monterey	NCC	MBU	4.05E+02	1.50E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2019	Annual	Mon-Sun	2265001031	All Terrain G4	15	Recreation U	N	NHH	NP		Monterey	NCC	MBU	8.34E+01	3.09E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2019	Annual	Mon-Sun	2265001031	All Terrain G4	25	Recreation U	N	NHH	NP		Monterey	NCC	MBU	1.16E+03	4.30E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2019	Annual	Mon-Sun	2265001031	All Terrain G4	50	Recreation U	N	NHH	NP		Monterey	NCC	MBU	5.24E+01	1.94E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2019	Annual	Mon-Sun	2260001010	Off-Road M/G2	15	Recreation U	N	NHH	NP		Monterey	NCC	MBU	3.08E+02	1.14E+03	4.32E+01	4.35E-02	6.81E-02	1.33E-05	1.45E-01	1.17E-04	5.28E-04	4.88E-05	2.71E-03		
2019	Annual	Mon-Sun	2260001010	Off-Road M/G2	25	Recreation U	N	NHH	NP		Monterey	NCC	MBU	2.65E+02	9.82E+02	3.72E+01	3.75E-02	5.86E-02	1.14E-05	1.24E-01	1.88E-04	4.55E-04	4.20E-05	2.33E-03		
2019	Annual	Mon-Sun	2260001010	Off-Road M/G2	50	Recreation U	N	NHH	NP		Monterey	NCC	MBU	2.16E+03	7.99E+03	3.03E+02	3.05E-01	4.77E-01	9.30E-05	1.01E+00	2.42E-03	3.70E-03	3.42E-04	1.90E-02		
2019	Annual	Mon-Sun	2260001010	Off-Road M/G2	120	Recreation U	N	NHH	NP		Monterey	NCC	MBU	1.03E+03	3.82E+03	1.45E+02	1.46E-01	2.28E-01	4.45E-05	4.84E-01	1.71E-03	1.77E-03	1.64E-04	9.07E-03		
2019	Annual	Mon-Sun	2260001020	Snowmobi G2	25	Recreation U	N	NHH	P		Monterey	NCC	MBU	5.65E+00	8.89E-01	6.73E-01	3.91E-04	1.36E-03	3.19E-05	2.86E-03	4.99E-08	1.27E-05	2.76E-06	2.43E-05		
2019	Annual	Mon-Sun	2260001020	Snowmobi G2	50	Recreation U	N	NHH	P		Monterey	NCC	MBU	2.66E+01	4.19E+00	6.03E+00	3.51E-03	1.22E-02	2.86E-04	2.56E-02	4.47E-07	1.14E-04	1.83E-05	2.18E-04		
2019	Annual	Mon-Sun	2260001020	Snowmobi G2	120	Recreation U	N	NHH	P		Monterey	NCC	MBU	4.84E+01	7.63E+00	1.86E+01	1.07E-02	3.76E-02	8.94E-04	7.98E-02	1.39E-06	3.53E-04	4.44E-05	6.67E-04		
2019	Annual	Mon-Sun	2260001030	All Terrain G2	15	Recreation U	N	NHH	NP		Monterey	NCC	MBU	3.37E+02	1.25E+03	4.72E+01	4.76E-02	7.43E-02	1.45E-05	1.58E-01	1.57E-04	5.77E-04	5.33E-05	2.96E-03		
2019	Annual	Mon-Sun	2260001030	All Terrain G2	25	Recreation U	N	NHH	NP		Monterey	NCC	MBU	2.19E+02	8.11E+02	3.08E+01	3.10E-02	4.84E-02	9.44E-06	1.03E-01	1.40E-04	3.76E-04	3.47E-05	1.92E-03		
2019	Annual	Mon-Sun	2260001030	All Terrain G2	50	Recreation U	N	NHH	NP		Monterey	NCC	MBU	2.88E+02	1.07E+03	4.05E+01	4.08E-02	6.37E-02	1.24E-05	1.35E-01	2.42E-04	4.94E-04	4.57E-05	2.53E-03		
2019	Annual	Mon-Sun	2260001050	Golf Carts G2	15	Recreation U	N	NHH	NP		Monterey	NCC	MBU	1.02E+03	3.07E+03	1.16E+03	5.23E-02	3.15E+00	3.93E-02	6.02E+00	2.48E-04	2.81E-03	5.51E-03	3.25E-03		
2019	Annual	Mon-Sun	2260001060	Specialty V/G2	15	Recreation U	N	NHH	NP		Monterey	NCC	MBU	2.32E+03	4.22E+02	1.55E+02	5.59E-03	4.24E-01	4.26E-03	8.10E-01	3.34E-05	3.05E-04	6.66E-04	3.47E-04		
2019	Annual	Mon-Sun	2260002006	Tampers/RG2	15	Constructi U	P	NHH	NP		Monterey	NCC	MBU	2.35E+01	1.17E+01	2.37E+00	1.49E-04	6.39E-03	1.15E-04	1.22E-02	5.03E-07	1.02E-04	1.82E-05	9.25E-06		
2019	Annual	Mon-Sun	2260002009	Plate Comj/G2	15	Constructi U	P	NHH	NP		Monterey	NCC	MBU	2.02E+00	1.14E+00	2.30E-01	1.44E-05	6.12E-04	1.12E-05	1.19E-03	4.89E-08	9.94E-06	1.77E-06	8.97E-07		
2019	Annual	Mon-Sun	2260003040	Other Gen/G2	15	Industrial E U	N	NHH	NP		Monterey	NCC	MBU	4.58E-01	4.71E-01	1.85E-01	8.35E-06	5.04E-04	6.27E-06	9.64E-04	3.97E-08	4.49E-07	8.63E-07	5.19E-07		
2019	Annual	Mon-Sun	2260004010	Lawn Mow/G2	15	Lawn and (C	N	NHH	NP		Monterey	NCC	MBU	4.02E+02	2.52E+02	2.85E+01	3.22E-03	5.87E-04	6.27E-04	1.72E-01	7.07E-06	5.42E-04	2.23E-04	2.00E-04		
2019	Annual	Mon-Sun	2260004010	Lawn Mow/G2	15	Lawn and (C	N	NHH	NP		Monterey	NCC	MBU	3.02E+03	1.28E+02	1.63E+01	2.09E-03	3.94E-02	4.32E-04	8.74E-02	3.60E-06	2.48E-04	1.08E-04	1.30E-04		
2019	Annual	Mon-Sun	2260004020	Chainsaws G2	2	Lawn and (C	N	HH	NP		Monterey	NCC	MBU	7.20E+02	5.71E+02	3.40E+01	2.85E-02	5.15E-02	4.47E-04	1.39E-01	5.73E-06	8.10E-05	2.31E-04	1.77E-03		
2019	Annual	Mon-Sun	2260004020	Chainsaws G2	2	Lawn and (C	N	HH	NP		Monterey	NCC	MBU	8.10E+03	1.09E+02	5.28E+00	2.05E-03	1.06E-02	8.78E-05	2.65E-02	1.09E-06	2.74E-05	4.45E-05	1.27E-04		
2019	Annual	Mon-Sun	2260004020	Chainsaws G2	15	Lawn and (C	N	HH	NP		Monterey	NCC	MBU	5.07E+02	4.02E+02	5.80E+01	4.85E-02	8.77E-02	7.61E-04	2.37E-01	9.76E-06	1.38E-04	2.60E-04	3.01E-03		
2019	Annual	Mon-Sun	2260004020	Chainsaws G2	15	Lawn and (C	N	HH	NP		Monterey	NCC	MBU	5.71E+03	7.66E+01	8.88E+00	3.35E-03	1.77E-02	1.49E-04	4.51E-02	1.86E-06	4.97E-05	5.01E-05	2.08E-04		
2019	Annual	Mon-Sun	2260004021	Chainsaws G2	15	Lawn and (C	P	HH	NP		Monterey	NCC	MBU	6.32E+02	5.00E+02	7.21E+01	6.03E-02	1.09E-01	9.48E-04	2.95E-01	1.21E-05	1.72E-04	3.24E-04	3.75E-03		
2019	Annual	Mon-Sun	2260004021	Chainsaws G2	15	Lawn and (C	P	HH	NP		Monterey	NCC	MBU	7.10E+03	9.53E+01	1.16E+01	4.81E-02	2.41E-02	1.72E-04	5.62E-02	2.31E-06	4.58E-05	6.00E-05	2.99E-04		
2019	Annual	Mon-Sun	2260004025	Trimmers/G2	2	Lawn and (C	N	HH	NP		Monterey	NCC	MBU	2.35E+03	7.81E+02	3.46E+01	1.87E-02	6.15E-02	5.34E-04	1.66E-01	6.85E-06	9.68E-05	2.94E-04	1.16E-03		
2019	Annual	Mon-Sun	2260004025	Trimmers/G2	2	Lawn and (C	N	HH	NP		Monterey	NCC	MBU	2.62E+04	1.54E+03	6.55E+01	2.95E-02	1.21E-01	1.06E-03	3.28E-01	1.35E-05	1.91E-04	5.80E-04	1.84E-03		
2019	Annual	Mon-Sun	2260004030	Leaf Blow/G2	2	Lawn and (C	N	HH	P	</																



2019 Annual	Mon-Sun	226500300	Sweepers/ G4	175 Industrial EU	N	NHH	NP	Monterey NCC	MBU	2.08E-02	2.95E-02	2.67E-01	8.92E-07	9.06E-05	7.65E-06	2.43E-03	2.42E-08	1.94E-07	2.50E-07	4.66E-08
2019 Annual	Mon-Sun	226500304	Other Gen/G4	15 Industrial EU	N	NHH	NP	Monterey NCC	MBU	5.09E+00	5.23E+00	2.30E+00	1.26E-04	7.00E-03	8.68E-05	1.07E-02	3.05E-07	5.68E-06	1.03E-05	6.61E-06
2019 Annual	Mon-Sun	226500304	Other Gen/G4	25 Industrial EU	N	NHH	NP	Monterey NCC	MBU	1.67E+00	1.97E+00	2.00E+00	1.07E-04	6.28E-03	7.90E-05	9.04E-03	2.29E-07	4.96E-06	6.18E-06	5.62E-06
2019 Annual	Mon-Sun	226500304	Other Gen/G4	50 Industrial EU	N	NHH	NP	Monterey NCC	MBU	1.47E+00	2.88E+00	5.24E+00	7.10E-05	6.33E-03	1.39E-04	4.03E-02	4.90E-07	3.09E-06	9.90E-06	3.71E-06
2019 Annual	Mon-Sun	226500304	Other Gen/G4	120 Industrial EU	N	NHH	NP	Monterey NCC	MBU	4.84E-01	9.47E-01	3.82E+00	2.20E-05	1.48E-03	1.15E-04	3.45E-02	3.33E-07	2.67E-06	5.36E-06	1.15E-06
2019 Annual	Mon-Sun	226500304	Other Gen/G4	175 Industrial EU	N	NHH	NP	Monterey NCC	MBU	4.69E-02	9.17E-02	7.87E-01	3.09E-06	2.78E-04	3.22E-05	7.15E-03	7.10E-08	5.70E-07	7.69E-07	1.61E-07
2019 Annual	Mon-Sun	226500305	Other Mat/G4	50 Industrial EU	N	NHH	NP	Monterey NCC	MBU	2.08E-02	2.21E-02	5.43E-02	1.10E-06	6.67E-05	1.87E-06	4.14E-04	5.03E-09	3.17E-08	9.94E-08	5.76E-08
2019 Annual	Mon-Sun	226500305	Other Mat/G4	120 Industrial EU	N	NHH	NP	Monterey NCC	MBU	9.22E-01	9.76E-01	2.64E+00	3.24E-05	1.17E-03	2.38E-02	2.30E-07	1.85E-06	5.19E-06	1.59E-06	1.70E-06
2019 Annual	Mon-Sun	226500401	Lawn Mow/G4	5 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	2.38E+03	1.49E+03	1.87E+02	2.27E-02	4.29E-01	5.55E-03	1.02E+00	3.51E-05	3.21E-03	1.32E-03	1.19E-03
2019 Annual	Mon-Sun	226500401	Lawn Mow/G4	5 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	3.78E+04	1.60E+03	2.22E+02	1.86E-02	6.21E-01	4.75E-03	1.09E+00	3.77E-05	2.63E-03	1.22E-03	9.69E-04
2019 Annual	Mon-Sun	226500401	Tillers G4	5 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	2.47E+02	3.78E+01	5.58E+00	5.15E-04	1.48E-02	1.24E-04	2.87E-02	9.90E-07	7.58E-05	3.11E-05	2.70E-05
2019 Annual	Mon-Sun	226500401	Tillers G4	5 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	9.60E+02	4.73E+01	7.19E+00	6.48E-04	1.98E-02	1.63E-04	3.58E-02	1.24E-06	9.00E-05	3.92E-05	3.39E-05
2019 Annual	Mon-Sun	226500402	Trimmers/ G4	5 Lawn and (C	P	NHH	NP	Monterey NCC	MBU	4.35E+02	1.62E+02	5.15E+00	6.95E-04	1.24E-02	3.00E-04	2.75E-02	9.51E-07	8.98E-06	9.85E-05	3.64E-05
2019 Annual	Mon-Sun	226500402	Trimmers/ G4	5 Lawn and (C	P	NHH	NP	Monterey NCC	MBU	2.03E+03	1.19E+02	4.05E+00	5.09E-04	1.07E-02	2.01E-04	2.03E-02	7.02E-07	1.22E-05	6.90E-05	2.67E-05
2019 Annual	Mon-Sun	226500403	Leaf Blow/G4	5 Lawn and (C	N	NHH	P	Monterey NCC	MBU	1.11E+02	1.88E+01	1.30E+00	9.95E-05	2.36E-05	6.42E-03	2.22E-07	1.51E-05	9.30E-06	5.21E-06	
2019 Annual	Mon-Sun	226500403	Leaf Blow/G4	5 Lawn and (C	N	NHH	P	Monterey NCC	MBU	9.52E+01	1.25E+00	9.33E-02	6.93E-06	2.85E-04	1.75E-06	4.27E-04	1.47E-08	8.54E-07	6.34E-07	3.63E-07
2019 Annual	Mon-Sun	226500403	Leaf Blow/G4	15 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	1.30E+03	9.69E+02	3.36E+02	1.61E-02	1.03E+00	1.11E-02	1.57E+00	4.47E-05	7.28E-04	1.56E-03	8.41E-04
2019 Annual	Mon-Sun	226500404	Rear Engin G4	15 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	1.14E+03	8.83E+01	3.05E+01	1.28E-03	9.34E-02	9.00E-04	1.43E-01	4.08E-06	5.73E-05	1.33E-04	6.72E-05
2019 Annual	Mon-Sun	226500404	Rear Engin G4	25 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	5.96E+00	4.43E+00	2.99E+00	1.38E-04	9.40E-03	9.71E-05	1.36E-02	3.44E-07	6.29E-06	1.01E-05	7.22E-06
2019 Annual	Mon-Sun	226500404	Rear Engin G4	25 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	5.14E+00	3.97E-01	2.67E-01	1.11E-05	8.42E-04	7.41E-06	1.22E-03	3.08E-08	4.87E-07	9.26E-07	5.83E-07
2019 Annual	Mon-Sun	226500405	Front Mow/G4	15 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	5.98E+01	4.44E+01	2.46E+01	1.18E-03	7.50E-02	8.14E-04	1.15E-01	3.27E-06	5.33E-05	9.19E-05	6.16E-05
2019 Annual	Mon-Sun	226500405	Front Mow/G4	15 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	1.93E+03	1.49E+02	8.24E+01	3.46E-03	5.25E-01	2.43E-03	3.86E-01	1.10E-05	1.55E-04	2.89E-04	1.81E-04
2019 Annual	Mon-Sun	226500405	Front Mow/G4	25 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	4.68E+01	3.48E+01	2.59E+01	1.20E-03	8.16E-02	8.43E-04	1.18E-01	2.98E-06	5.46E-05	8.35E-05	6.27E-05
2019 Annual	Mon-Sun	226500405	Front Mow/G4	25 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	1.51E+03	1.17E+02	8.70E+01	3.62E-03	2.74E-01	2.41E-03	3.95E-01	1.00E-05	1.58E-04	2.56E-04	1.90E-04
2019 Annual	Mon-Sun	226500405	Shredders G4	5 Lawn and (C	P	NHH	NP	Monterey NCC	MBU	4.69E+01	1.74E+01	4.94E+00	6.67E-04	1.19E-02	2.88E-04	2.64E-02	9.13E-07	8.62E-06	3.41E-05	3.49E-05
2019 Annual	Mon-Sun	226500405	Shredders G4	5 Lawn and (C	P	NHH	NP	Monterey NCC	MBU	1.75E+03	4.30E+00	1.47E+00	1.24E-04	4.61E-03	4.73E-05	6.52E-03	2.25E-07	5.29E-06	6.78E-06	6.49E-06
2019 Annual	Mon-Sun	226500405	Lawn & Ga G4	15 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	2.39E+02	8.42E+01	5.61E+01	2.26E-03	1.72E-01	1.58E-03	2.63E-01	7.50E-06	1.03E-04	1.76E-04	1.18E-04
2019 Annual	Mon-Sun	226500405	Lawn & Ga G4	15 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	1.55E+03	6.21E+01	4.14E+01	1.58E-03	1.27E-01	1.11E-03	1.94E-01	5.53E-06	7.07E-05	1.27E-04	8.25E-05
2019 Annual	Mon-Sun	226500405	Lawn & Ga G4	25 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	9.43E+01	3.32E+01	3.53E+01	1.40E-03	1.11E-01	9.34E-04	1.60E-01	4.06E-06	6.29E-05	8.63E-05	7.33E-05
2019 Annual	Mon-Sun	226500405	Lawn & Ga G4	25 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	6.12E+02	2.45E+01	2.60E+01	9.93E-04	6.42E-04	1.18E-01	3.00E-06	4.31E-05	6.12E-05	5.20E-05	
2019 Annual	Mon-Sun	226500405	Lawn & Ga G4	50 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	1.36E+00	3.89E-01	5.99E-01	8.12E-06	4.58E-04	1.50E-05	5.03E-03	6.12E-08	3.86E-07	1.15E-06	4.25E-07
2019 Annual	Mon-Sun	226500406	Wood Split/G4	5 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	8.03E+01	2.83E+01	8.62E+00	9.45E-04	2.13E-02	2.30E-04	4.62E-02	1.59E-06	1.36E-04	3.78E-05	4.95E-05
2019 Annual	Mon-Sun	226500406	Wood Split/G4	5 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	2.01E+03	6.05E+00	2.20E+00	1.35E-04	6.90E-03	3.58E-05	9.88E-03	3.41E-07	1.76E-05	6.62E-06	7.08E-06
2019 Annual	Mon-Sun	226500406	Chippers/S/G4	15 Lawn and (C	P	NHH	P	Monterey NCC	MBU	1.13E+00	3.91E+00	3.48E+00	2.82E-04	1.10E-02	3.00E-04	1.59E-02	4.53E-07	1.33E-04	1.39E-05	1.45E-05
2019 Annual	Mon-Sun	226500406	Chippers/S/G4	15 Lawn and (C	P	NHH	P	Monterey NCC	MBU	2.02E+00	9.13E-02	8.16E-02	5.49E-06	2.52E-04	3.33E-06	3.71E-04	1.06E-08	3.02E-06	2.72E-07	2.87E-07
2019 Annual	Mon-Sun	226500406	Chippers/S/G4	25 Lawn and (C	P	NHH	P	Monterey NCC	MBU	6.43E+00	2.22E+01	3.34E+01	5.27E-05	1.04E-01	1.72E-03	1.48E-01	3.74E-06	1.24E-03	9.84E-05	1.43E-04
2019 Annual	Mon-Sun	226500406	Chippers/S/G4	25 Lawn and (C	P	NHH	P	Monterey NCC	MBU	1.14E+01	5.17E-01	7.75E-01	5.16E-05	2.45E-03	2.83E-05	3.44E-03	8.71E-08	2.80E-05	1.92E-06	2.70E-06
2019 Annual	Mon-Sun	226500407	Commerci/G4	15 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	8.46E+01	1.85E+02	1.04E+02	6.05E-03	3.18E-01	4.14E-03	1.38E-05	2.70E-04	4.25E-04	3.15E-04	
2019 Annual	Mon-Sun	226500407	Commerci/G4	25 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	4.17E+01	9.13E+01	9.13E+01	5.00E-03	2.87E-01	3.69E-03	4.11E-01	1.04E-05	2.30E-04	2.87E-04	2.60E-04
2019 Annual	Mon-Sun	226500407	Commerci/G4	50 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	1.68E+01	3.38E+01	5.82E+01	1.17E-03	9.50E-02	2.09E-03	4.08E-01	4.96E-06	3.13E-05	1.30E-04	6.10E-05
2019 Annual	Mon-Sun	226500407	Commerci/G4	120 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	1.11E-01	2.23E-01	5.48E-01	2.65E-06	1.47E-04	1.52E-05	5.05E-03	4.88E-08	3.91E-07	9.28E-07	1.38E-07
2019 Annual	Mon-Sun	226500407	Other Law/G4	5 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	7.43E+01	1.40E+01	2.99E+00	2.75E-04	7.93E-03	6.61E-05	1.53E-02	5.30E-07	4.04E-05	1.44E-05	1.44E-05
2019 Annual	Mon-Sun	226500407	Other Law/G4	5 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	2.28E+03	2.68E+01	6.46E+00	4.69E-04	1.98E-02	1.19E-04	2.95E-02	1.02E-06	5.81E-05	2.52E-05	2.45E-05
2019 Annual	Mon-Sun	226500407	Other Law/G4	15 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	3.30E+01	6.20E+00	2.91E+00	1.18E-04	8.90E-03	8.27E-05	1.26E-02	3.88E-07	5.41E-06	1.08E-05	6.19E-06
2019 Annual	Mon-Sun	226500407	Other Law/G4	15 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	1.01E+03	1.19E+01	5.65E+00	2.43E-04	1.75E-02	1.60E-04	2.62E-02	7.46E-07	9.04E-06	2.08E-05	1.27E-05
2019 Annual	Mon-Sun	226500407	Other Law/G4	25 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	6.97E-01	1.31E-01	1.35E-01	5.40E-06	4.24E-04	6.62E-06	6.12E-04	1.55E-08	2.43E-07	3.37E-07	2.83E-07
2019 Annual	Mon-Sun	226500407	Other Law/G4	25 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	2.15E+01	2.53E-01	2.63E-01	1.13E-05	8.33E-04	6.66E-06	1.18E-03	3.00E-08	4.08E-07	6.32E-07	5.90E-07
2019 Annual	Mon-Sun	226500407	Other Law/G4	50 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	5.05E-02	8.44E-03	1.80E-02	2.58E-07	1.28E-05	4.85E-07	1.52E-04	1.85E-09	1.17E-08	3.05E-08	1.35E-08
2019 Annual	Mon-Sun	226500407	Other Law/G4	120 Lawn and (C	N	NHH	NP	Monterey NCC	MBU	1.21E-01	2.03E-02	1.11E-01	8.56E-07	2.56E-05	4.27E-06	1.02E-03	9.89E-09	7.93E-08	1.45E-07	4.48E-08
2019 Annual	Mon-Sun	226500501	2-Wheel Tr/G4	5 Agricultura P	N	NHH	NP	Monterey NCC	MBU	3.20E+01	1.41E+01	3.02E+00	4.32E-04	7.01E-03	1.87E-04	1.65E-02	5.70E-07	5.38E-06	2.45E-05	2.26E-05
2019 Annual	Mon-Sun	226500501	2-Wheel Tr/G4	15 Agricultura P	P	NHH	NP	Monterey NCC	MBU	3.73E+01	3.40E+01	1.73E+01	1.34E-03	5.51E-02	9.51E-04	7.97E-02	2.27E-06	6.68E-04	8.81E-05	7.00E-05
2019 Annual	Mon-Sun	226500501	2-Wheel Tr/G4	25 Agricultura P	P	NHH	NP	Monterey NCC	MBU	1.00E+00	9.11E-01	9.56E-01	7.57E-05	2.97E-03	4.72E-05	4.28E-03	1.08E-07	3.59E-05	3.28E-06	3.96E-06
2019 Annual	Mon-Sun	226500501	Agricultura G4	120 Agricultura P	N	NHH	NP	Monterey NCC	MBU	1.20E+01	1.80E+01	8.98E+01	1.56E-03	4.91E-02	6.72E-03	7.83E-01	7.57E-06	6.07E-05		



2019 Annual	Mon-Sun	226500811	Hydrant triG4	175	Airport	Grc U	N	NHH	NP	Monterey	NCC	MBU	3.22E-01	1.35E+00	1.08E+01	1.52E-04	5.13E-03	6.52E-04	9.54E-02	8.10E-07	7.60E-06	1.49E-05	2.87E-06
2019 Annual	Mon-Sun	226500905	Transport IG4	15	Transport	I U	N	NHH	NP	Monterey	NCC	MBU	7.05E+01	1.45E+02	8.88E+01	5.15E-03	2.70E-01	3.52E-03	4.12E-01	1.18E-05	2.30E-04	3.49E-04	2.69E-04
2019 Annual	Mon-Sun	2266003010	Aerial Lifts C4	15	Industrial	F U	P	NHH	NP	Monterey	NCC	MBU	9.90E-02	1.02E-01	8.15E-02	1.89E-07	7.31E-05	2.00E-06	4.53E-04	0.00E+00	2.07E-07	0.00E+00	1.58E-06
2019 Annual	Mon-Sun	2266003010	Aerial Lifts C4	25	Industrial	F U	P	NHH	NP	Monterey	NCC	MBU	4.25E+00	4.37E+00	5.20E+00	1.82E-05	4.83E-03	1.33E-04	2.84E-02	0.00E+00	1.46E-05	0.00E+00	1.52E-04
2019 Annual	Mon-Sun	2266003020	Forklifts C4	25	Industrial	F U	N	NHH	NP	Monterey	NCC	MBU	4.17E-02	1.43E-01	1.40E-01	8.88E-07	1.41E-04	3.93E-06	7.33E-04	0.00E+00	4.82E-07	0.00E+00	7.44E-06
2019 Annual	Mon-Sun	2266003020	Forklifts C4	50	Industrial	F U	N	NHH	NP	Monterey	NCC	MBU	2.82E+01	1.39E+02	1.86E+02	1.23E-04	2.04E-02	5.35E-03	1.27E+00	0.00E+00	1.13E-04	0.00E+00	1.03E-03
2019 Annual	Mon-Sun	2266003020	Forklifts C4	120	Industrial	F U	N	NHH	NP	Monterey	NCC	MBU	9.91E+01	4.89E+02	1.16E+03	7.28E-04	3.44E-01	3.45E-02	7.64E+00	0.00E+00	6.79E-04	0.00E+00	6.10E-03
2019 Annual	Mon-Sun	2266003020	Forklifts C4	175	Industrial	F U	N	NHH	NP	Monterey	NCC	MBU	3.63E+00	1.79E+01	8.74E+01	3.36E-05	2.02E-02	1.73E-03	5.83E-01	0.00E+00	5.18E-05	0.00E+00	2.81E-04
2019 Annual	Mon-Sun	2266006005	Generator C4	120	Light Comr	U	N	NHH	P	Monterey	NCC	MBU	2.80E+00	8.81E-01	5.52E+00	2.06E-06	1.16E-03	1.47E-04	3.70E-02	0.00E+00	3.29E-06	0.00E+00	1.73E-05
2019 Annual	Mon-Sun	2266006005	Generator C4	175	Light Comr	U	N	NHH	P	Monterey	NCC	MBU	2.32E+00	7.30E-01	7.97E+00	2.34E-06	1.39E-03	2.07E-04	5.39E-02	0.00E+00	4.80E-06	0.00E+00	1.96E-05
2019 Annual	Mon-Sun	2266006020	Gas ComprC4	50	Light Comr	U	P	NHH	P	Monterey	NCC	MBU	4.35E-01	1.01E+01	3.46E+01	1.97E-05	3.49E-03	7.16E-04	2.38E-01	0.00E+00	1.82E-05	0.00E+00	1.65E-04
2019 Annual	Mon-Sun	2266006020	Gas ComprC4	120	Light Comr	U	P	NHH	P	Monterey	NCC	MBU	8.99E-01	2.09E+01	2.03E+02	1.07E-04	5.59E-02	4.24E-03	1.34E+00	0.00E+00	1.04E-04	0.00E+00	9.01E-04
2019 Annual	Mon-Sun	2266006020	Gas ComprC4	175	Light Comr	U	P	NHH	P	Monterey	NCC	MBU	1.45E-01	3.38E+00	5.21E+01	3.00E-05	1.14E-02	1.13E-03	3.48E-01	0.00E+00	2.77E-05	0.00E+00	2.51E-04
2019 Annual	Mon-Sun	2266006020	Gas ComprC4	250	Light Comr	U	N	NHH	P	Monterey	NCC	MBU	1.16E-01	2.70E+00	5.39E+01	2.31E-05	1.31E-02	1.10E-03	3.59E-01	0.00E+00	3.19E-05	0.00E+00	1.93E-04
2019 Annual	Mon-Sun	2266006020	Gas ComprC4	500	Light Comr	U	N	NHH	P	Monterey	NCC	MBU	1.02E-01	2.36E+00	7.59E+01	3.25E-05	1.84E-02	1.55E-03	5.05E-01	0.00E+00	4.49E-05	0.00E+00	2.72E-04
2019 Annual	Mon-Sun	2266008010	Cargo Trac C4	175	Airport	Grc U	N	NHH	NP	Monterey	NCC	MBU	3.80E-01	1.63E-01	1.50E+00	4.38E-07	2.67E-04	3.72E-05	1.02E-02	0.00E+00	9.03E-07	0.00E+00	3.67E-06
2019 Annual	Mon-Sun	2266008025	Air ConditiC4	175	Airport	Grc U	N	NHH	P	Monterey	NCC	MBU	6.34E-02	3.83E-03	4.10E-02	9.61E-09	6.85E-06	9.62E-07	2.78E-04	0.00E+00	2.47E-08	0.00E+00	8.06E-08
2019 Annual	Mon-Sun	2266008035	Baggage TL C4	120	Airport	Grc U	N	NHH	NP	Monterey	NCC	MBU	8.98E-01	2.04E+00	1.28E+01	1.18E-05	3.72E-03	4.84E-04	8.36E-02	0.00E+00	7.44E-06	0.00E+00	9.88E-05
2019 Annual	Mon-Sun	2266008035	Baggage TL C4	120	Airport	Grc U	N	NHH	NP	Monterey	NCC	MBU	2.39E-01	3.61E-01	1.22E+00	8.57E-07	3.17E-04	4.03E-05	8.06E-03	0.00E+00	7.17E-07	0.00E+00	7.18E-06
2019 Annual	Mon-Sun	2266008045	Boatload C4	120	Airport	Grc U	N	NHH	NP	Monterey	NCC	MBU	2.05E-02	4.93E-02	3.03E-01	1.07E-07	7.26E-05	6.60E-06	2.02E-03	0.00E+00	1.79E-07	0.00E+00	8.96E-07
2019 Annual	Mon-Sun	2266008040	Belt Load C4	120	Airport	Grc U	N	NHH	NP	Monterey	NCC	MBU	9.65E-02	2.73E-01	1.09E+00	1.18E-06	3.42E-04	4.53E-05	1.09E+00	0.00E+00	6.32E-07	0.00E+00	9.91E-06
2019 Annual	Mon-Sun	2266008055	Forklift C4	50	Airport	Grc U	N	NHH	NP	Monterey	NCC	MBU	1.26E+00	2.50E+00	4.05E+00	1.29E-06	3.46E-04	9.36E-05	2.79E-02	0.00E+00	2.48E-06	0.00E+00	1.08E-05
2019 Annual	Mon-Sun	2266008070	Fuel Truck C4	175	Airport	Grc U	N	NHH	NP	Monterey	NCC	MBU	4.21E-02	6.53E-02	2.53E-01	1.17E-07	5.28E-05	7.25E-06	1.70E-03	0.00E+00	1.51E-07	0.00E+00	9.83E-07
2019 Annual	Mon-Sun	2266008085	Lav Truck C4	175	Airport	Grc U	N	NHH	NP	Monterey	NCC	MBU	3.78E-02	4.01E-02	1.44E-01	5.60E-08	2.81E-05	3.88E-06	9.69E-04	0.00E+00	8.62E-08	0.00E+00	4.69E-07
2019 Annual	Mon-Sun	2266008090	Lift C4	120	Airport	Grc U	N	NHH	NP	Monterey	NCC	MBU	3.53E-02	3.30E-02	1.85E-01	9.82E-08	4.36E-05	5.41E-06	1.23E-03	0.00E+00	1.09E-07	0.00E+00	8.24E-07
2019 Annual	Mon-Sun	2266008100	Other C4	50	Airport	Grc U	N	NHH	NP	Monterey	NCC	MBU	1.85E-01	5.16E-01	1.40E+00	1.53E-06	1.63E-04	6.09E-05	9.58E-03	0.00E+00	8.52E-07	0.00E+00	1.28E-05
2019 Annual	Mon-Sun	2266008101	Passenger C4	175	Airport	Grc U	N	NHH	NP	Monterey	NCC	MBU	1.63E-02	5.37E-04	5.73E-03	1.32E-09	9.54E-07	1.34E-07	3.89E-05	0.00E+00	3.46E-09	0.00E+00	1.11E-08
2019 Annual	Mon-Sun	2266008102	Sweeper C4	50	Airport	Grc U	N	NHH	NP	Monterey	NCC	MBU	1.63E-02	1.24E-02	3.07E-02	1.18E-08	2.55E-06	8.91E-07	2.12E-04	0.00E+00	1.89E-08	0.00E+00	9.93E-08
2019 Annual	Mon-Sun	2266008105	Service Tru C4	250	Airport	Grc U	N	NHH	NP	Monterey	NCC	MBU	1.87E-01	6.66E-01	2.68E+00	1.26E-06	6.30E-04	6.22E-05	1.78E-02	0.00E+00	1.59E-06	0.00E+00	1.06E-05
2019 Annual	Mon-Sun	2266008106	Catering Tr C4	250	Airport	Grc U	N	NHH	NP	Monterey	NCC	MBU	7.14E-02	8.85E-02	1.04E+00	4.34E-07	2.09E-04	2.88E-05	7.02E-03	0.00E+00	6.24E-07	0.00E+00	3.64E-06
2019 Annual	Mon-Sun	2270002003	Pavers D	25	Constructi	U	P	NHH	NP	Monterey	NCC	MBU	1.30E-01	2.93E-01	2.49E-01	3.30E-06	1.22E-05	2.09E-05	2.73E-03	3.46E-08	8.15E-07	0.00E+00	2.98E-07
2019 Annual	Mon-Sun	2270002003	Pavers D	50	Constructi	U	P	NHH	NP	Monterey	NCC	MBU	7.56E+00	1.72E+01	2.24E+01	7.72E-04	1.68E-03	2.12E-03	2.41E-01	3.12E-06	1.72E-04	0.00E+00	6.97E-05
2019 Annual	Mon-Sun	2270002003	Pavers D	120	Constructi	U	P	NHH	NP	Monterey	NCC	MBU	8.91E+00	2.03E+01	6.43E+01	9.81E-04	4.90E-03	5.91E-03	7.02E-01	8.24E-06	4.72E-04	0.00E+00	8.85E-05
2019 Annual	Mon-Sun	2270002003	Pavers D	175	Constructi	U	P	NHH	NP	Monterey	NCC	MBU	5.54E+00	1.26E+01	7.39E+01	8.12E-04	5.60E-03	8.10E-01	9.11E-06	3.14E-04	0.00E+00	7.33E-05	
2019 Annual	Mon-Sun	2270002003	Pavers D	250	Constructi	U	N	NHH	NP	Monterey	NCC	MBU	6.68E-01	1.52E+00	1.34E+01	1.13E-04	3.69E-04	9.18E-04	1.48E-01	1.66E-06	3.40E-05	0.00E+00	1.02E-05
2019 Annual	Mon-Sun	2270002003	Pavers D	500	Constructi	U	N	NHH	NP	Monterey	NCC	MBU	6.85E-01	1.56E+00	1.65E+01	1.31E-04	5.13E-04	1.02E-03	1.82E-01	1.79E-06	3.84E-05	0.00E+00	1.18E-05
2019 Annual	Mon-Sun	2270002009	Plate ComD	15	Constructi	U	P	NHH	NP	Monterey	NCC	MBU	2.79E+00	4.59E+00	9.04E-01	1.15E-05	6.04E-05	7.22E-05	9.90E-03	1.54E-07	2.82E-06	0.00E+00	1.04E-06
2019 Annual	Mon-Sun	2270002015	Rollers D	15	Constructi	U	P	NHH	NP	Monterey	NCC	MBU	5.25E+00	1.00E+01	2.88E+00	3.67E-05	1.93E-04	2.30E-04	3.16E-02	4.91E-07	8.99E-06	0.00E+00	3.32E-06
2019 Annual	Mon-Sun	2270002015	Rollers D	25	Constructi	U	P	NHH	NP	Monterey	NCC	MBU	2.19E+00	4.18E+00	2.54E+00	3.36E-05	1.15E-04	2.12E-04	2.79E-02	3.54E-07	7.93E-06	0.00E+00	3.03E-06
2019 Annual	Mon-Sun	2270002015	Rollers D	50	Constructi	U	P	NHH	NP	Monterey	NCC	MBU	6.82E+00	1.31E+01	1.57E+01	3.92E-04	1.63E-03	1.38E-03	1.70E-01	2.20E-06	9.32E-05	0.00E+00	3.54E-05
2019 Annual	Mon-Sun	2270002015	Rollers D	120	Constructi	U	P	NHH	NP	Monterey	NCC	MBU	3.66E+01	7.04E+01	1.90E+02	2.20E-03	1.37E-02	1.44E-02	2.07E+00	2.43E-05	1.07E-03	0.00E+00	1.98E-04
2019 Annual	Mon-Sun	2270002015	Rollers D	175	Constructi	U	P	NHH	NP	Monterey	NCC	MBU	1.47E+01	2.83E+01	1.39E+02	1.18E-03	8.65E-03	8.37E-03	1.53E+00	1.72E-05	4.51E-04	0.00E+00	1.06E-04
2019 Annual	Mon-Sun	2270002015	Rollers D	250	Constructi	U	N	NHH	NP	Monterey	NCC	MBU	2.09E+00	4.01E+00	2.78E+01	1.68E-04	6.52E-04	1.47E-03	3.07E-01	3.45E-06	4.96E-05	0.00E+00	1.60E-05
2019 Annual	Mon-Sun	2270002015	Rollers D	500	Constructi	U	N	NHH	NP	Monterey	NCC	MBU	1.47E+00	2.82E+00	2.79E+01	1.79E-04	6.67E-04	1.31E-03	3.08E-01	3.02E-06	4.65E-05	0.00E+00	1.53E-05
2019 Annual	Mon-Sun	2270002018	Scrapers D	120	Constructi	U	P	NHH	NP	Monterey	NCC	MBU	3.38E-01	1.03E+00	4.42E+00	6.65E-05	3.41E-04	3.92E-04	4.82E-02	5.66E-07	3.10E-05	0.00E+00	6.00E-06
2019 Annual	Mon-Sun	2270002018	Scrapers D	175	Constructi	U	P	NHH	NP	Monterey	NCC	MBU	3.10E+00	9.41E+00	6.36E+01	6.98E-04	4.20E-03	4.62E-03	6.96E-01	7.83E-06	2.59E-04	0.00E+00	6.30E-05
2019 Annual	Mon-Sun	2270002018	Scrapers D	250	Constructi	U	N	NHH	NP	Monterey	NCC	MBU	3.02E+00	9.18E+00	8.71E+01	7.37E-04	2.37E-03	5.68E-03	9.60E-01	1.08E-05	2.08E-04	0.00E+00	6.65E-05
2019 Annual	Mon-Sun	2270002018	Scrapers D	500	Constructi	U	N	NHH	NP	Monterey	NCC	MBU	8.31E+00	2.53E+01	3.68E+02	2.94E-03	1.11E-02	2.15E-02	4.06E+00	3.98E-05	8.11E-04	0.00E+00	2.65E-04
2019 Annual	Mon-Sun	2270002018	Scrapers D	750	Constructi	U	N	NHH	NP	Monterey	NCC	MBU	4.15E-01	1.26E+00	3.18E+01	2.55E-04	1.90E-03	3.50E-01	3.52E-06	7.08E-05	0.00E+00	2.60E-05	
2019 Annual	Mon-Sun	2270002021	Paving EquD	25	Constructi	U	P	NHH	NP	Monterey	NCC	MBU	2.25E-01	5.12E-01	2.94E-01	3.90E-06	1.33E-05	2.46E-05	3.23E-03</				



2019 Annual	Mon-Sun	2270002069	Crawler TrcD	120 ConstructiU	P	NHH	NP	Monterey NCC	MBU	6.89E+01	1.96E+02	5.91E+02	8.67E-03	4.56E-02	5.12E-02	6.45E+00	7.57E-05	3.99E-03	0.00E+00	7.82E-04
2019 Annual	Mon-Sun	2270002069	Crawler TrcD	175 ConstructiU	P	NHH	NP	Monterey NCC	MBU	2.33E+01	6.64E+01	3.67E+02	3.95E-03	2.43E-02	2.59E-02	4.02E+00	4.52E-05	1.45E-03	0.00E+00	3.57E-04
2019 Annual	Mon-Sun	2270002069	Crawler TrcD	250 ConstructiU	N	NHH	NP	Monterey NCC	MBU	2.00E+01	5.71E+01	4.29E+02	3.58E-03	1.16E-02	2.71E-02	4.74E+00	5.33E-05	9.93E-04	0.00E+00	3.23E-04
2019 Annual	Mon-Sun	2270002069	Crawler TrcD	500 ConstructiU	N	NHH	NP	Monterey NCC	MBU	1.37E+01	3.91E+01	4.59E+02	3.62E-03	1.35E-02	2.60E-02	5.06E+00	4.97E-05	9.80E-04	0.00E+00	3.27E-04
2019 Annual	Mon-Sun	2270002069	Crawler TrcD	750 ConstructiU	N	NHH	NP	Monterey NCC	MBU	2.12E-01	6.03E-01	1.27E+01	1.01E-04	3.74E-04	7.35E-04	1.40E-01	1.41E-06	2.74E-05	0.00E+00	9.07E-06
2019 Annual	Mon-Sun	2270002069	Crawler TrcD	1000 ConstructiU	N	NHH	NP	Monterey NCC	MBU	2.12E-01	6.02E-01	1.80E+01	1.53E-04	5.81E-04	1.64E-03	1.98E-01	1.99E-06	4.63E-05	0.00E+00	1.38E-05
2019 Annual	Mon-Sun	2270002072	Skid Steer D	25 ConstructiU	P	NHH	NP	Monterey NCC	MBU	1.66E+01	3.81E+01	2.39E+01	3.30E-04	1.10E-03	2.04E-03	2.62E-01	3.33E-06	8.66E-05	0.00E+00	2.97E-05
2019 Annual	Mon-Sun	2270002072	Skid Steer D	50 ConstructiU	P	NHH	NP	Monterey NCC	MBU	1.51E+02	3.52E+02	4.11E+02	4.30E-03	3.55E-02	3.02E-02	4.49E+00	5.80E-05	9.38E-04	0.00E+00	3.88E-04
2019 Annual	Mon-Sun	2270002072	Skid Steer D	120 ConstructiU	P	NHH	NP	Monterey NCC	MBU	7.91E+01	1.84E+02	3.59E+02	2.13E-03	2.46E-02	1.65E-02	3.94E+00	4.62E-05	7.24E-04	0.00E+00	1.93E-04
2019 Annual	Mon-Sun	2270002075	Off-HighwzD	120 ConstructiU	P	NHH	NP	Monterey NCC	MBU	8.67E-03	2.64E-02	1.13E-01	2.02E-06	9.01E-06	1.17E-05	1.24E-03	1.45E-08	9.54E-07	0.00E+00	1.83E-07
2019 Annual	Mon-Sun	2270002075	Off-HighwzD	175 ConstructiU	P	NHH	NP	Monterey NCC	MBU	1.06E+01	3.23E+01	1.92E+02	2.47E-03	1.30E-02	1.68E-02	2.10E+00	2.37E-05	9.47E-04	0.00E+00	2.23E-04
2019 Annual	Mon-Sun	2270002075	Off-HighwzD	250 ConstructiU	N	NHH	NP	Monterey NCC	MBU	1.00E+01	3.05E+01	1.81E+02	1.84E-03	5.69E-03	1.45E-02	1.99E+00	2.24E-05	5.77E-04	0.00E+00	1.66E-04
2019 Annual	Mon-Sun	2270002075	Off-HighwzD	750 ConstructiU	N	NHH	NP	Monterey NCC	MBU	1.33E+00	4.04E+00	1.04E+02	9.94E-04	4.02E-03	7.71E-03	1.15E+00	1.15E-05	3.04E-04	0.00E+00	8.97E-05
2019 Annual	Mon-Sun	2270002075	Off-HighwzD	1000 ConstructiU	N	NHH	NP	Monterey NCC	MBU	1.40E-01	4.26E-01	1.58E+01	1.59E-04	6.64E-04	1.65E-03	1.73E-01	1.74E-06	5.04E-05	0.00E+00	1.44E-05
2019 Annual	Mon-Sun	2270002081	Other Con:D	25 ConstructiU	P	NHH	NP	Monterey NCC	MBU	2.08E-01	3.78E-01	1.31E-01	1.74E-06	5.92E-06	1.10E-05	1.44E-03	1.83E-08	4.23E-07	0.00E+00	1.57E-07
2019 Annual	Mon-Sun	2270002081	Other Con:D	15 ConstructiU	P	NHH	NP	Monterey NCC	MBU	2.87E+00	5.43E+00	2.50E+00	3.19E-05	1.67E-04	2.00E-04	2.74E-02	4.27E-07	7.81E-06	0.00E+00	2.88E-06
2019 Annual	Mon-Sun	2270002081	Other Con:D	25 ConstructiU	P	NHH	NP	Monterey NCC	MBU	4.86E-01	9.19E-01	5.53E-01	7.32E-06	2.50E-05	6.07E-03	7.70E-08	1.73E-06	0.00E+00	0.00E+00	6.60E-07
2019 Annual	Mon-Sun	2270002081	Other Con:D	50 ConstructiU	P	NHH	NP	Monterey NCC	MBU	7.46E-01	1.43E+00	1.83E+00	2.59E-05	1.64E-04	1.45E-04	2.00E-02	2.58E-07	6.57E-06	0.00E+00	2.34E-06
2019 Annual	Mon-Sun	2270002081	Other Con:D	120 ConstructiU	P	NHH	NP	Monterey NCC	MBU	1.23E+00	2.36E+00	8.69E+00	6.42E-05	6.01E-04	4.92E-04	9.53E-02	1.12E-06	2.77E-05	0.00E+00	5.79E-06
2019 Annual	Mon-Sun	2270002081	Other Con:D	175 ConstructiU	P	NHH	NP	Monterey NCC	MBU	1.70E+00	3.26E+00	1.58E+01	9.15E-05	9.53E-04	6.37E-04	1.73E-01	1.95E-06	3.07E-05	0.00E+00	8.26E-06
2019 Annual	Mon-Sun	2270002081	Other Con:D	500 ConstructiU	N	NHH	NP	Monterey NCC	MBU	3.95E+00	7.56E+00	8.69E+01	4.03E-04	1.78E-03	2.64E-03	9.60E-01	9.43E-06	9.17E-05	0.00E+00	3.64E-05
2019 Annual	Mon-Sun	2270003010	Aerial Lifts D	15 Industrial EU	P	NHH	NP	Monterey NCC	MBU	2.17E+00	2.37E+00	9.37E-01	1.19E-05	6.26E-05	7.48E-05	1.03E-02	1.60E-07	2.92E-06	0.00E+00	1.08E-06
2019 Annual	Mon-Sun	2270003010	Aerial Lifts D	25 Industrial EU	P	NHH	NP	Monterey NCC	MBU	3.54E+00	3.88E+00	1.93E+00	2.70E-05	8.95E-05	1.66E-04	2.12E-02	2.69E-07	7.09E-06	0.00E+00	2.44E-06
2019 Annual	Mon-Sun	2270003010	Aerial Lifts D	50 Industrial EU	P	NHH	NP	Monterey NCC	MBU	1.29E+01	1.36E+01	1.22E+01	1.89E-04	9.81E-04	9.87E-04	1.33E-01	1.73E-06	5.25E-05	0.00E+00	1.70E-05
2019 Annual	Mon-Sun	2270003010	Aerial Lifts D	120 Industrial EU	P	NHH	NP	Monterey NCC	MBU	1.15E+01	1.21E+01	2.09E+01	1.66E-04	1.38E-03	2.30E-01	2.69E-06	8.36E-05	0.00E+00	0.00E+00	1.50E-05
2019 Annual	Mon-Sun	2270003010	Aerial Lifts D	500 Industrial EU	N	NHH	NP	Monterey NCC	MBU	1.47E+00	1.55E+00	1.49E+01	5.95E-05	2.96E-04	5.83E-04	1.65E-01	1.62E-06	1.81E-05	0.00E+00	5.37E-06
2019 Annual	Mon-Sun	2270003010	Aerial Lifts D	750 Industrial EU	N	NHH	NP	Monterey NCC	MBU	1.18E-01	1.25E-01	2.16E+00	8.77E-06	4.30E-05	8.67E-05	2.39E-02	2.41E-07	2.66E-06	0.00E+00	7.91E-07
2019 Annual	Mon-Sun	2270003020	Forklifts D	50 Industrial EU	P	NHH	NP	Monterey NCC	MBU	3.92E+00	1.94E+01	1.30E+01	1.93E-04	1.35E-03	1.08E-03	1.42E-01	1.83E-06	4.36E-05	0.00E+00	1.75E-05
2019 Annual	Mon-Sun	2270003020	Forklifts D	120 Industrial EU	P	NHH	NP	Monterey NCC	MBU	6.15E+00	3.04E+01	4.32E+01	3.58E-04	3.18E-03	2.33E-03	4.74E-01	5.56E-06	1.29E-04	0.00E+00	3.23E-05
2019 Annual	Mon-Sun	2270003020	Forklifts D	175 Industrial EU	P	NHH	NP	Monterey NCC	MBU	6.18E+00	3.05E+01	7.79E+01	5.38E-04	5.06E-03	2.98E-03	8.55E-01	9.62E-06	1.54E-04	0.00E+00	4.86E-05
2019 Annual	Mon-Sun	2270003020	Forklifts D	250 Industrial EU	N	NHH	NP	Monterey NCC	MBU	6.14E+00	3.03E+01	1.06E+02	6.09E-04	2.34E-03	3.24E-03	1.17E+00	1.31E-05	1.11E-04	0.00E+00	5.49E-05
2019 Annual	Mon-Sun	2270003020	Forklifts D	500 Industrial EU	N	NHH	NP	Monterey NCC	MBU	2.63E+00	1.30E+01	6.51E+01	3.70E-04	1.85E-03	7.19E-03	7.06E-06	6.67E-05	0.00E+00	0.00E+00	3.34E-05
2019 Annual	Mon-Sun	2270003030	Sweepers/D	15 Industrial EU	N	NHH	NP	Monterey NCC	MBU	2.88E-01	5.13E-01	2.79E-01	3.17E-06	1.87E-05	2.23E-05	3.06E-03	4.76E-08	8.72E-07	0.00E+00	2.86E-07
2019 Annual	Mon-Sun	2270003030	Sweepers/D	25 Industrial EU	N	NHH	NP	Monterey NCC	MBU	2.88E-01	5.13E-01	4.58E-01	6.06E-06	2.07E-05	2.33E-05	5.03E-03	6.38E-08	1.43E-06	0.00E+00	5.47E-07
2019 Annual	Mon-Sun	2270003030	Sweepers/D	50 Industrial EU	N	NHH	NP	Monterey NCC	MBU	5.61E+00	1.88E+01	2.72E+01	4.27E-04	2.71E-03	2.27E-03	2.96E-01	3.82E-06	1.05E-04	0.00E+00	3.85E-05
2019 Annual	Mon-Sun	2270003030	Sweepers/D	120 Industrial EU	N	NHH	NP	Monterey NCC	MBU	9.28E+00	3.10E+01	1.06E+02	8.99E-04	6.14E-03	6.14E-03	1.16E+00	1.37E-05	3.70E-04	0.00E+00	8.11E-05
2019 Annual	Mon-Sun	2270003030	Sweepers/D	175 Industrial EU	N	NHH	NP	Monterey NCC	MBU	4.27E+00	1.43E+01	9.04E+01	6.25E-04	3.78E-03	9.92E-01	1.12E-05	2.02E-04	0.00E+00	0.00E+00	5.63E-05
2019 Annual	Mon-Sun	2270003030	Sweepers/D	250 Industrial EU	N	NHH	NP	Monterey NCC	MBU	6.84E-01	2.29E+00	1.68E+01	9.47E-05	3.65E-04	5.75E-04	1.85E-01	2.08E-06	1.97E-05	0.00E+00	8.54E-06
2019 Annual	Mon-Sun	2270003040	Other Gen:D	15 Industrial EU	N	NHH	NP	Monterey NCC	MBU	7.56E-01	2.95E+00	8.61E-01	9.78E-06	5.76E-05	6.88E-05	9.43E-03	1.47E-07	2.69E-06	0.00E+00	8.83E-07
2019 Annual	Mon-Sun	2270003040	Other Gen:D	25 Industrial EU	N	NHH	NP	Monterey NCC	MBU	1.01E+00	3.96E+00	2.76E+00	3.66E-05	1.25E-04	2.31E-04	3.03E-02	3.85E-07	8.64E-06	0.00E+00	3.30E-06
2019 Annual	Mon-Sun	2270003040	Other Gen:D	50 Industrial EU	N	NHH	NP	Monterey NCC	MBU	1.25E+00	4.90E+00	4.91E+00	1.12E-04	5.42E-04	4.35E-04	5.32E-02	6.88E-07	2.72E-05	0.00E+00	1.01E-05
2019 Annual	Mon-Sun	2270003040	Other Gen:D	120 Industrial EU	N	NHH	NP	Monterey NCC	MBU	5.02E+00	1.96E+01	5.55E+01	6.19E-04	4.14E-03	3.94E-03	6.08E-01	7.13E-06	2.77E-04	0.00E+00	5.58E-05
2019 Annual	Mon-Sun	2270003040	Other Gen:D	175 Industrial EU	N	NHH	NP	Monterey NCC	MBU	5.03E+00	1.97E+01	8.59E+01	7.31E-04	5.54E-03	4.68E-03	9.42E-01	1.06E-05	2.53E-04	0.00E+00	6.60E-05
2019 Annual	Mon-Sun	2270003040	Other Gen:D	250 Industrial EU	N	NHH	NP	Monterey NCC	MBU	5.01E+00	1.96E+01	1.20E+02	7.95E-04	2.75E-03	5.66E-03	1.33E+00	1.49E-05	1.85E-04	0.00E+00	7.17E-05
2019 Annual	Mon-Sun	2270003040	Other Gen:D	500 Industrial EU	N	NHH	NP	Monterey NCC	MBU	5.00E+00	1.95E+01	2.35E+02	1.51E-03	5.11E-03	9.83E-03	2.59E+00	2.54E-05	3.47E-04	0.00E+00	1.36E-04
2019 Annual	Mon-Sun	2270003040	Other Gen:D	750 Industrial EU	N	NHH	NP	Monterey NCC	MBU	1.25E+00	4.88E+00	9.66E+01	6.22E-04	2.10E-03	4.14E-03	1.07E+00	1.07E-05	1.44E-04	0.00E+00	5.61E-05
2019 Annual	Mon-Sun	2270003040	Other Gen:D	1000 Industrial EU	N	NHH	NP	Monterey NCC	MBU	7.61E-01	2.97E+00	7.52E+01	5.28E-04	1.77E-03	5.97E-03	8.30E-01	8.35E-06	1.53E-04	0.00E+00	4.76E-05
2019 Annual	Mon-Sun	2270003050	Other Mat:D	50 Industrial EU	N	NHH	NP	Monterey NCC	MBU	3.60E-02	1.30E-01	1.82E-01	4.11E-06	1.98E-05	1.60E-05	1.97E-03	2.55E-08	1.00E-06	0.00E+00	3.71E-07
2019 Annual	Mon-Sun	2270003050	Other Mat:D	120 Industrial EU	N	NHH	NP	Monterey NCC	MBU	2.16E-01	7.80E-01	2.16E+00	2.38E-05	1.60E-04	1.53E-04	2.36E-02	2.77E-07	1.08E-05	0.00E+00	2.15E-06
2019 Annual	Mon-Sun	2270003050	Other Mat:D	175 Industrial EU	N	NHH	NP	Monterey NCC	MBU	2.31E-01	8.36E-01	4.65E+00	3.91E-05	2.98E-04	2.53E-04	5.10E-02	5.74E-07	1.37E-05	0.00E+00	3.53E-06
2019 Annual	Mon-Sun	2270003050	Other Mat:D	250 Industrial EU	N	NHH	NP	Monterey NCC	MBU	5.50E-01	1.99E+00	1.30E+01	8.52E-05	2.97E-04	6.14E-04	1.44E-01	1.62E-06	2.00E-05	0.00E+00	7.69E-06
2019 Annual	Mon-Sun	2270003050	Other Mat:D	500 Industrial EU	N	NHH	NP	Monterey NCC	MBU	1.03E-01	3.72E-01	3.22E+00	2.04E-05	6.99E-05	1.35E-04	3.56E-02	3.49E-07	4.75E-06	0.00E+00	1.84E-06
2019 Annual	Mon-Sun	2270003050	Other Mat:D	9999 Industrial EU	N	NHH	NP	Monterey NCC	MBU	3.08E-02	1.11E-01	3.74E+00	2.78E-05	2.96E-04	4.13E-02	4.05E-07	7.57			

2019 Annual	Mon-Sun	2270008025 Air Conditio	175 Airport GrcU	N	NHH	P	Monterey NCC	MBU	2.42E-01	5.36E-01	3.54E+00	1.35E-05	2.07E-04	9.17E-05	3.89E-02	4.38E-07	3.12E-06	0.00E+00	1.22E-06
2019 Annual	Mon-Sun	2270008025 Air Conditio	250 Airport GrcU	N	NHH	P	Monterey NCC	MBU	1.91E-02	4.23E-02	3.97E-01	1.29E-06	7.95E-06	6.85E-06	4.39E-03	4.94E-08	1.82E-07	0.00E+00	1.16E-07
2019 Annual	Mon-Sun	2270008025 Air Conditio	500 Airport GrcU	N	NHH	P	Monterey NCC	MBU	1.27E-02	2.82E-02	5.29E-01	1.71E-06	1.03E-05	8.79E-06	5.85E-03	6.59E-08	2.40E-07	0.00E+00	1.55E-07
2019 Annual	Mon-Sun	2270008030 Air Start Ur	175 Airport GrcU	N	NHH	P	Monterey NCC	MBU	6.36E-03	5.81E-03	4.01E-02	2.10E-07	2.26E-06	1.96E-06	4.40E-04	4.32E-09	8.63E-08	0.00E+00	1.89E-08
2019 Annual	Mon-Sun	2270008030 Air Start Ur	250 Airport GrcU	N	NHH	P	Monterey NCC	MBU	1.91E-02	1.74E-02	1.71E-01	6.78E-07	3.43E-06	7.23E-06	1.89E-03	1.85E-08	2.10E-07	0.00E+00	6.12E-08
2019 Annual	Mon-Sun	2270008030 Air Start Ur	500 Airport GrcU	N	NHH	P	Monterey NCC	MBU	7.51E-01	6.86E-01	1.34E+01	5.04E-05	2.65E-04	5.13E-04	1.49E-01	1.46E-06	1.59E-05	0.00E+00	4.55E-06
2019 Annual	Mon-Sun	2270008030 Air Start Ur	750 Airport GrcU	N	NHH	P	Monterey NCC	MBU	1.08E-01	9.88E-02	2.90E+00	1.10E-05	5.72E-05	1.13E-04	3.21E-02	3.15E-07	3.47E-06	0.00E+00	9.97E-07
2019 Annual	Mon-Sun	2270008035 Baggage T.L	120 Airport GrcU	N	NHH	NP	Monterey NCC	MBU	3.05E+00	1.16E+01	2.61E+01	4.87E-04	2.07E-03	2.78E-03	2.84E-01	3.34E-06	2.40E-04	0.00E+00	4.39E-05
2019 Annual	Mon-Sun	2270008040 Belt Load	120 Airport GrcU	N	NHH	NP	Monterey NCC	MBU	1.47E+00	3.93E+00	6.12E+00	9.84E-05	4.68E-04	5.82E-04	6.68E-02	7.84E-07	4.94E-05	0.00E+00	8.88E-06
2019 Annual	Mon-Sun	2270008045 Bobtail D	120 Airport GrcU	N	NHH	NP	Monterey NCC	MBU	1.08E-01	2.03E-01	7.21E-01	1.10E-05	5.37E-05	6.76E-05	7.87E-03	9.23E-08	5.65E-06	0.00E+00	9.94E-07
2019 Annual	Mon-Sun	2270008050 Cargo Load	120 Airport GrcU	N	NHH	NP	Monterey NCC	MBU	1.79E+00	4.46E+00	1.29E+01	1.58E-04	9.45E-04	1.01E-03	1.41E-01	1.65E-06	7.75E-05	0.00E+00	1.42E-05
2019 Annual	Mon-Sun	2270008065 Forklift D	175 Airport GrcU	P	NHH	NP	Monterey NCC	MBU	2.48E-01	5.06E-01	1.35E+00	9.62E-06	8.23E-05	7.05E-05	1.48E-02	1.66E-07	3.65E-06	0.00E+00	8.68E-07
2019 Annual	Mon-Sun	2270008070 Fuel Truck D	250 Airport GrcU	N	NHH	NP	Monterey NCC	MBU	1.34E-01	2.29E-01	6.13E-01	3.17E-06	1.31E-05	2.75E-05	6.77E-03	7.62E-08	8.72E-07	0.00E+00	2.86E-07
2019 Annual	Mon-Sun	2270008075 Ground Po	175 Airport GrcU	N	NHH	P	Monterey NCC	MBU	1.99E+00	5.29E+00	3.69E+01	2.66E-04	2.31E-03	1.79E-03	4.06E-01	4.56E-06	9.45E-05	0.00E+00	2.40E-05
2019 Annual	Mon-Sun	2270008085 Lav Truck D	175 Airport GrcU	N	NHH	NP	Monterey NCC	MBU	3.18E-02	1.14E-01	2.73E-01	2.26E-06	1.75E-05	1.46E-05	2.99E-03	3.37E-08	7.89E-07	0.00E+00	2.04E-07
2019 Annual	Mon-Sun	2270008090 Lift D	120 Airport GrcU	N	NHH	NP	Monterey NCC	MBU	3.31E-01	7.18E-01	2.36E+00	2.27E-05	1.68E-04	1.62E-04	2.59E-02	3.04E-07	1.10E-05	0.00E+00	2.05E-06
2019 Annual	Mon-Sun	2270008100 Other GSE D	175 Airport GrcU	N	NHH	NP	Monterey NCC	MBU	5.92E-01	1.50E+00	6.01E+00	6.85E-05	3.88E-04	4.79E-04	6.58E-02	8.51E-07	2.74E-05	0.00E+00	6.18E-06
2019 Annual	Mon-Sun	2270008101 Passenger D	120 Airport GrcU	N	NHH	NP	Monterey NCC	MBU	5.09E-02	9.78E-03	3.30E-02	1.81E-07	2.02E-06	1.99E-06	3.62E-04	4.25E-09	9.69E-08	0.00E+00	1.64E-08
2019 Annual	Mon-Sun	2270008102 Sweeper D	120 Airport GrcU	N	NHH	NP	Monterey NCC	MBU	1.46E-01	1.16E-01	1.73E-01	7.48E-07	1.09E-05	8.32E-06	1.90E-03	2.14E-08	3.56E-07	0.00E+00	6.75E-08
2019 Annual	Mon-Sun	2270008103 Generator D	120 Airport GrcU	N	NHH	P	Monterey NCC	MBU	9.54E-02	4.27E-01	1.60E+00	1.76E-05	1.20E-04	1.12E-04	1.75E-02	1.97E-07	7.75E-06	0.00E+00	1.59E-06
2019 Annual	Mon-Sun	2270008103 Generator D	175 Airport GrcU	N	NHH	P	Monterey NCC	MBU	5.22E-01	2.33E+00	1.65E+01	1.40E-04	1.07E-03	8.82E-04	1.80E-01	2.03E-06	4.77E-05	0.00E+00	1.27E-05
2019 Annual	Mon-Sun	2270008103 Generator D	250 Airport GrcU	N	NHH	P	Monterey NCC	MBU	5.41E-01	2.42E+00	2.45E+01	1.67E-04	5.67E-04	1.14E-03	2.71E-01	3.05E-06	3.83E-05	0.00E+00	1.51E-05
2019 Annual	Mon-Sun	2270008103 Generator D	500 Airport GrcU	N	NHH	P	Monterey NCC	MBU	5.73E-02	2.56E-01	4.11E+00	2.73E-05	9.04E-05	1.70E-04	4.54E-02	5.11E-07	6.16E-06	0.00E+00	2.46E-06
2019 Annual	Mon-Sun	2270008103 Generator D	750 Airport GrcU	N	NHH	P	Monterey NCC	MBU	7.63E-02	3.41E-01	8.85E+00	5.89E-05	1.95E-04	3.75E-04	9.78E-02	1.10E-06	1.34E-05	0.00E+00	5.31E-06
2019 Annual	Mon-Sun	2270008105 Cart D	175 Airport GrcU	N	NHH	NP	Monterey NCC	MBU	2.10E-01	2.91E-01	5.76E-01	3.53E-06	3.38E-05	2.92E-05	6.33E-03	7.12E-08	1.40E-06	0.00E+00	3.18E-07
2019 Annual	Mon-Sun	2270008106 Catering Tr	250 Airport GrcU	N	NHH	NP	Monterey NCC	MBU	5.09E-02	5.17E-02	3.65E-01	1.09E-06	7.00E-06	9.79E-06	4.04E-03	4.55E-08	2.83E-07	0.00E+00	9.84E-08
2019 Annual	Mon-Sun	2270008111 Hydrant Tr	175 Airport GrcU	N	NHH	NP	Monterey NCC	MBU	1.02E-01	1.74E-01	1.22E+00	9.00E-06	7.34E-05	6.93E-05	1.34E-02	1.50E-07	3.56E-06	0.00E+00	8.12E-07
2019 Annual	Mon-Sun	2270008115 CompressD	120 Airport GrcU	P	NHH	P	Monterey NCC	MBU	3.18E-02	7.10E-02	1.85E-01	1.80E-06	1.32E-05	1.27E-05	2.03E-03	2.38E-08	8.66E-07	0.00E+00	1.62E-07
2019 Annual	Mon-Sun	2270008115 CompressD	250 Airport GrcU	N	NHH	P	Monterey NCC	MBU	6.36E-03	1.42E-02	7.50E-02	4.36E-07	1.65E-06	3.43E-06	8.28E-04	9.32E-09	1.12E-07	0.00E+00	3.93E-08
2019 Annual	Mon-Sun	2270008115 CompressD	500 Airport GrcU	N	NHH	P	Monterey NCC	MBU	2.54E-02	5.68E-02	6.18E-01	3.48E-06	1.30E-05	5.22E-05	6.83E-03	6.71E-08	8.89E-07	0.00E+00	3.14E-07
2019 Annual	Mon-Sun	2270008115 CompressD	750 Airport GrcU	N	NHH	P	Monterey NCC	MBU	8.27E-02	1.85E-01	2.97E+00	1.68E-05	6.26E-05	1.24E-04	3.28E-02	3.30E-07	4.31E-06	0.00E+00	1.51E-06
2019 Annual	Mon-Sun	2270009005 Transport I	15 Transport IU	N	NHH	NP	Monterey NCC	MBU	1.28E+02	3.65E+02	1.33E+02	1.52E-03	8.93E-03	1.07E-02	1.46E+00	1.85E-05	4.18E-04	0.00E+00	1.37E-04
2019 Annual	Mon-Sun	2270009005 Transport I	25 Transport IU	N	NHH	NP	Monterey NCC	MBU	4.07E+01	1.16E+02	7.19E+01	9.53E-04	3.25E-03	6.02E-03	7.90E-01	1.00E-05	2.26E-04	0.00E+00	8.59E-05
2019 Annual	Mon-Sun	2270009005 Transport I	50 Transport IU	N	NHH	NP	Monterey NCC	MBU	9.90E+02	3.98E+03	4.71E+03	3.90E-02	4.60E-01	3.18E-01	5.16E+01	6.66E-04	5.25E-03	0.00E+00	3.52E-03
2019 Annual	Mon-Sun	2270011005 A/C unit D	120 Military Ta U	P	NHH	P	Monterey NCC	MBU	2.88E-01	2.37E-01	8.22E-01	6.22E-06	5.34E-05	5.48E-05	9.02E-03	1.06E-07	3.22E-06	0.00E+00	5.62E-07
2019 Annual	Mon-Sun	2270011005 A/C unit D	250 Military Ta U	N	NHH	P	Monterey NCC	MBU	1.20E-01	9.91E-02	7.01E-01	2.86E-06	1.42E-05	3.16E-05	7.75E-03	8.72E-08	9.18E-07	0.00E+00	2.58E-07
2019 Annual	Mon-Sun	2270011005 A/C unit D	500 Military Ta U	N	NHH	P	Monterey NCC	MBU	4.76E-02	3.92E-02	4.20E-01	1.62E-06	8.36E-06	1.71E-05	4.64E-03	4.56E-08	5.29E-07	0.00E+00	1.46E-07
2019 Annual	Mon-Sun	2270011010 Aircraft Suj	120 Military Ta U	P	NHH	P	Monterey NCC	MBU	7.84E-02	6.46E-02	1.50E-01	1.14E-06	9.78E-06	1.00E-05	1.65E-03	1.94E-08	5.90E-07	0.00E+00	1.03E-07
2019 Annual	Mon-Sun	2270011010 Aircraft Suj	175 Military Ta U	P	NHH	P	Monterey NCC	MBU	1.12E-01	9.22E-02	4.41E-01	2.40E-06	2.48E-05	2.28E-05	4.85E-03	5.46E-08	1.00E-06	0.00E+00	2.16E-07
2019 Annual	Mon-Sun	2270011015 Cart D	120 Military Ta U	P	NHH	P	Monterey NCC	MBU	3.36E-02	2.77E-02	7.68E-02	5.81E-07	4.49E-06	5.12E-06	8.42E-04	9.88E-09	3.01E-07	0.00E+00	5.25E-08
2019 Annual	Mon-Sun	2270011015 Cart D	175 Military Ta U	P	NHH	P	Monterey NCC	MBU	8.40E-03	6.92E-03	3.62E-02	1.97E-07	2.04E-06	1.87E-06	3.98E-04	4.48E-09	8.20E-08	0.00E+00	1.77E-08
2019 Annual	Mon-Sun	2270011015 Cart D	250 Military Ta U	N	NHH	P	Monterey NCC	MBU	2.80E-02	2.31E-02	1.54E-01	6.31E-07	3.14E-06	6.95E-06	1.71E-03	1.92E-08	2.02E-07	0.00E+00	5.69E-08
2019 Annual	Mon-Sun	2270011020 Communic	50 Military Ta U	P	NHH	P	Monterey NCC	MBU	1.12E-02	9.22E-03	1.27E-02	1.80E-07	9.69E-07	1.03E-06	1.39E-04	1.79E-09	5.34E-08	0.00E+00	1.63E-08
2019 Annual	Mon-Sun	2270011020 Communic	120 Military Ta U	P	NHH	P	Monterey NCC	MBU	1.68E-02	1.38E-02	3.79E-02	2.87E-07	2.47E-06	2.53E-06	4.16E-04	4.88E-09	1.49E-07	0.00E+00	2.59E-08
2019 Annual	Mon-Sun	2270011025 CompressD	50 Military Ta U	P	NHH	P	Monterey NCC	MBU	1.12E-02	9.22E-03	1.55E-02	2.21E-07	1.19E-06	1.26E-06	1.70E-04	2.20E-09	6.54E-08	0.00E+00	1.99E-08
2019 Annual	Mon-Sun	2270011025 CompressD	120 Military Ta U	P	NHH	P	Monterey NCC	MBU	4.23E-01	3.48E-01	8.47E-01	6.41E-06	5.51E-05	9.29E-03	1.09E-07	3.32E-06	0.00E+00	5.79E-07	
2019 Annual	Mon-Sun	2270011025 CompressD	175 Military Ta U	P	NHH	P	Monterey NCC	MBU	1.12E-02	9.22E-03	5.27E-02	2.86E-07	2.96E-06	2.72E-06	5.79E-04	6.51E-09	1.19E-07	0.00E+00	2.58E-08
2019 Annual	Mon-Sun	2270011025 CompressD	250 Military Ta U	N	NHH	P	Monterey NCC	MBU	2.24E-02	1.84E-02	1.40E-01	5.71E-07	2.84E-06	6.30E-06	1.55E-03	1.74E-08	1.83E-07	0.00E+00	5.15E-08
2019 Annual	Mon-Sun	2270011025 CompressD	500 Military Ta U	N	NHH	P	Monterey NCC	MBU	7.84E-02	6.46E-02	8.19E-01	3.15E-06	3.33E-05	9.05E-03	8.88E-08	1.03E-06	0.00E+00	2.84E-07	
2019 Annual	Mon-Sun	2270011030 Crane D	120 Military Ta U	P	NHH	P	Monterey NCC	MBU	4.48E-02	3.69E-02	1.32E-01	4.02E-07	8.18E-06	5.31E-06	1.46E-03	1.71E-08	1.47E-07	0.00E+00	3.63E-08
2019 Annual	Mon-Sun	2270011030 Crane D	175 Military Ta U	P	NHH	P	Monterey NCC	MBU	8.40E-03	6.92E-03	3.33E-02	8.46E-08	1.82E-06	8.39E-07	3.67E-04	4.12E-09	2.41E-08	0.00E+00	7.63E-09
2019 Annual	Mon-Sun	2270011030 Crane D	250 Military Ta U	N	NHH	P	Monterey NCC	MBU	5.60E-03	4.61E-03	3.35E-02	7.24E-08	6.27E-07	5.68E-07	3.71E-04	4.17E-09	1.37E-08	0.00E+00	6.53E-09
2019 Annual	Mon-Sun	2270011040 Deicer D	120 Military Ta U	P	NHH	P	Monterey NCC	MBU	1.12E-02	9.22E-03	3.48E-02	2.63E-07	2.26E-06	3.81E-04	4.47E-09	1.36E-07	0.00E+00	2.37E-08	
2019 Annual	Mon-Sun	2270011050 Generator D	50 Military Ta U	P	NHH	P	Monterey NCC	MBU	7.56E-02	6.23E-02	8.14E-02	1.16E-06	6.21E-06	6.62E-06	8.89E-04	1.15E-08	3.42E-07	0.00E+00	1.04E-07
2019 Annual	Mon-Sun	2270011050 Generator D	120 Military Ta U	P</															



CY	Season	AvgDays	Equipmen		MaxHP	Class	C/R	Pre	Hand	Port	County	Air Basin	Air Dist.	Population	Activity	Consumption	ROG Exhaust	CO Exhaust	NOX Exhaust	CO2 Exhaust	SO2 Exhaust	PM Exhaust	N2O Exhaust	CH4 Exhaust
			Code	Fuel																				
2030	Annual	Mon-Sun	2.26E+09	Off-Road V G2	15	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	1.82E+02	6.73E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2030	Annual	Mon-Sun	2.26E+09	Off-Road V G2	25	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	1.52E+02	5.79E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2030	Annual	Mon-Sun	2.26E+09	Off-Road V G2	50	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	1.27E+03	4.71E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2030	Annual	Mon-Sun	2.26E+09	Off-Road V G2	120	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	6.09E+02	2.25E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2030	Annual	Mon-Sun	2.26E+09	Snowmobil G2	25	Recreation:U	N	NHH	P	Monterey	NCC	MBU	3.33E+00	5.25E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2030	Annual	Mon-Sun	2.26E+09	Snowmobil G2	50	Recreation:U	N	NHH	P	Monterey	NCC	MBU	1.57E+01	2.48E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2030	Annual	Mon-Sun	2.26E+09	Snowmobil G2	120	Recreation:U	N	NHH	P	Monterey	NCC	MBU	2.86E+01	4.50E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2030	Annual	Mon-Sun	2.26E+09	All Terrain G2	15	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	1.51E+02	5.59E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2030	Annual	Mon-Sun	2.26E+09	All Terrain G2	25	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	9.83E+01	3.64E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2030	Annual	Mon-Sun	2.26E+09	All Terrain G2	50	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	1.29E+02	4.79E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2030	Annual	Mon-Sun	2.26E+09	Off-Road V G4	15	Recreation:U	N	NHH	P	Monterey	NCC	MBU	3.54E+02	1.31E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2030	Annual	Mon-Sun	2.27E+09	Off-Road V G4	25	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	5.72E+02	2.12E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2030	Annual	Mon-Sun	2.27E+09	Off-Road V G4	50	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	5.96E+02	2.21E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2030	Annual	Mon-Sun	2.27E+09	All Terrain G4	15	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	1.23E+03	4.56E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2030	Annual	Mon-Sun	2.27E+09	All Terrain G4	25	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	1.71E+03	6.35E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2030	Annual	Mon-Sun	2.27E+09	All Terrain G4	50	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	7.74E+01	2.87E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2030	Annual	Mon-Sun	2.26E+09	Off-Road V G2	15	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	4.54E+02	1.68E+03	6.37E+01	6.41E-02	1.00E-01	1.95E-05	2.13E-01	1.72E-04	7.78E-04	7.78E-04	7.19E-05	3.98E-03
2030	Annual	Mon-Sun	2.26E+09	Off-Road V G2	25	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	3.90E+02	1.45E+03	5.48E+01	5.52E-02	8.62E-02	1.68E-05	1.83E-01	2.77E-04	6.69E-04	6.19E-05	3.43E-03	
2030	Annual	Mon-Sun	2.26E+09	Off-Road V G2	50	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	3.18E+03	1.18E+04	4.46E+02	4.49E-01	7.02E-01	1.37E-04	1.49E+00	3.57E-03	5.45E-03	5.04E-04	2.79E-02	
2030	Annual	Mon-Sun	2.26E+09	Snowmobil G2	120	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	1.52E+03	5.63E+03	2.13E+02	2.15E-01	3.36E-01	6.55E-05	7.13E-01	2.52E-03	2.61E-03	2.41E-04	1.34E-02	
2030	Annual	Mon-Sun	2.26E+09	Snowmobil G2	25	Recreation:U	N	NHH	P	Monterey	NCC	MBU	9.58E+00	1.51E+00	1.08E+00	5.76E-04	2.14E-03	5.82E-05	4.86E-03	8.46E-08	1.87E-05	4.85E-06	3.58E-05	
2030	Annual	Mon-Sun	2.26E+09	Snowmobil G2	50	Recreation:U	N	NHH	P	Monterey	NCC	MBU	4.51E+01	7.11E+00	9.66E+00	5.16E-03	1.91E-02	5.22E-04	4.35E-02	7.58E-07	1.68E-04	3.22E-05	3.21E-04	
2030	Annual	Mon-Sun	2.26E+09	Snowmobil G2	120	Recreation:U	N	NHH	P	Monterey	NCC	MBU	8.21E+01	1.29E+01	3.00E+01	1.61E-02	5.95E-02	1.62E-03	1.35E-01	2.36E-06	5.22E-04	7.80E-05	9.98E-04	
2030	Annual	Mon-Sun	2.26E+09	All Terrain G2	15	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	4.98E+02	1.84E+03	6.98E+01	7.03E-02	1.10E-01	2.14E-05	2.33E-01	2.33E-04	8.53E-04	7.88E-05	4.37E-03	
2030	Annual	Mon-Sun	2.26E+09	All Terrain G2	25	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	3.24E+02	1.20E+03	4.54E+01	4.58E-02	7.15E-02	1.39E-05	1.52E-01	2.07E-04	5.55E-04	5.13E-05	2.84E-03	
2030	Annual	Mon-Sun	2.26E+09	All Terrain G2	50	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	4.26E+02	1.58E+03	5.98E+01	6.02E-02	9.41E-02	1.84E-05	2.00E-01	3.58E-04	7.31E-04	6.75E-05	3.74E-03	
2030	Annual	Mon-Sun	2.26E+09	Golf Carts G2	15	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	1.04E+03	3.15E+03	1.19E+03	5.35E-02	3.23E+00	4.02E-02	6.18E+00	2.54E-04	2.88E-03	5.64E-03	3.32E-03	
2030	Annual	Mon-Sun	2.26E+09	Specialty V G2	15	Recreation:U	N	NHH	NP	Monterey	NCC	MBU	2.38E+03	4.32E+02	1.59E+02	5.73E-03	4.34E-01	4.37E-03	8.31E-01	3.42E-05	3.13E-04	6.83E-04	3.56E-04	
2030	Annual	Mon-Sun	2.26E+09	Tampers/R G2	15	Constructive U	P	NHH	NP	Monterey	NCC	MBU	2.54E+01	1.27E+01	2.55E+00	1.61E-04	6.89E-03	1.24E-04	1.32E-02	5.43E-07	1.10E-04	1.97E-05	9.98E-06	
2030	Annual	Mon-Sun	2.26E+09	Plate Comp G2	15	Constructive U	P	NHH	NP	Monterey	NCC	MBU	2.17E+00	1.23E+00	2.48E-01	1.56E-05	6.69E-04	1.20E-05	1.28E-03	5.27E-08	1.07E-05	1.91E-06	9.68E-07	
2030	Annual	Mon-Sun	2.26E+09	Other Gene G2	15	Industrial E U	P	NHH	NP	Monterey	NCC	MBU	4.94E-01	5.08E-01	2.00E-01	9.00E-06	5.44E-04	6.76E-06	1.04E-03	4.28E-08	4.84E-07	9.30E-07	5.59E-07	
2030	Annual	Mon-Sun	2.26E+09	Lawn Mow G2	15	Lawn and C C	N	NHH	NP	Monterey	NCC	MBU	4.38E+02	2.74E+02	3.10E+01	3.51E-03	6.30E-02	9.32E-04	1.87E-01	6.79E-06	5.89E-04	2.42E-04	2.18E-04	
2030	Annual	Mon-Sun	2.26E+09	Lawn Mow G2	15	Lawn and C R	N	NHH	NP	Monterey	NCC	MBU	3.29E+03	1.40E+02	1.70E+01	1.41E-03	4.02E-02	3.77E-04	9.51E-02	3.92E-06	2.46E-04	1.08E-04	8.76E-05	
2030	Annual	Mon-Sun	2.26E+09	Chainsaws G2	2	Lawn and C C	N	HH	NP	Monterey	NCC	MBU	7.84E+02	6.21E+02	3.70E+01	3.10E-02	5.60E-02	4.87E-04	1.51E-01	6.24E-06	8.82E-05	2.51E-04	1.93E-03	
2030	Annual	Mon-Sun	2.26E+09	Chainsaws G2	2	Lawn and C R	N	HH	NP	Monterey	NCC	MBU	8.82E+03	1.18E+02	5.42E+00	1.74E-03	1.07E-02	9.32E-05	2.89E-02	1.19E-06	1.69E-05	4.80E-05	1.08E-04	
2030	Annual	Mon-Sun	2.26E+09	Chainsaws G2	15	Lawn and C C	N	HH	NP	Monterey	NCC	MBU	5.52E+02	4.38E+02	6.31E+01	5.27E-02	9.54E-02	8.29E-04	2.58E-01	1.06E-05	1.50E-04	2.83E-04	3.28E-03	
2030	Annual	Mon-Sun	2.26E+09	Chainsaws G2	15	Lawn and C R	N	HH	NP	Monterey	NCC	MBU	6.21E+03	8.34E+01	9.22E+00	2.96E-03	1.82E-02	1.59E-04	4.91E-02	2.02E-06	2.87E-05	5.41E-05	1.84E-04	
2030	Annual	Mon-Sun	2.26E+09	Chainsaws G2	15	Lawn and C C	P	HH	NP	Monterey	NCC	MBU	6.87E+02	5.45E+02	7.85E+01	6.57E-02	1.19E-01	1.03E-03	3.21E-01	1.32E-05	1.87E-04	3.52E-04	4.08E-03	
2030	Annual	Mon-Sun	2.26E+09	Chainsaws G2	15	Lawn and C R	P	HH	NP	Monterey	NCC	MBU	7.73E+03	1.04E+02	1.15E+01	3.75E-03	2.28E-02	1.96E-04	6.12E-02	2.52E-06	3.56E-05	6.71E-05	2.33E-04	
2030	Annual	Mon-Sun	2.26E+09	Trimmers/G2	2	Lawn and C C	N	HH	NP	Monterey	NCC	MBU	2.56E+03	8.50E+02	3.77E+01	2.03E-02	6.70E-02	5.82E-04	1.81E-01	7.46E-06	1.05E-04	3.20E-04	1.26E-03	
2030	Annual	Mon-Sun	2.26E+09	Trimmers/G2	2	Lawn and C R	N	HH	NP	Monterey	NCC	MBU	2.85E+04	1.68E+03	7.12E+01	3.20E-02	1.32E-01	1.15E-03	3.57E-01	1.47E-05	2.08E-04	6.31E-04	1.99E-03	
2030	Annual	Mon-Sun	2.26E+09	Leaf Blow G2	2	Lawn and C C	N	HH	P	Monterey	NCC	MBU	3.82E+03	2.05E+03	1.09E+02	7.56E-02	1.80E-01	1.56E-03	4.86E-01	2.00E-05	2.83E-04	8.17E-04	4.70E-03	
2030	Annual	Mon-Sun	2.26E+09	Leaf Blow G2	2	Lawn and C R	N	HH	P	Monterey	NCC	MBU	9.84E+03	1.29E+02	5.74E+00	1.83E-03	1.13E-02	9.89E-05	3.06E-02	1.26E-06	1.79E-05	5.16E-05	1.14E-04	
2030	Annual</																							



2030 Annual	Mon-Sun	2.27E+09	Other Gene G4	25	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	1.80E+00	2.12E+00	2.16E+00	1.16E-04	6.77E-03	8.52E-05	9.75E-03	2.47E-07	5.35E-06	6.67E-06	6.06E-06
2030 Annual	Mon-Sun	2.27E+09	Other Gene G4	50	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	1.59E+00	3.11E+00	5.65E+00	7.69E-05	6.87E-03	1.51E-04	4.35E-02	5.29E-07	3.33E-06	1.07E-05	4.01E-06
2030 Annual	Mon-Sun	2.27E+09	Other Gene G4	120	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	5.22E-01	1.02E+00	4.13E+00	2.38E-05	1.61E-03	1.24E-04	3.72E-02	3.59E-07	2.88E-06	5.78E-06	1.24E-06
2030 Annual	Mon-Sun	2.27E+09	Other Gene G4	175	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	5.06E-02	9.88E-02	8.49E-01	3.34E-06	3.00E-04	2.50E-05	7.71E-03	7.66E-08	6.14E-07	8.29E-07	1.74E-07
2030 Annual	Mon-Sun	2.27E+09	Other Mat G4	50	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	2.25E-02	2.38E-02	5.91E-02	8.58E-07	7.68E-05	1.68E-06	4.46E-04	5.43E-09	3.42E-08	9.95E-08	4.49E-08
2030 Annual	Mon-Sun	2.27E+09	Other Mat G4	120	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	9.94E-01	1.05E+00	2.87E+00	1.86E-05	1.23E-03	9.09E-05	2.57E-02	2.48E-07	1.99E-06	4.94E-06	9.73E-07
2030 Annual	Mon-Sun	2.27E+09	Lawn Mow G4	5	Lawn and C C	N	NHH	NP	Monterey	NCC	MBU	2.59E+03	1.62E+03	2.00E+02	2.47E-02	4.67E-01	6.04E-03	1.11E+00	3.82E-05	3.49E-03	1.43E-03	1.29E-03
2030 Annual	Mon-Sun	2.27E+09	Lawn Mow G4	5	Lawn and C R	N	NHH	NP	Monterey	NCC	MBU	4.11E+04	1.74E+03	2.39E+02	1.91E-02	6.67E-01	4.54E-03	1.19E+00	4.11E-05	2.86E-03	1.26E-03	9.95E-04
2030 Annual	Mon-Sun	2.27E+09	Tillers G4	5	Lawn and C C	N	NHH	NP	Monterey	NCC	MBU	2.69E+02	4.12E+01	6.07E+00	5.60E-04	1.61E-02	1.35E-04	3.12E-02	1.08E-06	8.24E-05	3.38E-05	2.93E-05
2030 Annual	Mon-Sun	2.27E+09	Tillers G4	5	Lawn and C R	N	NHH	NP	Monterey	NCC	MBU	1.04E+03	5.15E+01	7.73E+00	6.57E-04	2.11E-02	1.57E-04	3.90E-02	1.35E-06	9.79E-05	4.07E-05	3.44E-05
2030 Annual	Mon-Sun	2.27E+09	Trimmers/f G4	5	Lawn and C C	P	NHH	NP	Monterey	NCC	MBU	4.73E+02	1.76E+02	5.60E+00	7.56E-04	1.35E-02	3.26E-04	3.00E-02	1.03E-06	9.77E-06	1.07E-04	3.96E-05
2030 Annual	Mon-Sun	2.27E+09	Trimmers/f G4	5	Lawn and C R	P	NHH	NP	Monterey	NCC	MBU	2.20E+03	1.30E+02	4.32E+00	5.15E-04	1.12E-02	2.22E-04	2.21E-02	7.64E-07	7.21E-06	7.56E-05	2.69E-05
2030 Annual	Mon-Sun	2.27E+09	Leaf Blow G4	5	Lawn and C C	N	NHH	P	Monterey	NCC	MBU	1.21E+02	2.05E+01	1.42E+00	1.08E-04	3.99E-03	2.57E-05	6.99E-03	2.41E-07	1.64E-05	1.01E-05	5.67E-06
2030 Annual	Mon-Sun	2.27E+09	Leaf Blow G4	5	Lawn and C R	N	NHH	P	Monterey	NCC	MBU	1.04E+02	1.36E+00	9.85E-02	5.91E-06	2.95E-04	1.41E-06	4.64E-04	1.60E-08	9.27E-07	6.03E-07	3.09E-07
2030 Annual	Mon-Sun	2.27E+09	Rear Engin G4	15	Lawn and C C	N	NHH	NP	Monterey	NCC	MBU	1.42E+03	1.05E+03	3.66E+02	1.75E-02	1.12E+00	1.21E-02	1.71E+00	4.87E-05	7.92E-04	1.70E-03	9.16E-04
2030 Annual	Mon-Sun	2.27E+09	Rear Engin G4	15	Lawn and C R	N	NHH	NP	Monterey	NCC	MBU	1.24E+03	9.61E+01	3.32E+01	1.36E-03	1.02E-01	9.49E-04	1.56E-01	4.44E-06	6.21E-05	1.43E-04	7.11E-05
2030 Annual	Mon-Sun	2.27E+09	Rear Engin G4	25	Lawn and C C	N	NHH	NP	Monterey	NCC	MBU	6.49E+00	4.82E+00	3.25E+00	1.50E-04	1.02E-02	1.06E-04	1.48E-02	3.74E-07	6.85E-06	1.10E-05	7.86E-06
2030 Annual	Mon-Sun	2.27E+09	Rear Engin G4	25	Lawn and C R	N	NHH	NP	Monterey	NCC	MBU	5.60E+00	4.32E-01	2.91E-01	1.17E-05	9.17E-04	7.87E-06	1.32E-03	3.35E-08	5.28E-07	8.89E-07	6.14E-07
2030 Annual	Mon-Sun	2.27E+09	Front Mow G4	15	Lawn and C C	N	NHH	NP	Monterey	NCC	MBU	6.50E+01	4.84E+01	2.68E+01	1.28E-03	8.17E-02	8.86E-04	1.25E-01	3.56E-06	5.80E-05	1.00E-04	6.70E-05
2030 Annual	Mon-Sun	2.27E+09	Front Mow G4	15	Lawn and C R	N	NHH	NP	Monterey	NCC	MBU	2.10E+03	1.62E+02	8.96E+01	3.66E-03	2.74E-01	2.56E-03	4.20E-01	1.20E-05	1.68E-04	3.10E-04	1.92E-04
2030 Annual	Mon-Sun	2.27E+09	Front Mow G4	25	Lawn and C C	N	NHH	NP	Monterey	NCC	MBU	5.09E+01	3.79E+01	2.82E+01	1.30E-03	8.88E-02	9.17E-04	1.28E-01	3.24E-06	5.94E-05	9.09E-05	6.82E-05
2030 Annual	Mon-Sun	2.27E+09	Front Mow G4	25	Lawn and C R	N	NHH	NP	Monterey	NCC	MBU	1.65E+03	1.27E+02	9.46E+01	3.81E-03	2.98E-01	2.56E-03	4.30E-01	1.09E-05	1.72E-04	2.76E-04	2.00E-04
2030 Annual	Mon-Sun	2.27E+09	Shredders G4	5	Lawn and C C	P	NHH	NP	Monterey	NCC	MBU	5.11E+01	1.90E+01	5.38E+00	7.26E-04	1.30E-02	3.13E-04	2.88E-02	9.93E-07	9.38E-06	3.71E-05	3.80E-05
2030 Annual	Mon-Sun	2.27E+09	Shredders G4	5	Lawn and C R	P	NHH	NP	Monterey	NCC	MBU	1.90E+03	4.68E+00	1.56E+00	1.22E-04	4.80E-03	5.24E-05	7.09E-03	2.45E-07	2.47E-06	7.45E-06	6.37E-06
2030 Annual	Mon-Sun	2.27E+09	Lawn & Ga G4	15	Lawn and C C	N	NHH	NP	Monterey	NCC	MBU	2.60E+02	9.16E+01	6.11E+01	2.45E-03	1.87E-01	1.72E-03	2.86E-01	8.16E-06	1.12E-04	1.92E-04	1.29E-04
2030 Annual	Mon-Sun	2.27E+09	Lawn & Ga G4	15	Lawn and C R	N	NHH	NP	Monterey	NCC	MBU	1.69E+03	6.76E+01	4.50E+01	1.67E-03	1.38E-01	1.17E-03	2.11E-01	6.02E-06	7.68E-05	1.36E-04	8.74E-05
2030 Annual	Mon-Sun	2.27E+09	Lawn & Ga G4	25	Lawn and C C	N	NHH	NP	Monterey	NCC	MBU	1.03E+02	3.61E+01	3.84E+01	1.52E-03	1.21E-01	1.02E-03	1.74E-01	4.42E-06	6.85E-05	9.40E-05	7.97E-05
2030 Annual	Mon-Sun	2.27E+09	Lawn & Ga G4	25	Lawn and C R	N	NHH	NP	Monterey	NCC	MBU	6.67E+02	2.67E+01	2.83E+01	1.05E-03	8.92E-02	6.81E-04	1.29E-01	3.26E-06	4.68E-05	6.58E-05	5.49E-05
2030 Annual	Mon-Sun	2.27E+09	Lawn & Ga G4	50	Lawn and C U	N	NHH	NP	Monterey	NCC	MBU	1.48E+00	4.23E-01	6.48E-01	6.99E-06	4.72E-03	1.30E-05	5.48E-03	6.66E-08	4.20E-07	1.15E-06	3.66E-07
2030 Annual	Mon-Sun	2.27E+09	Wood Split G4	5	Lawn and C C	N	NHH	NP	Monterey	NCC	MBU	8.74E+01	3.08E+01	9.39E+00	1.03E-03	2.32E-02	2.50E-04	5.03E-02	1.74E-06	1.48E-04	4.11E-05	5.38E-05
2030 Annual	Mon-Sun	2.27E+09	Wood Split G4	5	Lawn and C R	N	NHH	NP	Monterey	NCC	MBU	2.18E+03	6.58E+00	2.34E+00	1.18E-04	1.07E-02	2.75E-05	1.07E-02	3.71E-07	1.92E-05	6.15E-06	6.15E-06
2030 Annual	Mon-Sun	2.27E+09	Chippers/SI G4	15	Lawn and C C	P	NHH	P	Monterey	NCC	MBU	1.23E+00	4.26E+00	3.79E+00	3.07E-04	1.15E-02	2.17E-04	1.73E-02	4.93E-07	1.45E-04	1.51E-05	1.58E-05
2030 Annual	Mon-Sun	2.27E+09	Chippers/SI G4	15	Lawn and C R	P	NHH	P	Monterey	NCC	MBU	2.20E+00	9.94E-02	8.70E-02	5.28E-06	2.64E-04	3.72E-06	4.04E-04	1.15E-08	3.38E-06	3.01E-07	2.76E-07
2030 Annual	Mon-Sun	2.27E+09	Chippers/SI G4	25	Lawn and C C	P	NHH	P	Monterey	NCC	MBU	6.99E+00	2.42E+01	3.63E+01	3.01E-03	1.14E-01	1.87E-03	1.61E-01	4.07E-06	1.35E-03	1.07E-04	1.55E-04
2030 Annual	Mon-Sun	2.27E+09	Chippers/SI G4	25	Lawn and C R	P	NHH	P	Monterey	NCC	MBU	1.24E+01	5.63E-01	8.31E-01	5.15E-05	2.60E-03	3.18E-05	3.74E-03	9.48E-08	3.13E-05	2.12E-06	2.70E-06
2030 Annual	Mon-Sun	2.27E+09	Commercia G4	15	Lawn and C C	N	NHH	NP	Monterey	NCC	MBU	9.21E+01	2.02E+02	1.13E+02	6.58E-03	3.46E-01	4.50E-03	5.25E-01	1.50E-05	2.94E-04	4.63E-04	3.43E-04
2030 Annual	Mon-Sun	2.27E+09	Commercia G4	25	Lawn and C C	N	NHH	NP	Monterey	NCC	MBU	4.54E+01	9.94E+01	9.94E+01	5.44E-03	3.12E-01	4.01E-03	4.47E-01	1.13E-05	2.50E-04	3.33E-04	2.83E-04
2030 Annual	Mon-Sun	2.27E+09	Commercia G4	50	Lawn and C U	N	NHH	NP	Monterey	NCC	MBU	1.83E+01	3.67E+01	6.35E+01	1.03E-03	1.05E-01	2.08E-03	4.44E-01	5.40E-06	3.40E-05	1.36E-04	5.37E-05
2030 Annual	Mon-Sun	2.27E+09	Commercia G4	120	Lawn and C U	N	NHH	NP	Monterey	NCC	MBU	1.21E-01	2.43E-01	5.97E-01	2.88E-06	1.60E-04	1.65E-05	5.50E-03	5.31E-08	4.26E-07	1.01E-06	1.51E-07
2030 Annual	Mon-Sun	2.27E+09	Other Lawr G4	5	Lawn and C C	N	NHH	NP	Monterey	NCC	MBU	8.09E+01	1.52E+01	3.25E+00	2.98E-04	8.64E-03	7.18E-05	1.67E-02	5.76E-07	4.39E-05	1.52E-05	1.56E-05
2030 Annual	Mon-Sun	2.27E+09	Other Lawr G4	5	Lawn and C R	N	NHH	NP	Monterey	NCC	MBU	2.48E+03	2.92E+01	6.83E+00	4.00E-04	2.06E-02	9.51E-05	3.21E-02	1.11E-06	6.31E-05	2.39E-05	2.10E-05
2030 Annual	Mon-Sun	2.27E+09	Other Lawr G4	15	Lawn and C C	N	NHH	NP	Monterey	NCC	MBU	3.59E+01	6.75E+00	3.16E+00	1.29E-04	9.68E-03	9.00E-05	1.48E-02	4.23E-07	5.89E-06	1.18E-05	6.74E-06
2030 Annual	Mon-Sun	2.27E+09	Other Lawr G4	15	Lawn and C R	N	NHH	NP	Monterey	NCC	MBU	1.10E+03	1.30E+01	6.07E+00	2.17E-04	1.86E-02	1.53E-04	2.85E-02	8.12E-07	9.82E-06	2.12E-05	1.13E-05
2030 Annual	Mon-Sun	2.27E+09	Other Lawr G4	25	Lawn and C C	N	NHH	NP	Monterey	NCC	MBU	7.59E-01	1.43E-01	1.46E-01	5.87E-06	4.61E-04	3.94E-06	6.66E-04	1.69E-08	2.64E-07	3.67E-07	3.07E-07
2030 Annual	Mon-Sun	2.27E+09	Other Lawr G4	25	Lawn and C R	N	NHH	NP	Monterey	NCC	MBU	2.34E+01	2.76E-01	2.83E-01	1.02E-05	8.93E-04	6.45E-06	1.29E-03	3.26E-08	4.44E-07	6.49E-07	5.33E-07
2030 Annual	Mon-Sun	2.27E+09	Other Lawr G4	50	Lawn and C U	N	NHH	NP	Monterey	NCC	MBU	5.50E-02	9.19E-03	1.94E-02	2.05E-07	1.31E-05	3.78E-07	1.66E-04	2.01E-09	1.27E-08	2.91E-08	1.07E-08
2030 Annual	Mon-Sun	2.27E+09	Other Lawr G4	120	Lawn and C U	N	NHH	NP	Monterey	NCC	MBU	1.32E-01	2.21E-02	1.19E-01	5.20E-07	2.20E-05	3.17E-06	1.11E-03	1.08E-08	8.63E-08	1.36E-07	2.72E-08
2030 Annual	Mon-Sun	2.27E+09	2-Wheel Tr G4	5	Agricultura U	P	NHH	NP	Monterey	NCC	MBU	3.53E+01	1.55E+01	3.34E+00	4.77E-04	7.74E-03	2.06E-04	1.82E-02	6.29E-07	5.94E-06	2.70E-05	2.50E-05
2030 Annual	Mon-Sun	2.27E+09	2-Wheel Tr G4	15	Agricultura U	P	NHH	NP	Monterey	NCC	MBU	4.11E+01	3.75E+01	1.91E+01	1.47E-03	5.75E-02	1.05E-03	8.80E-02	2.51E-06	7.37E-04	9.71E-05	7.72E-05
2030 Annual	Mon-Sun	2.27E+09	2-Wheel Tr G4	25	Agricultura U	P	NHH	NP	Monterey	NCC	MBU	1.10E+00	1.01E+00	1.06E+00	8.35E-05	3.27E-03	5.20E-05	4.72E-03	1.20E-07	3.96E-05	3.62E-06	4.37E-06
2030 Annual	Mon-Sun	2.27E+09	Agricultura G4	120	Agricultura U	P	NHH	NP	Monterey	NCC	MBU	1.20E+01	1.80E+01	8.97E+01	8.65E-04	5.03E-02	1.91E-03	7.83E-01	7.57E-06	6.07E-05	9.1	

2030 Annual	Mon-Sun	2.27E+09	Forklifts	C4	50	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	3.04E+01	1.50E+02	2.01E+02	1.33E-04	2.21E-02	5.77E-03	1.37E+00	0.00E+00	1.22E-04	0.00E+00	1.12E-03
2030 Annual	Mon-Sun	2.27E+09	Forklifts	C4	120	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	1.07E+02	5.27E+02	1.26E+03	7.90E-04	3.72E-01	3.74E-02	8.24E+00	0.00E+00	7.32E-04	0.00E+00	6.62E-03
2030 Annual	Mon-Sun	2.27E+09	Forklifts	C4	175	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	3.91E+00	1.93E+01	9.42E+01	3.62E-05	2.18E-02	1.86E-03	6.29E-01	0.00E+00	5.59E-05	0.00E+00	3.04E-04
2030 Annual	Mon-Sun	2.27E+09	Generator	C4	120	Light Comm U	N	NHH	P	Monterey	NCC	MBU	3.02E+00	9.50E-01	5.94E+00	1.32E-06	1.25E-03	1.08E-04	3.99E-02	0.00E+00	3.55E-06	0.00E+00	1.11E-05
2030 Annual	Mon-Sun	2.27E+09	Generator	C4	175	Light Comm U	N	NHH	P	Monterey	NCC	MBU	2.50E+00	7.88E-01	8.59E+00	1.47E-06	1.50E-03	1.45E-04	5.82E-02	0.00E+00	5.17E-06	0.00E+00	1.23E-05
2030 Annual	Mon-Sun	2.27E+09	Gas Compr	C4	50	Light Comm U	P	NHH	P	Monterey	NCC	MBU	4.69E-01	1.09E+01	3.74E+01	2.13E-05	3.77E-03	7.72E-04	2.57E-01	0.00E+00	1.97E-05	0.00E+00	1.78E-04
2030 Annual	Mon-Sun	2.27E+09	Gas Compr	C4	120	Light Comm U	P	NHH	P	Monterey	NCC	MBU	9.70E-01	2.26E+01	2.19E+02	1.16E-04	6.02E-02	4.57E-03	1.44E+00	0.00E+00	1.12E-04	0.00E+00	9.72E-04
2030 Annual	Mon-Sun	2.27E+09	Gas Compr	C4	175	Light Comm U	P	NHH	P	Monterey	NCC	MBU	1.56E-01	3.64E+00	5.61E+01	3.23E-05	1.23E-02	1.22E-03	3.75E-01	0.00E+00	2.99E-05	0.00E+00	2.71E-04
2030 Annual	Mon-Sun	2.27E+09	Gas Compr	C4	250	Light Comm U	N	NHH	P	Monterey	NCC	MBU	1.25E-01	2.91E+00	5.82E+01	2.49E-05	1.41E-02	1.18E-03	3.87E-01	0.00E+00	3.44E-05	0.00E+00	2.09E-04
2030 Annual	Mon-Sun	2.27E+09	Gas Compr	C4	500	Light Comm U	N	NHH	P	Monterey	NCC	MBU	1.10E-01	2.55E+00	8.19E+01	3.50E-05	1.99E-02	1.67E-03	5.45E-01	0.00E+00	4.85E-05	0.00E+00	2.94E-04
2030 Annual	Mon-Sun	2.27E+09	Cargo Tract	C4	175	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	4.76E-01	2.03E-01	1.88E+00	3.39E-07	3.33E-04	3.19E-05	1.27E-02	0.00E+00	1.13E-06	0.00E+00	2.85E-06
2030 Annual	Mon-Sun	2.27E+09	Belit Loader	C4	175	Airport Grc U	N	NHH	P	Monterey	NCC	MBU	7.94E-02	4.79E-03	5.12E-02	7.12E-09	8.57E-06	8.36E-07	3.48E-04	0.00E+00	3.09E-08	0.00E+00	5.97E-08
2030 Annual	Mon-Sun	2.27E+09	Baggage Tr	C4	120	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	1.12E+00	2.56E+00	1.59E+01	9.92E-06	4.61E-03	4.71E-04	1.05E-01	0.00E+00	9.31E-06	0.00E+00	8.31E-05
2030 Annual	Mon-Sun	2.27E+09	Belit Loader	C4	120	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	2.99E-01	4.52E-01	1.52E+00	7.11E-07	3.95E-04	3.83E-05	1.01E-02	0.00E+00	8.98E-07	0.00E+00	5.96E-06
2030 Annual	Mon-Sun	2.27E+09	Bobtail	C4	120	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	2.57E-02	6.17E-02	3.79E-01	1.33E-07	9.07E-05	8.24E-06	2.52E-03	0.00E+00	2.25E-07	0.00E+00	1.12E-06
2030 Annual	Mon-Sun	2.27E+09	Cargo Load	C4	120	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	1.21E-01	3.42E-01	1.36E+00	1.00E-06	4.25E-04	4.47E-05	8.90E-03	0.00E+00	7.91E-07	0.00E+00	8.39E-06
2030 Annual	Mon-Sun	2.27E+09	Forklift	C4	50	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	1.57E+00	3.13E+00	5.06E+00	1.61E-06	4.33E-04	1.17E-04	3.50E-02	0.00E+00	3.11E-06	0.00E+00	1.35E-05
2030 Annual	Mon-Sun	2.27E+09	Forklift	C4	175	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	5.27E-02	8.17E-02	3.17E-01	9.73E-08	6.57E-05	6.04E-06	2.13E-03	0.00E+00	1.89E-07	0.00E+00	8.16E-07
2030 Annual	Mon-Sun	2.27E+09	Forklift	C4	175	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	4.73E-02	5.02E-02	1.80E-01	4.54E-08	3.50E-05	3.27E-06	1.21E-03	0.00E+00	1.08E-07	0.00E+00	3.81E-07
2030 Annual	Mon-Sun	2.27E+09	Forklift	C4	120	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	4.42E-02	4.14E-02	2.31E-01	8.00E-08	5.43E-05	5.01E-06	1.54E-03	0.00E+00	1.37E-07	0.00E+00	6.70E-07
2030 Annual	Mon-Sun	2.27E+09	Other	C4	50	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	2.31E-01	6.45E-01	1.75E+00	1.35E-06	2.02E-04	5.47E-05	1.20E-02	0.00E+00	1.07E-06	0.00E+00	1.13E-05
2030 Annual	Mon-Sun	2.27E+09	Passenger	C4	175	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	2.04E-02	6.72E-04	7.17E-03	9.74E-10	1.19E-06	1.17E-07	4.86E-05	0.00E+00	4.32E-09	0.00E+00	8.16E-09
2030 Annual	Mon-Sun	2.27E+09	Air Conditi	C4	50	Airport Grc U	N	NHH	P	Monterey	NCC	MBU	2.04E-02	1.56E-02	3.84E-02	1.08E-08	3.18E-06	6.68E-07	2.66E-04	0.00E+00	2.36E-08	0.00E+00	9.07E-08
2030 Annual	Mon-Sun	2.27E+09	Air Conditi	C4	250	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	2.34E-01	8.34E-01	3.35E+00	1.34E-06	7.88E-04	6.67E-05	2.23E-02	0.00E+00	1.98E-06	0.00E+00	1.12E-05
2030 Annual	Mon-Sun	2.27E+09	Catering Tr	C4	250	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	8.94E-02	1.11E-01	1.31E+00	3.56E-07	2.60E-04	2.41E-05	8.78E-03	0.00E+00	7.81E-07	0.00E+00	2.98E-06
2030 Annual	Mon-Sun	2.27E+09	Pavers	D	25	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	1.51E-01	3.39E-01	2.88E-01	3.81E-06	1.30E-05	2.41E-05	3.16E-03	4.01E-08	9.00E-07	0.00E+00	3.44E-07
2030 Annual	Mon-Sun	2.27E+09	Pavers	D	50	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	8.75E+00	1.99E+01	2.56E+01	4.13E-04	2.64E-03	1.88E-03	2.78E-01	3.59E-06	6.55E-05	0.00E+00	3.72E-05
2030 Annual	Mon-Sun	2.27E+09	Pavers	D	120	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	1.03E+01	2.34E+01	7.39E+01	5.81E-04	5.42E-03	3.52E-03	8.10E-01	9.50E-06	1.73E-04	0.00E+00	5.24E-05
2030 Annual	Mon-Sun	2.27E+09	Pavers	D	175	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	6.41E+00	1.46E+01	8.50E+01	4.93E-04	5.46E-03	2.34E-03	9.33E-01	1.05E-05	1.22E-04	0.00E+00	4.45E-05
2030 Annual	Mon-Sun	2.27E+09	Pavers	D	250	Constructiv U	N	NHH	NP	Monterey	NCC	MBU	7.73E-01	1.75E+00	1.54E+01	7.80E-05	3.58E-04	3.73E-04	1.70E-01	1.92E-06	1.37E-05	0.00E+00	7.03E-06
2030 Annual	Mon-Sun	2.27E+09	Pavers	D	500	Constructiv U	N	NHH	NP	Monterey	NCC	MBU	7.93E-01	1.80E+00	1.90E+01	9.37E-05	4.36E-04	4.21E-04	2.10E-01	2.06E-06	1.59E-05	0.00E+00	8.45E-06
2030 Annual	Mon-Sun	2.27E+09	Plate Comp	D	15	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	3.23E+00	5.32E+00	1.05E+00	1.33E-05	7.00E-05	8.35E-05	1.15E-02	1.78E-07	3.26E-06	0.00E+00	1.20E-06
2030 Annual	Mon-Sun	2.27E+09	Rollers	D	15	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	6.07E+00	1.16E+01	3.34E+00	4.25E-05	2.23E-04	2.66E-04	3.65E-02	5.69E-07	1.04E-05	0.00E+00	3.84E-06
2030 Annual	Mon-Sun	2.27E+09	Rollers	D	25	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	2.54E+00	4.84E+00	2.94E+00	3.89E-05	1.33E-04	2.46E-04	3.23E-02	4.09E-07	9.19E-06	0.00E+00	3.51E-06
2030 Annual	Mon-Sun	2.27E+09	Rollers	D	50	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	7.90E+00	1.51E+01	1.80E+01	2.03E-04	1.65E-03	1.20E-03	1.96E-01	2.54E-06	2.54E-05	0.00E+00	1.83E-05
2030 Annual	Mon-Sun	2.27E+09	Rollers	D	120	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	4.24E+01	8.12E+01	2.18E+02	1.26E-03	1.53E-02	8.21E-03	2.39E+00	2.81E-05	2.79E-04	0.00E+00	1.14E-04
2030 Annual	Mon-Sun	2.27E+09	Rollers	D	175	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	1.71E+01	3.27E+01	1.61E+02	6.93E-04	9.94E-03	2.81E-03	1.76E+00	1.99E-05	1.30E-04	0.00E+00	6.26E-05
2030 Annual	Mon-Sun	2.27E+09	Rollers	D	250	Constructiv U	N	NHH	NP	Monterey	NCC	MBU	2.42E+00	4.63E+00	3.20E+01	1.22E-04	6.85E-04	4.64E-04	3.54E-01	3.99E-06	1.53E-05	0.00E+00	1.10E-05
2030 Annual	Mon-Sun	2.27E+09	Rollers	D	500	Constructiv U	N	NHH	NP	Monterey	NCC	MBU	1.70E+00	3.25E+00	3.22E+01	1.21E-04	6.61E-04	4.36E-04	3.56E-01	3.49E-06	1.49E-05	0.00E+00	1.09E-05
2030 Annual	Mon-Sun	2.27E+09	Scrapers	D	120	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	3.91E-01	1.18E+00	5.07E+00	4.01E-05	3.78E-04	2.33E-04	5.56E-02	6.52E-07	1.09E-05	0.00E+00	3.62E-06
2030 Annual	Mon-Sun	2.27E+09	Scrapers	D	175	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	3.58E+00	1.08E+01	7.31E+01	4.25E-04	4.78E-03	1.86E-03	8.02E-01	9.02E-06	9.62E-05	0.00E+00	3.84E-05
2030 Annual	Mon-Sun	2.27E+09	Scrapers	D	250	Constructiv U	N	NHH	NP	Monterey	NCC	MBU	3.49E+00	1.06E+01	1.00E+02	5.15E-04	2.35E-03	2.24E-03	1.11E+00	1.24E-05	8.23E-05	0.00E+00	4.65E-05
2030 Annual	Mon-Sun	2.27E+09	Scrapers	D	500	Constructiv U	N	NHH	NP	Monterey	NCC	MBU	9.61E+00	2.91E+01	4.23E+02	2.13E-03	9.74E-03	8.69E-03	4.67E+00	4.59E-05	3.30E-04	0.00E+00	1.92E-04
2030 Annual	Mon-Sun	2.27E+09	Scrapers	D	750	Constructiv U	N	NHH	NP	Monterey	NCC	MBU	4.81E-01	1.45E+00	3.65E+01	1.84E-04	8.42E-04	7.62E-04	4.04E-01	4.06E-06	2.87E-05	0.00E+00	1.66E-05
2030 Annual	Mon-Sun	2.27E+09	Paving Equ	D	25	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	2.61E-01	5.93E-01	3.41E-01	4.51E-06	1.54E-05	2.85E-05	3.74E-03	4.75E-08	1.07E-06	0.00E+00	4.07E-07
2030 Annual	Mon-Sun	2.27E+09	Paving Equ	D	50	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	2.21E-01	5.04E-01	5.54E-01	8.51E-06	5.63E-05	4.04E-05	6.03E-03	7.79E-08	1.34E-06	0.00E+00	7.68E-07
2030 Annual	Mon-Sun	2.27E+09	Paving Equ	D	120	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	3.18E+00	7.27E+00	1.81E+01	1.36E-04	1.31E-03	8.33E-04	1.98E-01	2.32E-06	3.97E-05	0.00E+00	1.23E-05
2030 Annual	Mon-Sun	2.27E+09	Paving Equ	D	175	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	1.50E+00	3.42E+00	1.57E+01	8.81E-05	1.00E-03	4.13E-04	1.72E-01	1.94E-06	2.13E-05	0.00E+00	7.95E-06
2030 Annual	Mon-Sun	2.27E+09	Paving Equ	D	250	Constructiv U	N	NHH	NP	Monterey	NCC	MBU	4.22E-01	9.63E-01	5.32E+00	2.60E-05	1.21E-04	5.88E-02	6.62E-07	4.38E-06	0.00E+00	0.00E+00	2.34E-06
2030 Annual	Mon-Sun	2.27E+09	Surfacing E	D	50	Constructiv U	P	NHH	NP	Monterey	NCC	MBU	2.01E-01	2.47E-01	1.60E-01	1.59E-06	1.32E-05	1.04E-05	1.74E-03	2.25E-08	2.32E-07	0.00E+00	1.43E-07
2030 Annual	Mon-Sun	2.27E+09	Surfacing E	D	120																		



2030 Annual	Mon-Sun	2.27E+09	Skid Steer LD	120	Constructic U	P	NHH	NP	Monterey	NCC	MBU	9.16E+01	2.13E+02	4.14E+02	1.71E-03	2.83E-02	1.18E-02	4.54E+00	5.33E-05	1.37E-04	0.00E+00	1.54E-04
2030 Annual	Mon-Sun	2.27E+09	Off-Highwa D	120	Constructic U	P	NHH	NP	Monterey	NCC	MBU	1.00E-02	3.04E-02	1.30E-01	1.30E-06	9.89E-06	7.41E-06	1.43E-03	1.67E-08	4.39E-07	0.00E+00	1.17E-07
2030 Annual	Mon-Sun	2.27E+09	Off-Highwa D	175	Constructic U	P	NHH	NP	Monterey	NCC	MBU	1.23E+01	3.72E+01	2.21E+02	1.59E-03	1.47E-02	8.15E-03	2.42E+00	2.73E-05	4.43E-04	0.00E+00	1.44E-04
2030 Annual	Mon-Sun	2.27E+09	Off-Highwa D	250	Constructic U	N	NHH	NP	Monterey	NCC	MBU	1.12E+01	3.52E+01	2.08E+02	1.27E-03	5.19E-03	6.90E-03	2.29E+00	2.58E-05	2.60E-04	0.00E+00	1.15E-04
2030 Annual	Mon-Sun	2.27E+09	Off-Highwa D	750	Constructic U	N	NHH	NP	Monterey	NCC	MBU	1.54E+00	4.66E+00	1.20E+02	7.08E-04	3.15E-03	3.69E-03	1.32E+00	1.33E-05	1.40E-04	0.00E+00	6.39E-05
2030 Annual	Mon-Sun	2.27E+09	Off-Highwa D	1000	Constructic U	N	NHH	NP	Monterey	NCC	MBU	1.62E-01	4.92E-01	1.81E+01	1.12E-04	4.96E-04	1.25E-03	2.00E-01	2.01E-06	2.75E-05	0.00E+00	1.01E-05
2030 Annual	Mon-Sun	2.27E+09	Dumpers/T/D	25	Constructic U	P	NHH	NP	Monterey	NCC	MBU	2.41E-01	4.37E-01	1.52E-01	2.01E-06	6.86E-06	1.27E-05	1.67E-03	2.11E-08	4.74E-07	0.00E+00	1.81E-07
2030 Annual	Mon-Sun	2.27E+09	Other Cons D	15	Constructic U	P	NHH	NP	Monterey	NCC	MBU	3.32E+00	6.29E+00	2.90E+00	3.69E-05	1.94E-04	2.31E-04	3.17E-02	4.94E-07	9.04E-06	0.00E+00	3.33E-06
2030 Annual	Mon-Sun	2.27E+09	Other Cons D	25	Constructic U	P	NHH	NP	Monterey	NCC	MBU	5.62E-01	1.06E+00	6.04E-01	8.47E-06	2.89E-05	5.35E-05	7.02E-03	8.91E-08	2.00E-06	0.00E+00	7.64E-07
2030 Annual	Mon-Sun	2.27E+09	Other Cons D	50	Constructic U	P	NHH	NP	Monterey	NCC	MBU	8.63E-01	1.65E+00	2.11E+00	1.74E-05	1.78E-04	1.30E-04	2.31E-02	2.99E-07	1.25E-06	0.00E+00	1.57E-06
2030 Annual	Mon-Sun	2.27E+09	Other Cons D	120	Constructic U	P	NHH	NP	Monterey	NCC	MBU	1.43E+00	2.73E+00	1.00E+01	4.37E-05	6.86E-04	3.06E-04	1.10E-01	1.29E-06	5.32E-06	0.00E+00	3.94E-06
2030 Annual	Mon-Sun	2.27E+09	Other Cons D	175	Constructic U	P	NHH	NP	Monterey	NCC	MBU	1.97E+00	3.76E+00	1.82E+01	5.70E-05	1.10E-03	1.62E-04	2.00E-01	2.25E-06	6.88E-06	0.00E+00	5.15E-06
2030 Annual	Mon-Sun	2.27E+09	Other Cons D	500	Constructic U	N	NHH	NP	Monterey	NCC	MBU	4.57E+00	8.74E+00	1.00E+02	3.02E-04	2.01E-03	7.65E-04	1.11E+00	1.09E-05	2.79E-05	0.00E+00	2.72E-05
2030 Annual	Mon-Sun	2.27E+09	Aerial Lifts D	15	Industrial E U	P	NHH	NP	Monterey	NCC	MBU	2.32E+00	2.54E+00	1.00E+00	1.28E-05	6.71E-05	8.01E-05	1.10E-02	1.71E-07	3.13E-06	0.00E+00	1.15E-06
2030 Annual	Mon-Sun	2.27E+09	Aerial Lifts D	25	Industrial E U	P	NHH	NP	Monterey	NCC	MBU	3.79E+00	4.15E+00	2.07E+00	2.74E-05	9.35E-05	1.73E-04	2.27E-02	2.88E-07	6.49E-06	0.00E+00	2.47E-06
2030 Annual	Mon-Sun	2.27E+09	Aerial Lifts D	50	Industrial E U	P	NHH	NP	Monterey	NCC	MBU	1.39E+01	1.46E+01	1.30E+01	8.48E-05	9.46E-04	7.87E-04	1.43E-01	1.85E-06	9.81E-06	0.00E+00	7.65E-06
2030 Annual	Mon-Sun	2.27E+09	Aerial Lifts D	120	Industrial E U	P	NHH	NP	Monterey	NCC	MBU	1.23E+01	1.29E+01	2.24E+01	8.12E-05	1.45E-03	7.13E-04	2.46E-01	2.88E-06	1.53E-05	0.00E+00	7.32E-06
2030 Annual	Mon-Sun	2.27E+09	Aerial Lifts D	500	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	1.57E+00	1.66E+00	1.59E+01	3.91E-05	3.06E-04	1.47E-04	1.76E-01	1.73E-06	4.96E-06	0.00E+00	3.52E-06
2030 Annual	Mon-Sun	2.27E+09	Aerial Lifts D	750	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	1.27E-01	1.33E-01	2.32E+00	5.69E-06	4.45E-05	2.16E-05	2.56E-02	2.58E-07	7.26E-07	0.00E+00	5.13E-07
2030 Annual	Mon-Sun	2.27E+09	Forklifts D	50	Industrial E U	P	NHH	NP	Monterey	NCC	MBU	4.20E+00	2.07E+01	1.39E+01	1.50E-04	1.40E-03	8.88E-04	1.52E-01	1.96E-06	6.26E-06	0.00E+00	1.35E-05
2030 Annual	Mon-Sun	2.27E+09	Forklifts D	120	Industrial E U	P	NHH	NP	Monterey	NCC	MBU	6.59E+00	3.25E+01	4.62E+01	2.51E-04	3.38E-03	1.38E-03	5.07E-01	5.95E-06	1.86E-05	0.00E+00	2.26E-05
2030 Annual	Mon-Sun	2.27E+09	Forklifts D	175	Industrial E U	P	NHH	NP	Monterey	NCC	MBU	6.62E+00	3.27E+01	8.33E+01	3.19E-04	5.40E-03	6.21E-04	9.15E-01	1.03E-05	2.49E-05	0.00E+00	2.88E-05
2030 Annual	Mon-Sun	2.27E+09	Forklifts D	250	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	6.57E+00	3.24E+01	1.13E+02	4.27E-04	2.51E-03	7.45E-04	1.25E+00	1.41E-05	2.79E-05	0.00E+00	3.85E-05
2030 Annual	Mon-Sun	2.27E+09	Forklifts D	500	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	2.81E+00	1.39E+01	6.96E+01	2.63E-04	1.47E-03	4.59E-04	7.69E-01	7.55E-06	1.72E-05	0.00E+00	2.37E-05
2030 Annual	Mon-Sun	2.27E+09	Sweepers/T/D	15	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	3.08E-01	5.49E-01	2.99E-01	3.40E-06	2.00E-05	2.39E-05	3.28E-03	5.10E-08	9.33E-07	0.00E+00	3.07E-07
2030 Annual	Mon-Sun	2.27E+09	Sweepers/T/D	25	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	3.08E-01	5.49E-01	2.99E-01	3.40E-06	2.00E-05	2.39E-05	3.28E-03	5.10E-08	9.33E-07	0.00E+00	3.07E-07
2030 Annual	Mon-Sun	2.27E+09	Sweepers/T/D	50	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	6.00E+00	2.01E+01	2.90E+01	2.83E-04	2.75E-03	1.83E-03	3.17E-01	4.09E-06	1.47E-05	0.00E+00	2.55E-05
2030 Annual	Mon-Sun	2.27E+09	Sweepers/T/D	120	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	9.93E+00	3.32E+01	1.14E+02	5.70E-04	8.11E-03	3.43E-03	1.25E+00	1.46E-05	5.06E-05	0.00E+00	5.14E-05
2030 Annual	Mon-Sun	2.27E+09	Sweepers/T/D	175	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	4.57E+00	1.53E+01	9.67E+01	3.48E-04	6.12E-03	7.95E-04	1.06E+00	1.20E-05	3.25E-05	0.00E+00	3.14E-05
2030 Annual	Mon-Sun	2.27E+09	Sweepers/T/D	250	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	7.32E-01	2.45E+00	1.79E+01	6.32E-05	3.89E-04	1.28E-04	1.98E-01	2.23E-06	4.73E-06	0.00E+00	5.70E-06
2030 Annual	Mon-Sun	2.27E+09	Other Gene D	15	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	8.09E-01	3.16E+00	9.22E-01	1.05E-05	7.36E-05	1.01E-02	1.57E-07	2.88E-06	0.00E+00	0.00E+00	9.45E-07
2030 Annual	Mon-Sun	2.27E+09	Other Gene D	25	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	1.08E+00	4.24E+00	2.96E+00	3.92E-05	1.34E-04	2.48E-04	3.25E-02	4.12E-07	9.25E-06	0.00E+00	3.54E-06
2030 Annual	Mon-Sun	2.27E+09	Other Gene D	50	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	1.34E+00	5.25E+00	5.23E+00	6.08E-05	5.31E-04	3.46E-04	5.70E-02	7.37E-07	4.78E-06	0.00E+00	5.49E-06
2030 Annual	Mon-Sun	2.27E+09	Other Gene D	120	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	5.37E+00	2.10E+01	5.93E+01	3.52E-04	4.35E-03	2.01E-03	6.50E-01	7.63E-06	4.83E-05	0.00E+00	3.18E-05
2030 Annual	Mon-Sun	2.27E+09	Other Gene D	175	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	5.39E+00	2.11E+01	9.18E+01	3.94E-04	5.96E-03	1.11E-03	1.01E+00	1.14E-05	4.95E-05	0.00E+00	3.56E-05
2030 Annual	Mon-Sun	2.27E+09	Other Gene D	250	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	5.37E+00	2.10E+01	1.28E+02	5.21E-04	2.86E-03	1.32E-03	1.42E+00	1.60E-05	4.65E-05	0.00E+00	4.70E-05
2030 Annual	Mon-Sun	2.27E+09	Other Gene D	500	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	5.35E+00	2.09E+01	2.51E+02	1.01E-03	5.31E-03	2.44E-03	2.77E+00	2.72E-05	8.96E-05	0.00E+00	9.15E-05
2030 Annual	Mon-Sun	2.27E+09	Other Gene D	750	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	1.34E+00	5.23E+00	1.03E+02	4.18E-04	2.19E-03	1.01E-03	1.14E+00	1.15E-05	3.71E-05	0.00E+00	3.77E-05
2030 Annual	Mon-Sun	2.27E+09	Other Gene D	1000	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	8.14E-01	3.18E+00	8.04E+01	3.31E-04	1.70E-03	4.15E-03	8.89E-01	8.94E-06	5.49E-05	0.00E+00	2.99E-05
2030 Annual	Mon-Sun	2.27E+09	Other Matx D	50	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	3.85E-02	1.39E-01	1.94E-01	2.21E-06	1.94E-05	1.28E-05	2.11E-03	2.73E-08	1.76E-07	0.00E+00	2.00E-07
2030 Annual	Mon-Sun	2.27E+09	Other Matx D	120	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	2.31E-01	8.35E-01	2.31E+00	1.35E-05	1.69E-04	7.80E-05	2.53E-02	2.97E-07	1.87E-06	0.00E+00	1.22E-06
2030 Annual	Mon-Sun	2.27E+09	Other Matx D	175	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	2.48E-01	8.95E-01	4.97E+00	2.10E-05	3.21E-04	6.01E-05	5.46E-02	6.14E-07	2.67E-06	0.00E+00	1.90E-06
2030 Annual	Mon-Sun	2.27E+09	Other Matx D	250	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	5.89E-01	2.13E+00	1.39E+01	5.57E-05	3.09E-04	1.43E-04	1.54E-01	1.73E-06	5.03E-06	0.00E+00	5.03E-06
2030 Annual	Mon-Sun	2.27E+09	Other Matx D	500	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	1.10E-01	3.98E-01	3.44E+00	1.37E-05	7.26E-05	3.34E-05	3.81E-02	3.74E-07	1.23E-06	0.00E+00	1.24E-06
2030 Annual	Mon-Sun	2.27E+09	Other Matx D	9999	Industrial E U	N	NHH	NP	Monterey	NCC	MBU	3.30E-02	1.19E-01	4.00E+00	1.69E-05	8.43E-05	2.06E-04	4.42E-02	4.34E-07	2.71E-06	0.00E+00	1.52E-06
2030 Annual	Mon-Sun	2.27E+09	Leaf Blowe D	15	Lawn and CU	N	NHH	P	Monterey	NCC	MBU	8.80E-02	2.89E-02	3.97E-03	4.51E-08	2.65E-07	3.17E-07	4.35E-05	6.77E-10	1.24E-08	0.00E+00	4.07E-09
2030 Annual	Mon-Sun	2.27E+09	Leaf Blowe D	120	Lawn and CU	N	NHH	P	Monterey	NCC	MBU	7.70E-02	2.53E-02	5.59E-02	1.38E-07	3.41E-06	1.72E-06	6.15E-04	7.21E-09	3.05E-08	0.00E+00	1.25E-08
2030 Annual	Mon-Sun	2.27E+09	Leaf Blowe D	250	Lawn and CU	N	NHH	P	Monterey	NCC	MBU	2.20E-02	7.23E-03	3.27E-02	5.46E-08	6.04E-07	3.07E-07	3.62E-04	4.08E-09	9.12E-09	0.00E+00	4.92E-09
2030 Annual	Mon-Sun	2.27E+09	Lawn & Ga D	15	Lawn and CU	N	NHH	P	Monterey	NCC	MBU	2.12E+02	3.16E+02	1.34E+02	1.52E-03	8.97E-03	1.07E-02	1.47E+00	2.29E-05	4.18E-04	0.00E+00	1.37E-04
2030 Annual	Mon-Sun	2.27E+09	Lawn & Ga D	25	Lawn and CU	N	NHH	P	Monterey	NCC	MBU	1.66E+02	2.48E+02	1.61E+02	2.13E-03	7.28E-03	1.35E-02	1.77E+00	2.24E-05	5.04E-04	0.00E+00	1.92E-04
2030 Annual	Mon-Sun	2.27E+09	Chippers/S/D	15	Lawn and CU	P	NHH	P	Monterey	NCC	MBU	9.90E-02	1.26E-01	1.16E-01	1.53E-06	5.22E-06	9.67E-06	1.27E-03	1.61E-08	3.61E-07	0.00E+00	1.38E-07
2030 Annual	Mon-Sun	2.27E+09</																				

2030 Annual	Mon-Sun	2.27E+09	Forklift	D	175	Airport Grc U	P	NHH	NP	Monterey	NCC	MBU	3.11E-01	6.33E-01	1.68E+00	5.80E-06	1.03E-04	1.88E-05	1.85E-02	2.08E-07	8.22E-07	0.00E+00	5.23E-07
2030 Annual	Mon-Sun	2.27E+09	Fuel Truck	D	250	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	1.67E-01	2.87E-01	7.66E-01	2.30E-06	1.57E-05	7.29E-06	8.47E-03	9.53E-08	2.52E-07	0.00E+00	2.08E-07
2030 Annual	Mon-Sun	2.27E+09	Ground Po	D	175	Airport Grc U	N	NHH	P	Monterey	NCC	MBU	2.49E+00	6.62E+00	4.62E+01	1.65E-04	2.88E-03	4.50E-04	5.08E-01	5.71E-06	1.95E-05	0.00E+00	1.49E-05
2030 Annual	Mon-Sun	2.27E+09	Lav Truck	D	175	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	3.98E-02	1.43E-01	3.41E-01	1.40E-06	2.19E-05	3.86E-06	3.74E-03	4.21E-08	1.73E-07	0.00E+00	1.26E-07
2030 Annual	Mon-Sun	2.27E+09	Lift	D	120	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	4.14E-01	8.99E-01	2.95E+00	1.42E-05	2.05E-04	9.57E-05	3.24E-02	3.80E-07	2.11E-06	0.00E+00	1.29E-06
2030 Annual	Mon-Sun	2.27E+09	Other GSE	D	175	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	7.40E-01	1.87E+00	7.50E+00	4.11E-05	4.78E-04	1.89E-04	8.24E-02	1.07E-06	9.69E-06	0.00E+00	3.71E-06
2030 Annual	Mon-Sun	2.27E+09	Passenger	D	120	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	6.37E-02	1.22E-02	4.12E-02	9.01E-08	2.48E-06	1.23E-06	4.54E-04	5.32E-09	1.90E-08	0.00E+00	8.13E-09
2030 Annual	Mon-Sun	2.27E+09	Sweeper	D	120	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	1.83E-01	1.45E-01	2.16E-01	5.43E-07	1.35E-05	5.91E-06	2.38E-03	2.68E-08	5.49E-08	0.00E+00	4.90E-08
2030 Annual	Mon-Sun	2.27E+09	Generator	D	120	Airport Grc U	N	NHH	P	Monterey	NCC	MBU	1.19E-01	5.34E-01	2.00E+00	1.19E-05	1.47E-04	6.67E-05	2.19E-02	2.47E-07	1.52E-06	0.00E+00	1.07E-06
2030 Annual	Mon-Sun	2.27E+09	Generator	D	175	Airport Grc U	N	NHH	P	Monterey	NCC	MBU	6.53E-01	2.92E+00	2.06E+01	8.80E-05	1.34E-03	2.34E-04	2.26E-01	2.54E-06	1.06E-05	0.00E+00	7.94E-06
2030 Annual	Mon-Sun	2.27E+09	Generator	D	250	Airport Grc U	N	NHH	P	Monterey	NCC	MBU	6.77E-01	3.03E+00	3.06E+01	1.25E-04	6.85E-04	3.00E-04	3.39E-01	3.81E-06	1.08E-05	0.00E+00	1.13E-05
2030 Annual	Mon-Sun	2.27E+09	Generator	D	500	Airport Grc U	N	NHH	P	Monterey	NCC	MBU	7.17E-02	3.21E-01	5.14E+00	2.09E-05	1.09E-04	4.79E-05	5.69E-02	6.40E-07	1.79E-06	0.00E+00	1.89E-06
2030 Annual	Mon-Sun	2.27E+09	Generator	D	750	Airport Grc U	N	NHH	P	Monterey	NCC	MBU	9.55E-02	4.27E-01	1.11E+01	4.51E-05	2.35E-04	1.04E-04	1.22E-01	1.38E-06	3.87E-06	0.00E+00	4.07E-06
2030 Annual	Mon-Sun	2.27E+09	Service Tru	D	175	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	2.63E-01	3.64E-01	7.20E-01	2.10E-06	4.21E-05	7.90E-06	7.92E-03	8.91E-08	3.37E-07	0.00E+00	1.89E-07
2030 Annual	Mon-Sun	2.27E+09	Catering Tr	D	250	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	6.37E-02	6.47E-02	4.57E-01	8.89E-07	8.75E-06	2.70E-06	5.06E-03	5.69E-08	9.08E-08	0.00E+00	8.02E-08
2030 Annual	Mon-Sun	2.27E+09	Hydrant Tr	D	175	Airport Grc U	N	NHH	NP	Monterey	NCC	MBU	1.27E-01	2.18E-01	1.52E+00	5.37E-06	9.15E-05	2.07E-05	1.67E-02	1.88E-07	9.00E-07	0.00E+00	4.84E-07
2030 Annual	Mon-Sun	2.27E+09	Compresso	D	120	Airport Grc U	P	NHH	P	Monterey	NCC	MBU	3.98E-02	8.89E-02	2.31E-01	1.13E-06	1.61E-05	7.51E-06	2.54E-03	2.98E-08	1.66E-07	0.00E+00	1.02E-07
2030 Annual	Mon-Sun	2.27E+09	Compresso	D	250	Airport Grc U	N	NHH	P	Monterey	NCC	MBU	7.96E-03	1.78E-02	9.38E-02	3.15E-07	1.98E-06	9.01E-07	1.04E-03	1.17E-08	3.16E-08	0.00E+00	2.84E-08
2030 Annual	Mon-Sun	2.27E+09	Compresso	D	500	Airport Grc U	N	NHH	P	Monterey	NCC	MBU	3.18E-02	7.11E-02	7.73E-01	2.59E-06	1.57E-05	7.06E-06	8.55E-03	8.39E-08	2.57E-07	0.00E+00	2.34E-07
2030 Annual	Mon-Sun	2.27E+09	Compresso	D	750	Airport Grc U	N	NHH	P	Monterey	NCC	MBU	1.04E-01	2.31E-01	3.71E+00	1.24E-05	7.54E-05	3.43E-05	4.11E-02	4.13E-07	1.24E-06	0.00E+00	1.12E-06
2030 Annual	Mon-Sun	2.27E+09	Transport F	D	15	Transport F U	N	NHH	NP	Monterey	NCC	MBU	2.09E+02	5.97E+02	2.18E+02	2.48E-03	1.46E-02	1.74E-02	2.39E+00	3.04E-05	6.81E-04	0.00E+00	2.24E-04
2030 Annual	Mon-Sun	2.27E+09	Transport F	D	25	Transport F U	N	NHH	NP	Monterey	NCC	MBU	5.65E+01	1.61E+02	1.00E+02	1.32E-03	4.52E-03	8.37E-03	1.10E+00	1.39E-05	3.13E-04	0.00E+00	1.19E-04
2030 Annual	Mon-Sun	2.27E+09	Transport F	D	50	Transport F U	N	NHH	NP	Monterey	NCC	MBU	1.73E+03	6.95E+03	8.23E+03	6.76E-02	7.09E-01	4.93E-01	9.00E+01	1.16E-03	2.38E-03	0.00E+00	6.10E-03
2030 Annual	Mon-Sun	2.27E+09	A/C unit	D	120	Military Ta U	P	NHH	P	Monterey	NCC	MBU	2.88E-01	2.37E-01	8.20E-01	2.73E-06	5.22E-05	2.63E-05	9.02E-03	1.06E-07	5.67E-07	0.00E+00	2.47E-07
2030 Annual	Mon-Sun	2.27E+09	A/C unit	D	250	Military Ta U	N	NHH	P	Monterey	NCC	MBU	1.20E-01	9.91E-02	7.00E-01	1.59E-06	1.35E-05	7.12E-06	7.75E-03	8.72E-08	2.26E-07	0.00E+00	1.43E-07
2030 Annual	Mon-Sun	2.27E+09	A/C unit	D	500	Military Ta U	N	NHH	P	Monterey	NCC	MBU	4.76E-02	3.92E-02	4.19E-01	9.42E-07	7.95E-06	4.02E-06	4.64E-03	4.56E-08	1.33E-07	0.00E+00	8.50E-08
2030 Annual	Mon-Sun	2.27E+09	Aircraft Su	D	120	Military Ta U	P	NHH	P	Monterey	NCC	MBU	7.84E-02	6.46E-02	1.50E-01	5.00E-07	9.56E-06	4.81E-06	1.65E-03	1.94E-08	1.04E-07	0.00E+00	4.51E-08
2030 Annual	Mon-Sun	2.27E+09	Aircraft Su	D	175	Military Ta U	P	NHH	P	Monterey	NCC	MBU	1.12E-01	9.22E-02	4.41E-01	1.08E-06	2.48E-05	5.29E-06	4.85E-03	5.46E-08	2.08E-07	0.00E+00	9.78E-08
2030 Annual	Mon-Sun	2.27E+09	Cart	D	120	Military Ta U	P	NHH	P	Monterey	NCC	MBU	3.36E-02	2.77E-02	7.66E-02	2.55E-07	4.88E-06	2.46E-06	8.42E-04	9.88E-09	5.30E-08	0.00E+00	2.30E-08
2030 Annual	Mon-Sun	2.27E+09	Cart	D	175	Military Ta U	P	NHH	P	Monterey	NCC	MBU	8.40E-03	6.92E-03	3.61E-02	8.88E-08	2.04E-06	4.34E-07	3.98E-04	4.48E-09	1.70E-08	0.00E+00	8.01E-09
2030 Annual	Mon-Sun	2.27E+09	Cart	D	250	Military Ta U	N	NHH	P	Monterey	NCC	MBU	2.80E-02	2.31E-02	1.54E-01	3.50E-07	2.98E-06	1.57E-06	1.71E-03	1.92E-08	4.98E-08	0.00E+00	3.15E-08
2030 Annual	Mon-Sun	2.27E+09	Communic	D	50	Military Ta U	P	NHH	P	Monterey	NCC	MBU	1.12E-02	9.22E-03	1.26E-02	7.32E-08	8.68E-07	7.58E-07	1.39E-04	1.79E-09	9.55E-09	0.00E+00	6.60E-09
2030 Annual	Mon-Sun	2.27E+09	Communic	D	120	Military Ta U	P	NHH	P	Monterey	NCC	MBU	1.68E-02	1.38E-02	3.78E-02	1.26E-07	4.21E-06	1.21E-06	4.16E-04	4.88E-09	2.62E-08	0.00E+00	1.14E-08
2030 Annual	Mon-Sun	2.27E+09	Compresso	D	50	Military Ta U	P	NHH	P	Monterey	NCC	MBU	1.12E-02	9.22E-03	1.55E-02	8.96E-08	1.06E-06	9.28E-07	1.70E-04	2.20E-09	1.17E-08	0.00E+00	8.09E-09
2030 Annual	Mon-Sun	2.27E+09	Compresso	D	120	Military Ta U	P	NHH	P	Monterey	NCC	MBU	4.23E-01	3.48E-01	8.45E-01	2.82E-06	5.38E-05	2.71E-05	9.29E-03	1.09E-07	5.84E-07	0.00E+00	2.54E-07
2030 Annual	Mon-Sun	2.27E+09	Compresso	D	175	Military Ta U	P	NHH	P	Monterey	NCC	MBU	1.12E-02	9.22E-03	5.26E-02	1.29E-07	2.96E-06	6.31E-07	5.79E-04	6.51E-09	2.48E-08	0.00E+00	1.17E-08
2030 Annual	Mon-Sun	2.27E+09	Compresso	D	250	Military Ta U	N	NHH	P	Monterey	NCC	MBU	2.24E-02	1.84E-02	1.40E-01	3.17E-07	2.70E-06	1.42E-06	1.55E-03	1.74E-08	4.51E-08	0.00E+00	2.86E-08
2030 Annual	Mon-Sun	2.27E+09	Compresso	D	500	Military Ta U	N	NHH	P	Monterey	NCC	MBU	7.84E-02	6.46E-02	8.18E-01	1.84E-06	1.55E-05	7.85E-06	9.05E-03	8.88E-08	2.60E-07	0.00E+00	1.66E-07
2030 Annual	Mon-Sun	2.27E+09	Crane	D	120	Military Ta U	P	NHH	P	Monterey	NCC	MBU	4.48E-02	3.69E-02	1.32E-01	3.08E-07	8.17E-06	3.49E-06	1.46E-03	1.71E-08	2.57E-08	0.00E+00	2.78E-08
2030 Annual	Mon-Sun	2.27E+09	Crane	D	175	Military Ta U	P	NHH	P	Monterey	NCC	MBU	8.40E-03	6.92E-03	3.33E-02	5.45E-08	1.82E-06	1.75E-07	3.67E-04	4.12E-09	5.96E-09	0.00E+00	4.92E-09
2030 Annual	Mon-Sun	2.27E+09	Crane	D	250	Military Ta U	N	NHH	P	Monterey	NCC	MBU	5.60E-03	4.61E-03	3.35E-02	5.49E-08	6.27E-07	1.72E-07	3.71E-04	4.17E-09	5.92E-09	0.00E+00	4.96E-09
2030 Annual	Mon-Sun	2.27E+09	Delcer	D	120	Military Ta U	P	NHH	P	Monterey	NCC	MBU	1.12E-02	9.22E-03	3.47E-02	1.16E-07	2.21E-06	1.11E-06	3.81E-04	4.47E-09	2.40E-08	0.00E+00	1.04E-08
2030 Annual	Mon-Sun	2.27E+09	Generator	D	50	Military Ta U	P	NHH	P	Monterey	NCC	MBU	7.56E-02	6.23E-02	8.10E-02	4.69E-07	5.56E-06	4.86E-06	8.89E-04	1.15E-08	6.12E-08	0.00E+00	4.23E-08
2030 Annual	Mon-Sun	2.27E+09	Generator	D	120	Military Ta U	P	NHH	P	Monterey	NCC	MBU	1.88E+00	1.55E+00	4.40E+00	1.47E-05	2.80E-04	1.41E-04	4.83E-02	5.67E-07	3.04E-06	0.00E+00	1.32E-06
2030 Annual	Mon-Sun	2.27E+09	Generator	D	175	Military Ta U	P	NHH	P	Monterey	NCC	MBU	1.51E+00	1.25E+00	6.26E+00	1.54E-05	3.53E-04	7.51E-05	6.89E-02	7.75E-07	2.95E-06	0.00E+00	1.39E-06
2030 Annual	Mon-Sun	2.27E+09	Generator	D	250	Military Ta U	N	NHH	P	Monterey	NCC	MBU	4.00E-01	3.30E-01	2.50E+00	5.66E-06	4.82E-05	2.54E-05	2.76E-02	3.11E-07	8.07E-07	0.00E+00	5.11E-07
2030 Annual	Mon-Sun	2.27E+09	Generator	D	500	Military Ta U	N	NHH	P	Monterey	NCC	MBU	1.62E-01	1.34E-01	1.58E+00	3.55E-06	2.99E-05	1.52E-05	1.75E-02	1.72E-07	5.03E-07	0.00E+00	3.20E-07
2030 Annual	Mon-Sun	2.27E+09	Generator	D	750	Military Ta U	N	NHH	P	Monterey	NCC	MBU	5.60E-03	4.60E-03	8.36E-02	1.88E-07	1.58E-06	8.13E-07	9.25E-04	9.30E-09	2.68E-08	0.00E+00	1.70E-08
2030 Annual	Mon-Sun	2.27E+09	Hydraulic u	D	120	Military Ta U	P	NHH	P	Monterey	NCC	MBU	1.88E-01	1.54E-01	5.02E-01	1.67E-06	3.20E-05	1.61E-05	5.52E-03	6.47E-08	3.47E-07	0.00E+00	1.51E-07
2030 Annual	Mon-Sun	2.27E+09	Lift (Millit	D	120	Military Ta U	P	NHH	P	Monterey	NCC	MBU	5.60E-03	4.61E-03	1.50E-02	4.99E-08	9.54E-07	4.80E-07	1.65E-04	1.93E-09	1.04E-08	0.00E+00	4.51E-09
2030 Annual	Mon-Sun	2.27E+09	Lift	D	50	Military Ta U	P	NHH	P	Monterey	NCC	MBU	1.40E-02										



Natural Gas Activity Data

Source: PG&E

TOTCOUNTY	TOTCITY	YEAR	CATEGORY	RES GAS USE(THM)	RES GAS CO2(metric t)	RES GAS 100	COM GAS AVG(THM)	COM GAS USE(THM)	COM GAS CO2(metric t)	COM GAS 1515	IND GAS AVG(THM)	IND GAS USE(THM)	IND GAS CO2(metric t)	IND GAS 1515
SACRAMENTO RANCHO C		2005	(3) COUNTY					27,524	146					
SACRAMENTO RANCHO C		2006	(3) COUNTY					23,644	125					
SACRAMENTO RANCHO C		2007	(3) COUNTY	26	0			23,170	123					
SACRAMENTO RANCHO C		2008	(3) COUNTY	50	0			20,511	109					
SACRAMENTO RANCHO C		2009	(3) COUNTY					18,053	96					
SACRAMENTO RANCHO C		2010	(3) COUNTY	124	1			13,940	74					
SACRAMENTO RANCHO C		2011	(3) COUNTY					11,348	60					
SACRAMENTO RANCHO C		2012	(3) COUNTY					10,178	54					
SACRAMENTO RANCHO C		2013	(3) COUNTY					9,322	49					
SACRAMENTO RANCHO C		2014	(3) COUNTY					5,648	30					
SACRAMENTO RANCHO C		2015	(3) COUNTY					8,703	46					
SACRAMENTO RANCHO C		2016	(3) COUNTY					9,146	49					
SACRAMENTO RANCHO C		2017	(3) COUNTY					11,475	61					
SACRAMENTO RANCHO C		2018	(3) COUNTY					8,774	47					
SACRAMENTO RANCHO C		2019	(3) COUNTY	10	0			9,742	52					
SACRAMENTO RANCHO C		2020	(3) COUNTY					9,792	52					
SACRAMENTO RANCHO C		2005	(4) CITY					878	5					
SACRAMENTO RANCHO C		2006	(4) CITY					10,558	56					
SACRAMENTO RANCHO C		2007	(4) CITY					18,033	96					
SACRAMENTO RANCHO C		2008	(4) CITY	1,255	7			23,442	124					
SACRAMENTO RANCHO C		2009	(4) CITY					19,623	104					
SACRAMENTO RANCHO C		2010	(4) CITY					17,180	91					
SACRAMENTO RANCHO C		2011	(4) CITY					29,491	157					
SACRAMENTO RANCHO C		2012	(4) CITY					43,419	230					
SACRAMENTO RANCHO C		2013	(4) CITY					41,716	221					
SACRAMENTO RANCHO C		2014	(4) CITY					43,506	231					
SACRAMENTO RANCHO C		2015	(4) CITY					35,318	187					
SACRAMENTO RANCHO C		2016	(4) CITY					32,410	172					
SACRAMENTO RANCHO C		2017	(4) CITY					35,408	188					
SACRAMENTO RANCHO C		2018	(4) CITY					34,379	182					
SACRAMENTO RANCHO C		2019	(4) CITY					30,432	162					
SACRAMENTO RANCHO C		2020	(4) CITY					28,162	149					
SACRAMENTO RANCHO C		2005	(5) DISTRICT					185,663	985					
SACRAMENTO RANCHO C		2006	(5) DISTRICT					226,585	1,203					
SACRAMENTO RANCHO C		2007	(5) DISTRICT					258,266	1,371					
SACRAMENTO RANCHO C		2008	(5) DISTRICT	202	1			235,740	1,251					
SACRAMENTO RANCHO C		2009	(5) DISTRICT	598	3			224,574	1,192					
SACRAMENTO RANCHO C		2010	(5) DISTRICT	741	4			206,369	1,095					
SACRAMENTO RANCHO C		2011	(5) DISTRICT	634	3			172,144	914					
SACRAMENTO RANCHO C		2012	(5) DISTRICT	367	2			153,464	814					
SACRAMENTO RANCHO C		2013	(5) DISTRICT	353	2			157,650	837					
SACRAMENTO RANCHO C		2014	(5) DISTRICT	306	2			135,115	717					
SACRAMENTO RANCHO C		2015	(5) DISTRICT	355	2			158,170	839					
SACRAMENTO RANCHO C		2016	(5) DISTRICT	499	3			160,940	854					
SACRAMENTO RANCHO C		2017	(5) DISTRICT	556	3			200,686	1,065					
SACRAMENTO RANCHO C		2018	(5) DISTRICT	571	3			216,601	1,150					
SACRAMENTO RANCHO C		2019	(5) DISTRICT	623	3			218,084	1,157					
SACRAMENTO RANCHO C		2020	(5) DISTRICT	631	3			190,687	1,012					
SACRAMENTO RANCHO C		2005	NONGOVENT	7,565,764	40,152	PASS		3,744,199	19,871	PASS-COM ONLY				FAIL-DROPPED
SACRAMENTO RANCHO C		2006	NONGOVENT	8,213,592	43,590	PASS		3,742,297	19,861	PASS-COM ONLY				FAIL-DROPPED
SACRAMENTO RANCHO C		2007	NONGOVENT	8,313,909	44,123	PASS		3,650,704	19,375	PASS-COM ONLY				FAIL-DROPPED
SACRAMENTO RANCHO C		2008	NONGOVENT	8,534,719	45,294	PASS		3,670,532	19,480	PASS-COM ONLY				FAIL-DROPPED
SACRAMENTO RANCHO C		2009	NONGOVENT	8,712,211	46,236	PASS		3,555,924	18,872	PASS-COM ONLY				FAIL-DROPPED
SACRAMENTO RANCHO C		2010	NONGOVENT	8,699,075	46,167	PASS		3,420,298	18,152	PASS-COM ONLY				FAIL-DROPPED
SACRAMENTO RANCHO C		2011	NONGOVENT	9,464,074	50,227	PASS		3,521,972	18,691	PASS-COM ONLY				FAIL-DROPPED
SACRAMENTO RANCHO C		2012	NONGOVENT	8,764,024	46,511	PASS		3,251,473	17,296	PASS-COM ONLY				FAIL-DROPPED
SACRAMENTO RANCHO C		2013	NONGOVENT	8,751,983	46,448	PASS		3,381,261	17,945	PASS-COM ONLY				FAIL-DROPPED
SACRAMENTO RANCHO C		2014	NONGOVENT	7,425,447	39,407	PASS		2,992,161	15,880	PASS-COM ONLY				FAIL-DROPPED
SACRAMENTO RANCHO C		2015	NONGOVENT	7,825,333	41,530	PASS		3,160,480	16,773	PASS-COM ONLY				FAIL-DROPPED
SACRAMENTO RANCHO C		2016	NONGOVENT	8,082,673	42,895	PASS		3,338,007	17,715	PASS-COM ONLY				FAIL-DROPPED
SACRAMENTO RANCHO C		2017	NONGOVENT	8,616,919	45,731	PASS		3,618,429	19,203	PASS-COM ONLY				FAIL-DROPPED
SACRAMENTO RANCHO C		2018	NONGOVENT	8,837,632	46,902	PASS		3,444,960	18,283	PASS-COM ONLY				FAIL-DROPPED
SACRAMENTO RANCHO C		2019	NONGOVENT	9,082,001	48,199	PASS		3,654,085	19,393	PASS-COM ONLY				FAIL-DROPPED
SACRAMENTO RANCHO C		2020	NONGOVENT	9,015,316	47,845	PASS		3,189,441	16,927	PASS-COM ONLY				FAIL-DROPPED

## Electricity Activity Data

Source: SMUD

rate_cat	ind_code	account_type	sum_of_kwh2017	sum_of_kwh2018	sum_of_kwh2019
ASD	221310	Agricultural	7296	28683	0
ASD	221312	Agricultural	91312	12030	106112
ASN	221311	Agricultural	1978	2212	1734
ASN	221312	Agricultural	35797	27676	28991
ASN	221312	Agricultural	105	216	220
CITP-2	485111	Small Commercial	1993542	1935490	1918945
CITP-3	485111	Industrial	1486719	1472371	1542999
CITP-4	518210	Industrial	20971529	20462575	17749560
CITS-0	221122	Small Commercial	13	0	0
CITS-0	221310	Small Commercial	64238	47300	60002
CITS-0	221311	Small Commercial	21191	22045	19637
CITS-0	221311	Small Commercial	15578	13949	13128
CITS-0	221312	Small Commercial	27042	28588	31943
CITS-0	221312	Small Commercial	81	75	146
CITS-0	221320	Small Commercial	107352	87271	110558
CITS-0	221320	Small Commercial	5549	1237	1183
CITS-0	231543	Small Commercial	6407	7832	8414
CITS-0	236220	Small Commercial	5	0	3
CITS-0	322222	Small Commercial	7054	5937	5938
CITS-0	423210	Small Commercial	74615	77018	84029
CITS-0	423720	Small Commercial	0	0	46241
CITS-0	485111	Small Commercial	324049	326195	316603
CITS-0	488210	Small Commercial	1436	1447	1341
CITS-0	493110	Small Commercial	20466	32606	31123
CITS-0	524210	Small Commercial	152595	130276	85122
CITS-0	531110	Small Commercial	8992	10376	9557
CITS-0	531120	Small Commercial	39292	46843	43027
CITS-0	531120	Small Commercial	0	0	117
CITS-0	531130	Small Commercial	0	0	0
CITS-0	531190	Small Commercial	7907	5670	3823
CITS-0	531191	Small Commercial	38624	40745	38959
CITS-0	531191	Small Commercial	1203	2592	2328
CITS-0	541330	Small Commercial	13395	13026	12069
CITS-0	611110	Small Commercial	131663	135973	129617
CITS-0	611210	Small Commercial	0	0	0
CITS-0	611310	Small Commercial	3735	3745	3459
CITS-0	621111	Small Commercial	0	0	46718
CITS-0	624410	Small Commercial	85944	82206	73509
CITS-0	722110	Small Commercial	86690	80079	78863
CITS-0	722211	Small Commercial	0	0	0
CITS-0	811111	Small Commercial	20940	21876	24127
CITS-0	921190	Small Commercial	80650	75405	78194
CITS-0	921190	Small Commercial	27469	19707	19123



CITS-0	922120 Small Commercial	53035	53928	43188
CITS-0	922160 Small Commercial	26014	29775	38758
CITS-0	922190 Small Commercial	85629	76644	74731
CITS-0	923110 Small Commercial	96299	88560	89309
CITS-0	924110 Small Commercial	768	809	1364
CITS-0	925110 Small Commercial	6609	5120	4879
CITS-0	925190 Small Commercial	0	0	0
CITS-0	926120 Small Commercial	4565	3222	4529
CITS-0	926130 Small Commercial	22744	21675	23888
CITS-0	926130 Small Commercial	17	1	11
CITS-0	928120 Small Commercial	57659	44614	44012
CITS-1	221311 Small Commercial	343122	314824	267172
CITS-1	221320 Small Commercial	268475	263117	219751
CITS-1	238160 Small Commercial	0	38576	62406
CITS-1	485111 Small Commercial	110408	119669	106838
CITS-1	491110 Small Commercial	209984	232373	232826
CITS-1	524210 Small Commercial	577143	580675	494995
CITS-1	531120 Small Commercial	146875	142422	141218
CITS-1	531191 Small Commercial	1433081	1207508	1145335
CITS-1	551114 Small Commercial	0	271568	436952
CITS-1	561612 Small Commercial	0	152739	225989
CITS-1	611110 Small Commercial	5564555	5562245	5611943
CITS-1	611210 Small Commercial	325728	406870	415348
CITS-1	624110 Small Commercial	161782	180961	185713
CITS-1	722410 Small Commercial	194716	179684	193424
CITS-1	722513 Small Commercial	0	0	0
CITS-1	921110 Small Commercial	614743	589452	583507
CITS-1	921190 Small Commercial	0	51117	0
CITS-1	922130 Small Commercial	224553	246881	217871
CITS-1	922160 Small Commercial	406113	356071	326455
CITS-1	922190 Small Commercial	981963	1040087	991190
CITS-1	923110 Small Commercial	147742	144826	149160
CITS-1	924110 Small Commercial	94093	87570	100086
CITS-1	926120 Small Commercial	137200	143155	127636
CITS-1	926150 Small Commercial	118198	115233	121621
CITS-1	928110 Small Commercial	423351	390560	379850
CITS-2	221312 Small Commercial	0	0	0
CITS-2	524210 Small Commercial	996215	1028056	974323
CITS-2	611110 Small Commercial	874151	911226	950783
CITS-2	813110 Small Commercial	699355	662044	690847
CITS-2	922190 Small Commercial	0	1236073	2024069
CITS-2	924110 Small Commercial	2148994	2209900	2456504
CITS-2	926120 Small Commercial	1356288	1384097	1524059
GSN	221312 Small Commercial	2	0	0
GSN	231531 Small Commercial	3847	1159	0
GSN	236115 Small Commercial	0	140	124
GSN	238220 Small Commercial	405563	379988	343631

GSN	238320	Small Commercial	4951	6097	272
GSN	238330	Small Commercial	16583	15247	15376
GSN	238350	Small Commercial	5293	2368	2005
GSN	238390	Small Commercial	7056	10051	12842
GSN	311320	Small Commercial	83382	79622	73985
GSN	315210	Small Commercial	938	886	1076
GSN	423120	Small Commercial	12564	7639	8719
GSN	423130	Small Commercial	7954	0	0
GSN	423220	Small Commercial	19836	20785	23261
GSN	441221	Small Commercial	37176	29893	28089
GSN	441310	Small Commercial	22779	17563	16971
GSN	442110	Small Commercial	3966	3618	3663
GSN	444190	Small Commercial	110035	120243	116001
GSN	445210	Small Commercial	226409	233369	195754
GSN	515120	Small Commercial	10381	8913	8210
GSN	517110	Small Commercial	2902	2896	2903
GSN	517510	Small Commercial	6776	4679	4015
GSN	531110	Small Commercial	11894	10353	8517
GSN	531120	Small Commercial	82338	77127	70408
GSN	531191	Residential	2798	0	0
GSN	531191	Small Commercial	20702	23161	18739
GSN	541110	Small Commercial	353	134	0
GSN	541320	Small Commercial	14677	13056	14212
GSN	541410	Small Commercial	0	0	0
GSN	561710	Small Commercial	47690	0	0
GSN	561730	Small Commercial	16359	18549	17025
GSN	621310	Small Commercial	722	0	0
GSN	624229	Small Commercial	0	5972	0
GSN	6531	Small Commercial	22665	17468	15388
GSN	722211	Small Commercial	115610	114484	112358
GSN	811111	Small Commercial	40136	38034	34423
GSN	811118	Small Commercial	10134	8215	9211
GSN	811121	Small Commercial	33746	27427	24189
GSN	811490	Small Commercial	14818	3403	0
GSN	813990	Small Commercial	0	0	386
GSN	RE1100	Residential	15676	15355	15856
GSN_T	111419	Small Commercial	494	0	0
GSN_T	111421	Small Commercial	977	799	719
GSN_T	113310	Small Commercial	62651	60736	52301
GSN_T	115112	Small Commercial	13400	10805	12219
GSN_T	212322	Small Commercial	21763	23376	20471
GSN_T	213112	Small Commercial	49734	44973	46612
GSN_T	213113	Small Commercial	51462	47839	46497
GSN_T	221111	Small Commercial	13657	13239	14170
GSN_T	221119	Small Commercial	109814	94030	147212
GSN_T	221122	Small Commercial	6799	6814	5933
GSN_T	221210	Small Commercial	22064	22394	25513

GSN_T	221310 Small Commercial	39704	32394	25691
GSN_T	221311 Small Commercial	1447120	1800846	1341929
GSN_T	221312 Small Commercial	96326	83916	86112
GSN_T	221312 Small Commercial	0	0	0
GSN_T	221320 Small Commercial	60881	60796	55232
GSN_T	231531 Small Commercial	34467	30043	25791
GSN_T	231543 Small Commercial	318189	320911	70727
GSN_T	236115 Small Commercial	77796	77662	79891
GSN_T	236116 Small Commercial	62842	60003	55764
GSN_T	236117 Small Commercial	8561	21698	23615
GSN_T	236118 Small Commercial	366995	355792	306593
GSN_T	236210 Small Commercial	290029	286836	344652
GSN_T	236220 Small Commercial	1056072	1005242	1043476
GSN_T	237130 Small Commercial	85581	87135	107911
GSN_T	237210 Small Commercial	70279	69192	66043
GSN_T	237310 Small Commercial	106488	104592	104805
GSN_T	237990 Small Commercial	14606	14684	15120
GSN_T	238110 Small Commercial	80528	77287	64675
GSN_T	238120 Small Commercial	22883	18904	18305
GSN_T	238130 Small Commercial	58257	41211	43488
GSN_T	238140 Small Commercial	154154	144684	145593
GSN_T	238150 Small Commercial	61975	57842	57590
GSN_T	238160 Small Commercial	180246	186102	179967
GSN_T	238190 Small Commercial	71650	88069	93334
GSN_T	238210 Small Commercial	498956	495081	560058
GSN_T	238220 Small Commercial	846275	813860	783560
GSN_T	238290 Small Commercial	121496	119591	139838
GSN_T	238310 Small Commercial	89965	76686	79790
GSN_T	238320 Small Commercial	150956	142086	142353
GSN_T	238330 Small Commercial	249314	232982	262417
GSN_T	238340 Small Commercial	170491	177549	194311
GSN_T	238350 Small Commercial	325087	299518	309110
GSN_T	238390 Small Commercial	42597	44011	41882
GSN_T	238910 Small Commercial	37674	45338	86751
GSN_T	238990 Small Commercial	161518	152820	159622
GSN_T	311119 Small Commercial	8182	7190	8179
GSN_T	311212 Small Commercial	0	0	0
GSN_T	311520 Small Commercial	9185	82166	78740
GSN_T	311811 Small Commercial	52947	54709	56892
GSN_T	311812 Small Commercial	20839	20842	19857
GSN_T	311920 Small Commercial	7884	6396	6111
GSN_T	311991 Small Commercial	19648	8243	26719
GSN_T	312120 Small Commercial	70047	75485	93670
GSN_T	312140 Small Commercial	16516	22246	22399
GSN_T	313230 Small Commercial	281	5568	8725
GSN_T	314121 Small Commercial	44346	40554	43999
GSN_T	314911 Small Commercial	29163	27474	28694



GSN_T	314999	Small Commercial	14962	16552	13561
GSN_T	315190	Small Commercial	9243	4571	0
GSN_T	315210	Small Commercial	4799	4822	4386
GSN_T	316999	Small Commercial	2472	916	942
GSN_T	321911	Small Commercial	16206	11562	12648
GSN_T	321918	Small Commercial	32569	48026	60140
GSN_T	321999	Small Commercial	12678	4673	4593
GSN_T	322211	Small Commercial	22897	19022	17805
GSN_T	323110	Small Commercial	27616	30871	32190
GSN_T	323111	Small Commercial	44600	37876	31234
GSN_T	323113	Small Commercial	2023	6977	0
GSN_T	323114	Small Commercial	52602	81796	86055
GSN_T	323115	Small Commercial	128783	104923	108352
GSN_T	323119	Small Commercial	1938	2299	11846
GSN_T	323121	Small Commercial	8189	23555	34042
GSN_T	323122	Small Commercial	11348	10200	9908
GSN_T	324121	Small Commercial	1683	20614	52388
GSN_T	325199	Small Commercial	12760	9755	11439
GSN_T	325311	Small Commercial	1297	0	0
GSN_T	325312	Small Commercial	20130	18434	7020
GSN_T	325510	Small Commercial	16425	14933	14728
GSN_T	325611	Small Commercial	6666	6195	6621
GSN_T	325620	Small Commercial	40062	43132	43991
GSN_T	326199	Small Commercial	192387	201176	191164
GSN_T	326211	Small Commercial	6685	3719	9503
GSN_T	326299	Small Commercial	12067	8794	9402
GSN_T	327112	Small Commercial	2873	5343	6325
GSN_T	327122	Small Commercial	7837	7460	10705
GSN_T	327212	Small Commercial	9096	9403	9585
GSN_T	327215	Small Commercial	12252	14128	16153
GSN_T	327320	Small Commercial	36221	34074	29965
GSN_T	327331	Small Commercial	0	0	1181
GSN_T	327390	Small Commercial	5261	4517	4650
GSN_T	327991	Small Commercial	33588	9893	42330
GSN_T	331111	Small Commercial	76290	144143	152572
GSN_T	331491	Small Commercial	2936	4175	3962
GSN_T	332212	Small Commercial	20365	35783	41205
GSN_T	332311	Small Commercial	25855	26734	25711
GSN_T	332312	Small Commercial	49123	48151	45358
GSN_T	332321	Small Commercial	1130	919	700
GSN_T	332322	Small Commercial	146219	176657	167527
GSN_T	332323	Small Commercial	76007	75496	69147
GSN_T	332431	Small Commercial	29388	37142	28861
GSN_T	332618	Small Commercial	44829	16535	47689
GSN_T	332710	Small Commercial	212950	235483	211743
GSN_T	332721	Small Commercial	3502	2081	2758
GSN_T	332812	Small Commercial	34495	38009	47641

GSN_T	332992	Small Commercial	8949	10766	11435
GSN_T	332999	Small Commercial	34230	39467	52963
GSN_T	333111	Small Commercial	31917	24406	21310
GSN_T	333120	Small Commercial	200	403	4104
GSN_T	333131	Small Commercial	153	0	0
GSN_T	333210	Small Commercial	5645	2694	704
GSN_T	333294	Small Commercial	25097	21579	21367
GSN_T	333298	Small Commercial	6824	31296	27490
GSN_T	333318	Small Commercial	10689	9849	9211
GSN_T	333319	Small Commercial	31952	31946	28077
GSN_T	333414	Small Commercial	28445	28412	33292
GSN_T	333415	Small Commercial	64726	58366	54306
GSN_T	333511	Small Commercial	16383	16505	14139
GSN_T	333512	Small Commercial	29146	27671	24904
GSN_T	333515	Small Commercial	7598	9454	13743
GSN_T	333618	Small Commercial	2063	1452	1291
GSN_T	333911	Small Commercial	45	67	60
GSN_T	333921	Small Commercial	20736	17127	15922
GSN_T	333923	Small Commercial	46999	43960	39090
GSN_T	333991	Small Commercial	15299	15142	14404
GSN_T	333992	Small Commercial	7573	5767	7700
GSN_T	334111	Small Commercial	52197	58618	74425
GSN_T	334220	Small Commercial	162888	85442	89750
GSN_T	334413	Small Commercial	116550	98107	56433
GSN_T	334418	Small Commercial	28922	31131	31229
GSN_T	334510	Small Commercial	49578	35215	40685
GSN_T	334515	Small Commercial	57926	56404	59008
GSN_T	335110	Small Commercial	55282	54298	52749
GSN_T	335121	Small Commercial	17874	16573	15244
GSN_T	335122	Small Commercial	1631	2691	2353
GSN_T	335129	Small Commercial	27692	26586	24162
GSN_T	335221	Small Commercial	10696	25915	24083
GSN_T	335991	Small Commercial	7347	7371	10332
GSN_T	336211	Small Commercial	154391	133305	94502
GSN_T	336312	Small Commercial	104638	91134	91461
GSN_T	336330	Small Commercial	11608	10462	5608
GSN_T	336340	Small Commercial	64765	61314	34766
GSN_T	336360	Small Commercial	61291	44247	19399
GSN_T	336399	Small Commercial	51715	20477	13661
GSN_T	336413	Small Commercial	12788	11727	10411
GSN_T	336991	Small Commercial	7497	3605	2362
GSN_T	336999	Small Commercial	11960	14425	12548
GSN_T	337110	Small Commercial	335772	322329	313610
GSN_T	337122	Small Commercial	17917	19319	19702
GSN_T	337124	Small Commercial	48283	52683	66182
GSN_T	337127	Small Commercial	13877	22043	27197
GSN_T	337129	Small Commercial	10394	9656	10733

GSN_T	337212	Small Commercial	1557	6070	17387
GSN_T	339112	Small Commercial	0	0	0
GSN_T	339113	Small Commercial	61179	59789	60041
GSN_T	339114	Small Commercial	10198	7765	6392
GSN_T	339115	Small Commercial	0	0	0
GSN_T	339116	Small Commercial	18928	18379	16475
GSN_T	339914	Small Commercial	24499	24848	13192
GSN_T	339920	Small Commercial	38714	35731	33980
GSN_T	339942	Small Commercial	33447	29603	9898
GSN_T	339950	Small Commercial	172980	177237	185320
GSN_T	339999	Small Commercial	30239	25291	23395
GSN_T	423110	Small Commercial	18290	38305	45684
GSN_T	423120	Small Commercial	161935	152085	149650
GSN_T	423130	Small Commercial	23583	22042	22780
GSN_T	423140	Small Commercial	175197	159525	160364
GSN_T	423210	Small Commercial	208699	218374	282320
GSN_T	423220	Small Commercial	68976	85170	83866
GSN_T	423310	Small Commercial	45555	42044	50319
GSN_T	423320	Small Commercial	102283	79128	63795
GSN_T	423390	Small Commercial	97517	81547	68192
GSN_T	423420	Small Commercial	45105	46219	41205
GSN_T	423430	Small Commercial	14869	17886	8663
GSN_T	423450	Small Commercial	99780	99308	106127
GSN_T	423490	Small Commercial	4694	4394	3910
GSN_T	423510	Small Commercial	25096	23136	23548
GSN_T	423610	Small Commercial	288562	284566	282056
GSN_T	423620	Small Commercial	9563	6932	7189
GSN_T	423690	Small Commercial	53774	52653	48418
GSN_T	423710	Small Commercial	42989	47568	54200
GSN_T	423720	Small Commercial	210900	164160	107523
GSN_T	423730	Small Commercial	64183	54399	56282
GSN_T	423740	Small Commercial	72617	84459	76275
GSN_T	423820	Small Commercial	32182	32070	30811
GSN_T	423830	Small Commercial	171929	160096	147339
GSN_T	423850	Small Commercial	57115	51380	59104
GSN_T	423860	Small Commercial	17730	15933	13654
GSN_T	423910	Small Commercial	101339	96324	98869
GSN_T	423920	Small Commercial	19126	18240	13169
GSN_T	423930	Small Commercial	500114	488003	496676
GSN_T	423990	Small Commercial	0	672	10753
GSN_T	424120	Small Commercial	92428	98744	109533
GSN_T	424130	Small Commercial	36089	31947	33028
GSN_T	424410	Small Commercial	3989	4026	3068
GSN_T	424420	Small Commercial	6987	5997	3822
GSN_T	424430	Small Commercial	64205	70385	58896
GSN_T	424490	Small Commercial	13052	15299	16299
GSN_T	424690	Small Commercial	13846	11134	10611



GSN_T	424710 Small Commercial	61415	48919	47376
GSN_T	424720 Small Commercial	24349	23668	24478
GSN_T	424810 Small Commercial	8618	16568	15650
GSN_T	424820 Small Commercial	9277	11414	18673
GSN_T	424910 Small Commercial	18569	17632	17051
GSN_T	424930 Small Commercial	16627	18662	26379
GSN_T	424950 Small Commercial	31086	32664	25062
GSN_T	424990 Small Commercial	9398	11147	12403
GSN_T	425120 Small Commercial	2504	526	1195
GSN_T	441110 Small Commercial	45807	42714	39594
GSN_T	441120 Small Commercial	299308	338434	279071
GSN_T	441210 Small Commercial	54935	45199	1720
GSN_T	441221 Small Commercial	12705	11829	10405
GSN_T	441222 Small Commercial	183333	152248	139536
GSN_T	441228 Small Commercial	9209	10431	10329
GSN_T	441229 Small Commercial	2048	1355	4502
GSN_T	441310 Small Commercial	921506	894207	872687
GSN_T	441320 Small Commercial	35315	39179	33274
GSN_T	442110 Small Commercial	425906	389675	451018
GSN_T	442210 Small Commercial	90905	86902	149100
GSN_T	442291 Small Commercial	21122	21928	25308
GSN_T	442299 Small Commercial	60300	102802	92203
GSN_T	443111 Small Commercial	12636	3382	4304
GSN_T	443112 Small Commercial	202811	255349	255284
GSN_T	443120 Small Commercial	191488	182346	161169
GSN_T	443142 Small Commercial	369	368	706
GSN_T	444110 Small Commercial	218129	194330	208100
GSN_T	444120 Small Commercial	133731	119459	109079
GSN_T	444130 Small Commercial	85680	84979	85813
GSN_T	444190 Small Commercial	461296	465624	464934
GSN_T	444210 Small Commercial	61720	65384	71122
GSN_T	444220 Small Commercial	8644	7966	7464
GSN_T	445110 Small Commercial	288628	263209	258982
GSN_T	445120 Small Commercial	157678	152214	134711
GSN_T	445210 Small Commercial	85227	71736	71694
GSN_T	445292 Small Commercial	87841	72734	65727
GSN_T	445299 Small Commercial	7348	7416	8237
GSN_T	445310 Small Commercial	325180	323777	333401
GSN_T	446110 Small Commercial	7438	2807	6565
GSN_T	446120 Small Commercial	109628	105209	106275
GSN_T	446191 Small Commercial	33003	26861	17974
GSN_T	446199 Small Commercial	47	1459	1389
GSN_T	447110 Small Commercial	120634	46206	46076
GSN_T	447190 Small Commercial	97920	79803	66063
GSN_T	448120 Small Commercial	2037	8150	11173
GSN_T	448140 Small Commercial	41939	50736	48843
GSN_T	448150 Small Commercial	31268	33440	33380

GSN_T	448190 Small Commercial	56015	63533	61528
GSN_T	448310 Small Commercial	44839	50319	51344
GSN_T	451110 Small Commercial	158836	166210	174313
GSN_T	451120 Small Commercial	102739	99963	104092
GSN_T	451130 Small Commercial	88806	80147	74563
GSN_T	452110 Small Commercial	201	217	188
GSN_T	452111 Small Commercial	28989	31323	3902
GSN_T	452112 Small Commercial	44884	49483	54574
GSN_T	452311 Small Commercial	30425	31627	41485
GSN_T	452910 Small Commercial	20591	14344	17533
GSN_T	452990 Small Commercial	54624	47310	54400
GSN_T	453110 Small Commercial	62874	63374	67703
GSN_T	453210 Small Commercial	374834	351836	336626
GSN_T	453220 Small Commercial	51010	42279	28380
GSN_T	453310 Small Commercial	502864	451381	432584
GSN_T	453910 Small Commercial	63504	115232	100371
GSN_T	453991 Small Commercial	67639	63741	99679
GSN_T	453998 Small Commercial	106324	98495	89932
GSN_T	454110 Small Commercial	13724	14303	6846
GSN_T	454111 Small Commercial	85132	112766	124608
GSN_T	454112 Small Commercial	5330	6832	6194
GSN_T	454113 Small Commercial	5287	4496	10048
GSN_T	454210 Small Commercial	374	416	1236
GSN_T	454312 Small Commercial	85651	87409	91964
GSN_T	454390 Small Commercial	18768	12945	13240
GSN_T	481111 Small Commercial	5980	1002	2100
GSN_T	482111 Small Commercial	7961	8026	8497
GSN_T	484210 Small Commercial	66632	62668	62133
GSN_T	485320 Small Commercial	8677	8144	7172
GSN_T	486210 Small Commercial	12324	12278	17990
GSN_T	488310 Small Commercial	32459	26313	28349
GSN_T	488410 Small Commercial	113811	119544	113079
GSN_T	488510 Small Commercial	50528	51860	59865
GSN_T	492210 Small Commercial	21161	14179	14019
GSN_T	493110 Small Commercial	1045235	1032369	1106413
GSN_T	493120 Small Commercial	2776	3595	3286
GSN_T	493190 Small Commercial	102441	96122	81898
GSN_T	512110 Small Commercial	20262	15820	15415
GSN_T	512240 Small Commercial	3380	801	10333
GSN_T	515112 Small Commercial	0	0	22
GSN_T	516110 Small Commercial	19756	35005	28829
GSN_T	517110 Small Commercial	1112956	1132596	1114688
GSN_T	517212 Small Commercial	1800594	1792468	1995088
GSN_T	517312 Small Commercial	15917	15474	14526
GSN_T	517410 Small Commercial	0	0	0
GSN_T	517510 Small Commercial	491368	530590	536153
GSN_T	517910 Small Commercial	12869	14317	11099

GSN_T	517911 Small Commercial	12355	10604	10838
GSN_T	518210 Small Commercial	2539889	3908925	5421556
GSN_T	521110 Small Commercial	8795	10542	10247
GSN_T	522110 Small Commercial	105440	84229	86030
GSN_T	522120 Small Commercial	81801	94719	96799
GSN_T	522130 Small Commercial	136079	146518	159665
GSN_T	522220 Small Commercial	15558	35946	38809
GSN_T	522291 Small Commercial	88313	87992	79868
GSN_T	522292 Small Commercial	72511	80020	69211
GSN_T	522310 Small Commercial	3423	3217	3509
GSN_T	522320 Small Commercial	32014	28673	31529
GSN_T	522390 Small Commercial	58633	52435	55903
GSN_T	523910 Small Commercial	4503	3926	3144
GSN_T	523930 Small Commercial	35568	37396	36692
GSN_T	524113 Small Commercial	73111	74032	82739
GSN_T	524126 Small Commercial	10382	8213	8387
GSN_T	524210 Small Commercial	461838	456106	458416
GSN_T	524291 Small Commercial	28710	9549	10121
GSN_T	531110 Small Commercial	2938344	2830364	2747121
GSN_T	531120 Small Commercial	4783716	4472027	4312109
GSN_T	531120 Small Commercial	297	225	20
GSN_T	531123 Small Commercial	118151	116072	111926
GSN_T	531130 Small Commercial	502543	445684	411554
GSN_T	531190 Small Commercial	896742	900397	900545
GSN_T	531191 Small Commercial	4412892	4154551	4072993
GSN_T	531210 Small Commercial	278248	395136	420078
GSN_T	531311 Small Commercial	102406	105921	92622
GSN_T	531312 Small Commercial	369993	296021	310168
GSN_T	531390 Small Commercial	14073	8974	13176
GSN_T	532111 Small Commercial	161417	155391	159010
GSN_T	532120 Small Commercial	2320	1743	1101
GSN_T	532210 Small Commercial	15151	10077	4177
GSN_T	532292 Small Commercial	82	4218	4063
GSN_T	532299 Small Commercial	5905	3114	2048
GSN_T	532310 Small Commercial	52070	50347	41450
GSN_T	532412 Small Commercial	51232	54632	48040
GSN_T	532420 Small Commercial	133976	123602	153686
GSN_T	532490 Small Commercial	12942	13953	16025
GSN_T	533110 Small Commercial	8472	65532	110125
GSN_T	541110 Small Commercial	199334	237637	225039
GSN_T	541191 Small Commercial	66075	62969	63502
GSN_T	541211 Small Commercial	471095	436037	323304
GSN_T	541213 Small Commercial	8737	8169	12062
GSN_T	541219 Small Commercial	34411	22211	23052
GSN_T	541310 Small Commercial	134285	147618	153104
GSN_T	541320 Small Commercial	73471	65208	67181
GSN_T	541330 Small Commercial	499190	501151	490129



GSN_T	541350 Small Commercial	17815	14229	12425
GSN_T	541370 Small Commercial	8600	8292	8314
GSN_T	541380 Small Commercial	134773	126787	113769
GSN_T	541410 Small Commercial	26048	19560	18790
GSN_T	541420 Small Commercial	42994	10210	72304
GSN_T	541430 Small Commercial	94220	91873	74400
GSN_T	541511 Small Commercial	118480	125098	118907
GSN_T	541512 Small Commercial	121903	106807	107107
GSN_T	541611 Small Commercial	45053	28338	40474
GSN_T	541613 Small Commercial	37953	36891	43867
GSN_T	541614 Small Commercial	42059	33569	35885
GSN_T	541618 Small Commercial	11816	4210	1001
GSN_T	541620 Small Commercial	136541	148335	176260
GSN_T	541690 Small Commercial	134288	109145	111636
GSN_T	541710 Small Commercial	63151	56820	56740
GSN_T	541810 Small Commercial	25422	26490	29932
GSN_T	541811 Small Commercial	4809	3677	3838
GSN_T	541850 Small Commercial	93700	91645	103239
GSN_T	541860 Small Commercial	2830	3036	2605
GSN_T	541870 Small Commercial	31127	49482	52711
GSN_T	541890 Small Commercial	10562	19938	20147
GSN_T	541921 Small Commercial	14924	13249	14180
GSN_T	541922 Small Commercial	18099	16296	5016
GSN_T	541940 Small Commercial	295436	280304	237267
GSN_T	541990 Small Commercial	5524	22067	38698
GSN_T	551114 Small Commercial	211712	237860	190136
GSN_T	561110 Small Commercial	311158	257590	224530
GSN_T	561320 Small Commercial	0	20986	22116
GSN_T	561431 Small Commercial	58501	83303	70952
GSN_T	561439 Small Commercial	86596	80422	86753
GSN_T	561440 Small Commercial	57481	58037	55081
GSN_T	561491 Small Commercial	18417	10860	13155
GSN_T	561510 Small Commercial	31171	26634	27400
GSN_T	561612 Small Commercial	97363	82869	79411
GSN_T	561621 Small Commercial	196229	172168	160279
GSN_T	561710 Small Commercial	326079	256322	277525
GSN_T	561720 Small Commercial	78332	73148	75759
GSN_T	561730 Small Commercial	213548	188128	231851
GSN_T	561740 Small Commercial	5143	4873	4124
GSN_T	561790 Small Commercial	71013	58281	71654
GSN_T	561910 Small Commercial	40618	37089	36684
GSN_T	562111 Small Commercial	37412	40038	55621
GSN_T	562119 Small Commercial	52107	45575	44269
GSN_T	562213 Small Commercial	0	0	0
GSN_T	562910 Small Commercial	54450	88272	158945
GSN_T	611110 Small Commercial	75619	59000	67282
GSN_T	611111 Small Commercial	8389	6922	6841

GSN_T	611113 Small Commercial	18947	17865	20914
GSN_T	611117 Small Commercial	0	0	0
GSN_T	611210 Small Commercial	16947	15218	17498
GSN_T	611310 Small Commercial	17098	13259	18632
GSN_T	611420 Small Commercial	51488	51266	46314
GSN_T	611513 Small Commercial	55049	42440	63491
GSN_T	611610 Small Commercial	6022	3454	3352
GSN_T	611620 Small Commercial	323626	286913	311397
GSN_T	611691 Small Commercial	14260	8838	5080
GSN_T	621111 Small Commercial	245171	245311	240003
GSN_T	621112 Small Commercial	105697	115965	123776
GSN_T	621210 Small Commercial	540772	524457	514973
GSN_T	621310 Small Commercial	36249	36559	37062
GSN_T	621320 Small Commercial	70170	79856	67586
GSN_T	621330 Small Commercial	35253	39392	52518
GSN_T	621340 Small Commercial	84838	120337	149350
GSN_T	621399 Small Commercial	23573	23535	26854
GSN_T	621420 Small Commercial	5350	2635	2490
GSN_T	621493 Small Commercial	41951	37081	19903
GSN_T	621498 Small Commercial	16468	17892	16262
GSN_T	621511 Small Commercial	20415	20754	18614
GSN_T	621512 Small Commercial	43123	42701	42650
GSN_T	621610 Small Commercial	8291	20023	25533
GSN_T	621910 Small Commercial	86064	115197	124831
GSN_T	621991 Small Commercial	41850	4077	0
GSN_T	621999 Small Commercial	13844	16728	22423
GSN_T	622110 Small Commercial	21152	20796	29610
GSN_T	622210 Small Commercial	29513	28197	30599
GSN_T	622310 Small Commercial	5685	13086	27966
GSN_T	623110 Small Commercial	32001	31700	34293
GSN_T	623210 Small Commercial	1943	3963	5081
GSN_T	623220 Small Commercial	59463	52121	46614
GSN_T	623311 Small Commercial	12472	16595	32343
GSN_T	623312 Small Commercial	65407	57637	63532
GSN_T	623990 Small Commercial	4755	2834	4118
GSN_T	624110 Small Commercial	63805	41650	43386
GSN_T	624110 Small Commercial	0	0	0
GSN_T	624120 Small Commercial	0	26654	46505
GSN_T	624190 Small Commercial	99717	93539	93539
GSN_T	624230 Small Commercial	23253	18863	18442
GSN_T	624310 Small Commercial	28817	26657	28299
GSN_T	624410 Small Commercial	218338	229188	234427
GSN_T	711110 Small Commercial	60883	63855	71792
GSN_T	711120 Small Commercial	1455	9027	7124
GSN_T	711211 Small Commercial	20705	23111	22549
GSN_T	711212 Small Commercial	3759	8913	8860
GSN_T	711219 Small Commercial	913	24	325

GSN_T	711310 Small Commercial	60862	51032	26731
GSN_T	711320 Small Commercial	9506	10859	14312
GSN_T	711510 Small Commercial	378	378	393
GSN_T	712190 Small Commercial	32627	78907	79903
GSN_T	713110 Small Commercial	169	228	1344
GSN_T	713120 Small Commercial	4600	8825	14050
GSN_T	713210 Small Commercial	18736	19659	20356
GSN_T	713940 Small Commercial	918171	891984	905482
GSN_T	713990 Small Commercial	337328	372034	398824
GSN_T	721110 Small Commercial	5852	43366	37373
GSN_T	721310 Small Commercial	68292	68249	67663
GSN_T	722110 Small Commercial	1052398	1056702	1188286
GSN_T	722211 Small Commercial	811956	729844	864622
GSN_T	722213 Small Commercial	120462	149452	189482
GSN_T	722320 Small Commercial	63277	70188	60933
GSN_T	722410 Small Commercial	191962	167605	144369
GSN_T	722511 Small Commercial	448466	526665	480252
GSN_T	722513 Small Commercial	89295	92931	109889
GSN_T	722515 Small Commercial	216634	254055	245113
GSN_T	811111 Small Commercial	1018778	1039484	1003048
GSN_T	811112 Small Commercial	36634	34878	36327
GSN_T	811113 Small Commercial	51469	53498	45216
GSN_T	811118 Small Commercial	36064	49779	38431
GSN_T	811121 Small Commercial	658940	646849	628952
GSN_T	811122 Small Commercial	51702	47011	44209
GSN_T	811191 Small Commercial	49760	48380	49939
GSN_T	811192 Small Commercial	151463	91906	95081
GSN_T	811198 Small Commercial	86173	100865	128219
GSN_T	811211 Small Commercial	96412	75796	76490
GSN_T	811212 Small Commercial	48895	24503	21713
GSN_T	811213 Small Commercial	10857	10920	27766
GSN_T	811219 Small Commercial	42421	36448	36858
GSN_T	811310 Small Commercial	56879	56088	61410
GSN_T	811411 Small Commercial	39094	62461	94102
GSN_T	811412 Small Commercial	113297	103952	105608
GSN_T	811420 Small Commercial	53731	46214	45421
GSN_T	811490 Small Commercial	40704	39423	38628
GSN_T	812111 Small Commercial	54871	48149	50260
GSN_T	812112 Small Commercial	324189	310730	309730
GSN_T	812113 Small Commercial	181375	176724	187626
GSN_T	812199 Small Commercial	53839	66194	79594
GSN_T	812310 Small Commercial	378459	369303	361402
GSN_T	812320 Small Commercial	43144	45861	42996
GSN_T	812331 Small Commercial	14272	15731	17278
GSN_T	812332 Small Commercial	222	6190	12399
GSN_T	812910 Small Commercial	62921	59663	33505
GSN_T	812930 Small Commercial	84726	67723	77256



GSN_T	812931 Small Commercial	10913	10235	10525
GSN_T	812990 Small Commercial	223377	213052	208502
GSN_T	813110 Small Commercial	977868	916777	948483
GSN_T	813219 Small Commercial	7778	7769	7318
GSN_T	813319 Small Commercial	20212	20771	20003
GSN_T	813410 Small Commercial	10409	9547	9109
GSN_T	813910 Small Commercial	200244	186401	178958
GSN_T	813920 Small Commercial	97193	107765	114405
GSN_T	813930 Small Commercial	4023	9044	8350
GSN_T	813940 Small Commercial	9181	8266	8246
GSN_T	813990 Small Commercial	4167	8720	4543
GSN_T	814110 Small Commercial	6742	8785	16455
GSN_T	921190 Small Commercial	229060	148574	120882
GSN_T	922160 Small Commercial	97710	86191	73284
GSN_T	922610 Small Commercial	7883	7316	4900
GSN_T	922612 Small Commercial	9615	10086	10825
GSN_T	922700 Small Commercial	18082	16537	15657
GSN_T	923110 Small Commercial	104455	43963	57739
GSN_T	923130 Small Commercial	59139	52398	47832
GSN_T	923140 Small Commercial	58073	37502	33250
GSN_T	924120 Small Commercial	91667	99761	87525
GSN_T	925110 Small Commercial	479	502	2917
GSN_T	925120 Small Commercial	148510	128087	84272
GSN_T	925190 Small Commercial	0	0	0
GSN_T	926110 Small Commercial	32250	43711	42829
GSN_T	928110 Small Commercial	14382	39209	27025
GSN_T	928120 Small Commercial	23242	48218	42269
GSN_T	CB0000 Small Commercial	22298	21121	31665
GSN_T	RE1000 Small Commercial	32051	32268	39420
GSN_T	RE1100 Small Commercial	26507	17678	11409
GSP_S	485111 Industrial	189496	196309	204907
GSS_S	221311 Industrial	136805	93558	45735
GSS_S	447110 Industrial	282017	300465	292361
GSS_S	621210 Industrial	108007	105139	94996
GSS_S2	238150 Residential	6796	6048	5850
GSS_T	212312 Industrial	104098	182278	167847
GSS_T	213112 Industrial	111989	47885	98875
GSS_T	221310 Industrial	1017590	1109633	991671
GSS_T	221311 Industrial	3456035	3301545	2942271
GSS_T	221312 Industrial	164117	150906	233265
GSS_T	231543 Industrial	791004	894983	1084307
GSS_T	236210 Industrial	158070	146058	163118
GSS_T	236220 Industrial	708767	495044	570236
GSS_T	237110 Industrial	642941	731368	312317
GSS_T	237130 Industrial	140023	143922	150675
GSS_T	237210 Industrial	267883	257392	187278
GSS_T	238110 Industrial	216475	204046	175248

GSS_T	238160 Industrial	264118	81637	74806
GSS_T	238210 Industrial	3660254	2346476	2381412
GSS_T	238220 Industrial	433276	494688	700200
GSS_T	238320 Industrial	123887	120365	126204
GSS_T	238330 Industrial	91874	84709	78775
GSS_T	238340 Industrial	254329	267724	259771
GSS_T	238350 Industrial	120528	120487	120585
GSS_T	238390 Industrial	376069	331460	358454
GSS_T	311212 Industrial	0	696	45871
GSS_T	311991 Industrial	126615	121260	116040
GSS_T	312120 Industrial	87786	97254	74604
GSS_T	322211 Industrial	277793	304226	330266
GSS_T	323110 Industrial	513736	669556	681933
GSS_T	323113 Industrial	156775	49428	52798
GSS_T	325620 Industrial	65297	84244	89714
GSS_T	326140 Industrial	160911	176405	177680
GSS_T	327320 Industrial	299687	395609	395231
GSS_T	331111 Industrial	141966	208303	216589
GSS_T	332322 Industrial	70844	86590	89053
GSS_T	332710 Industrial	403750	370138	401143
GSS_T	333294 Industrial	50193	66710	74956
GSS_T	333511 Industrial	636777	580995	645687
GSS_T	333921 Industrial	1070533	1030754	1080092
GSS_T	333992 Industrial	176417	196773	206294
GSS_T	333999 Industrial	794431	728398	526802
GSS_T	334111 Industrial	328533	398891	422873
GSS_T	334413 Industrial	324031	317083	369016
GSS_T	334515 Industrial	53826	149191	154348
GSS_T	335122 Industrial	0	4772	75397
GSS_T	335929 Industrial	439975	462690	513089
GSS_T	336111 Industrial	129241	126662	134036
GSS_T	336413 Industrial	85529	92377	111250
GSS_T	336415 Industrial	2236271	2201485	2092727
GSS_T	337110 Industrial	340036	339374	364863
GSS_T	337124 Industrial	92328	85013	85547
GSS_T	337127 Industrial	113397	132012	161982
GSS_T	339113 Industrial	2002935	1652560	1603873
GSS_T	339115 Industrial	134126	132771	125207
GSS_T	423110 Industrial	1657	1292	0
GSS_T	423120 Industrial	271722	266764	268812
GSS_T	423140 Industrial	89621	94225	65493
GSS_T	423210 Industrial	44484	124254	20038
GSS_T	423320 Industrial	133995	120801	105140
GSS_T	423440 Industrial	180988	159972	147500
GSS_T	423450 Industrial	350491	347691	381331
GSS_T	423620 Industrial	109934	119736	116434
GSS_T	423690 Industrial	146006	146369	132856

GSS_T	423720 Industrial	0	39869	60339
GSS_T	423930 Industrial	701527	832697	755121
GSS_T	423990 Industrial	240744	204694	153071
GSS_T	424410 Industrial	1040949	858899	1517866
GSS_T	424490 Industrial	561333	472093	545866
GSS_T	424820 Industrial	24381	0	0
GSS_T	425110 Industrial	199987	233566	272722
GSS_T	425120 Industrial	401390	377806	361395
GSS_T	441110 Industrial	156927	143138	149733
GSS_T	441120 Industrial	225930	206800	265154
GSS_T	441210 Industrial	233407	241199	250124
GSS_T	441310 Industrial	705833	685065	610298
GSS_T	441320 Industrial	275991	244771	232568
GSS_T	442110 Industrial	1748110	1829858	1655876
GSS_T	442210 Industrial	201587	191837	129970
GSS_T	442291 Industrial	239163	196553	200098
GSS_T	443112 Industrial	95812	92193	101645
GSS_T	444110 Industrial	1012170	979276	953776
GSS_T	444130 Industrial	1574831	1127511	1178175
GSS_T	444190 Industrial	1370113	1320724	1327420
GSS_T	445110 Industrial	3450691	3616346	3759120
GSS_T	445120 Industrial	825047	832526	829635
GSS_T	445310 Industrial	395384	382455	389574
GSS_T	446110 Industrial	745634	726625	697964
GSS_T	446120 Industrial	0	0	0
GSS_T	446130 Industrial	197040	162589	190413
GSS_T	447110 Industrial	2724120	2976037	2927432
GSS_T	447190 Industrial	122317	123201	120331
GSS_T	448140 Industrial	589794	588331	584033
GSS_T	448190 Industrial	80822	74510	77583
GSS_T	448210 Industrial	145374	161543	160926
GSS_T	451110 Industrial	314211	276024	277108
GSS_T	451120 Industrial	300944	284548	304037
GSS_T	452110 Industrial	373225	354672	356554
GSS_T	452111 Industrial	192955	159799	113509
GSS_T	452311 Industrial	56019	0	0
GSS_T	452319 Industrial	997251	985134	1004523
GSS_T	452990 Industrial	326102	316965	332698
GSS_T	453210 Industrial	1640663	1561166	1589043
GSS_T	453220 Industrial	123682	114119	114554
GSS_T	453310 Industrial	989738	971723	976392
GSS_T	453910 Industrial	634120	630149	625409
GSS_T	453998 Industrial	343100	302388	307470
GSS_T	454111 Industrial	347344	329517	311686
GSS_T	482111 Industrial	130026	132240	127148
GSS_T	486110 Industrial	493510	492021	460378
GSS_T	492110 Industrial	308238	313610	336936



GSS_T	493110 Industrial	1000921	1061773	1276659
GSS_T	493190 Industrial	65027	56331	62779
GSS_T	517110 Industrial	891822	944546	944173
GSS_T	517212 Industrial	281223	274933	329504
GSS_T	518111 Industrial	1129605	1099128	1318148
GSS_T	518210 Industrial	0	0	0
GSS_T	522110 Industrial	238481	237722	192924
GSS_T	522120 Industrial	0	0	43738
GSS_T	522130 Industrial	102150	104456	101340
GSS_T	522292 Industrial	552838	486541	547473
GSS_T	522298 Industrial	827987	772179	797804
GSS_T	524114 Industrial	1994497	1855650	1797480
GSS_T	524126 Industrial	1749828	1787307	1962768
GSS_T	524210 Industrial	284825	225232	275296
GSS_T	531110 Industrial	175878	209965	192885
GSS_T	531120 Industrial	12138064	11025858	11836159
GSS_T	531123 Industrial	2788503	2361291	2262284
GSS_T	531130 Industrial	109524	149074	280168
GSS_T	531190 Industrial	775846	936036	980102
GSS_T	531191 Industrial	11215036	10149657	9762527
GSS_T	531210 Industrial	2260840	1833506	1771474
GSS_T	531312 Industrial	2904988	2461763	2359888
GSS_T	533110 Industrial	1054	100803	119487
GSS_T	541219 Industrial	334224	431647	332706
GSS_T	541310 Industrial	74079	75031	77668
GSS_T	541380 Industrial	624576	616697	623341
GSS_T	541420 Industrial	501629	625865	535995
GSS_T	541512 Industrial	2016790	2011528	2002972
GSS_T	541513 Industrial	513731	488016	477350
GSS_T	541611 Industrial	498523	154742	128650
GSS_T	541620 Industrial	104314	104826	118054
GSS_T	541710 Industrial	920396	833422	0
GSS_T	541715 Industrial	87832	401963	413269
GSS_T	541850 Industrial	361252	360152	383348
GSS_T	541940 Industrial	842775	797515	801116
GSS_T	551114 Industrial	2463681	2456201	2157139
GSS_T	561110 Industrial	1278551	1412517	1427738
GSS_T	561599 Industrial	119942	116120	112939
GSS_T	561612 Industrial	73025	63938	0
GSS_T	561621 Industrial	90264	100727	103376
GSS_T	561990 Industrial	102978	94743	86154
GSS_T	562111 Industrial	205026	185907	188777
GSS_T	562910 Industrial	1526806	1705044	1555648
GSS_T	611110 Industrial	117808	106298	98738
GSS_T	611117 Industrial	93566	74716	67718
GSS_T	611310 Industrial	1048825	1041880	998874
GSS_T	611513 Industrial	373988	357604	353266

GSS_T	611519 Industrial	70173	71889	70530
GSS_T	611620 Industrial	340897	354252	203149
GSS_T	611710 Industrial	43965	39391	53804
GSS_T	621111 Industrial	1028490	942642	1450253
GSS_T	621112 Industrial	88080	93469	80612
GSS_T	621210 Industrial	960459	945367	978627
GSS_T	621320 Industrial	129327	115131	100375
GSS_T	621420 Industrial	46504	90614	79413
GSS_T	621491 Industrial	991259	1247305	1128898
GSS_T	621492 Industrial	461069	439568	446093
GSS_T	621493 Industrial	70702	74598	68710
GSS_T	621511 Industrial	20984	43700	56139
GSS_T	621610 Industrial	79548	71062	63547
GSS_T	621991 Industrial	1451260	1445958	1428712
GSS_T	622110 Industrial	452017	625292	772404
GSS_T	623312 Industrial	371169	356921	358790
GSS_T	624110 Industrial	412022	409401	418809
GSS_T	624120 Industrial	88298	37737	0
GSS_T	624190 Industrial	174869	119855	76479
GSS_T	624229 Industrial	120397	114730	109140
GSS_T	624230 Industrial	733444	670176	605301
GSS_T	624410 Industrial	645147	562641	602714
GSS_T	6321 Industrial	530943	500087	496234
GSS_T	711310 Industrial	149964	31811	56626
GSS_T	712190 Industrial	108778	105997	97147
GSS_T	713940 Industrial	2121158	1967663	1957554
GSS_T	713990 Industrial	994271	892758	995855
GSS_T	721110 Industrial	9323467	9058203	9135864
GSS_T	722110 Industrial	5306021	5274823	5451218
GSS_T	722211 Industrial	7835653	7634176	7538225
GSS_T	722213 Industrial	679449	692946	724155
GSS_T	722410 Industrial	260964	275712	288116
GSS_T	722511 Industrial	716042	634593	627290
GSS_T	722513 Industrial	380422	378769	310384
GSS_T	722515 Industrial	0	0	0
GSS_T	811111 Industrial	249746	239674	250160
GSS_T	811118 Industrial	80067	87276	86658
GSS_T	811121 Industrial	442343	424635	480460
GSS_T	811191 Industrial	25844	66707	91414
GSS_T	811192 Industrial	439815	424074	448480
GSS_T	811198 Industrial	108355	88156	14776
GSS_T	811310 Industrial	768989	751206	717672
GSS_T	811411 Industrial	228464	192934	107498
GSS_T	812112 Industrial	252256	225505	227088
GSS_T	812199 Industrial	97014	92797	106418
GSS_T	812910 Industrial	0	0	343387
GSS_T	812990 Industrial	405876	401214	389144

GSS_T	813110 Industrial	944194	783335	749726
GSS_T	813211 Industrial	105564	128928	104132
GSS_T	813312 Industrial	118910	110239	103967
GSS_T	813410 Industrial	219798	229112	226810
GSS_T	813930 Industrial	70725	66626	81060
GSS_T	813990 Industrial	396418	380480	301030
GSS_T	921110 Industrial	109500	103627	108623
GSS_T	921190 Industrial	0	0	19743
GSS_T	922160 Industrial	316628	310358	310650
GSS_T	923110 Industrial	84799	78675	79760
GSS_T	923130 Industrial	987752	880832	1097162
GSS_T	923140 Industrial	287984	332172	296730
GSS_T	924120 Industrial	422431	425789	425669
GSS_T	925120 Industrial	247854	224694	192157
GSS_T	926130 Industrial	119223	109879	112254
GSS_T	928110 Industrial	811958	756090	777341
GUP_L	237310 Industrial	1466948	2151134	2081658
GUP_L	334220 Industrial	11306931	11125874	11301111
GUP_L	622110 Industrial	11403994	11123402	11087453
GUP_S	231543 Small Commercial	372412	378268	355235
GUP_S	238350 Small Commercial	117534	137879	131239
GUS_L	517110 Industrial	25241986	26294503	25071147
GUS_L	518210 Industrial	11388658	10614769	10965469
GUS_L	541219 Industrial	7794949	7384352	6987803
GUS_M	221311 Industrial	0	0	0
GUS_M	333511 Industrial	2596030	2952651	3171527
GUS_M	444130 Industrial	3017343	3284155	3213661
GUS_M	452110 Industrial	3115636	3101663	3064490
GUS_M	452910 Industrial	3508160	3421581	3361429
GUS_M	518210 Industrial	9958414	7946139	6570023
GUS_M	531120 Industrial	2163710	1990490	2000548
GUS_M	531123 Industrial	2237463	2170080	2108078
GUS_M	531210 Industrial	4116028	4194180	4255389
GUS_M	541513 Industrial	0	3830725	5963409
GUS_M	721110 Industrial	3257778	3185458	3164018
GUS_S	221312 Industrial	3254468	2513009	83670
GUS_S	333515 Industrial	1243817	1296842	1268216
GUS_S	333999 Industrial	1475060	1444163	1550920
GUS_S	444110 Industrial	1997970	1855443	1480645
GUS_S	445110 Industrial	4605501	4496218	4353874
GUS_S	452990 Industrial	1415712	1193837	1228824
GUS_S	454113 Industrial	903312	1069684	459478
GUS_S	517110 Industrial	5893635	5369223	5407324
GUS_S	518210 Industrial	5031770	4878319	4291244
GUS_S	522120 Industrial	868596	842469	541593
GUS_S	522298 Industrial	1281235	1194552	1227531
GUS_S	524114 Industrial	4968571	4519954	2789143



GUS_S	524126	Industrial	1289784	1274887	1188913
GUS_S	531120	Industrial	4270984	6589411	5299775
GUS_S	531123	Industrial	2345157	2328337	2336490
GUS_S	531190	Industrial	1748482	1331808	1417912
GUS_S	531191	Industrial	1716220	1458916	0
GUS_S	531210	Industrial	3025821	2810957	2832958
GUS_S	541513	Industrial	7645204	4994500	3523321
GUS_S	551114	Industrial	2454004	2291497	1995537
GUS_S	561110	Industrial	1033639	1014498	1019124
GUS_S	611110	Industrial	608735	563684	580863
GUS_S	611310	Industrial	460142	787977	1147594
GUS_S	621111	Industrial	1482797	1147484	596877
GUS_S	621491	Industrial	1073896	502257	0
GUS_S	622110	Industrial	2185460	2271710	2293626
GUS_S	624110	Industrial	604266	569701	635255
GUS_S	921130	Industrial	1535887	1427271	1471320
NLGT	922612	Residential	104	0	0
RF01	RE1100	Residential	493931	519348	1167133
RF01	RE1200	Residential	64357	102966	555755
RF01	RE1300	Residential	0	0	349
RF01_E	RE1100	Residential	93792	108167	132092
RF01_E	RE1200	Residential	38817	65508	141343
RF01_E	RE1300	Residential	0	0	2568
RF01_EL	RE1100	Residential	12057	11572	12730
RF01_EL	RE1200	Residential	2446	8988	12601
RF01_L	RE1100	Residential	16431	43745	47990
RF01_L	RE1200	Residential	0	0	2831
RPEV_1	RE1100	Residential	7282	0	0
RSC	RE1100	Residential	614846	553985	544273
RSC	RE1200	Residential	409593	364402	359490
RSCH	RE1100	Residential	750148	425714	215690
RSCH	RE1200	Residential	95196	46629	30736
RSCH_E	RE1100	Residential	63716	35203	29870
RSCH_E	RE1200	Residential	41095	31420	30299
RSCH_E_SP	RE1200	Residential	7026	5972	5472
RSCH_L	RE1100	Residential	23535	18891	9149
RSCH_SP	RE1200	Residential	2025	2037	1970
RSC_11	RE1200	Residential	16340	15441	15441
RSC_12	RE1200	Residential	12359	3645	6565
RSC_13	RE1200	Residential	9890	8480	10001
RSC_E	RE1100	Residential	85992	82943	83789
RSC_E	RE1200	Residential	77251	71387	64742
RSC_L	RE1100	Residential	45525	45168	32726
RSC_L	RE1200	Residential	9118	6019	5290
RSE	RE1100	Residential	2889678	2511796	2350599
RSE	RE1200	Residential	11291765	10089535	9710917
RSEH	RE1100	Residential	4201069	2767401	1829625

RSEH	RE1200	Residential	9272876	7624550	6047980
RSEH_E	RE1100	Residential	1077701	821695	689083
RSEH_E	RE1200	Residential	4031315	3008042	2357076
RSEH_EL	RE1100	Residential	36641	21011	16032
RSEH_EL	RE1200	Residential	142134	92420	44763
RSEH_E_SP	RE1100	Residential	9269	4556	1872
RSEH_E_SP	RE1200	Residential	67806	39129	39172
RSEH_L	RE1100	Residential	52326	19057	6422
RSEH_L	RE1200	Residential	51329	38953	26412
RSEH_SP	RE1100	Residential	27191	5372	6752
RSEH_SP	RE1200	Residential	74041	56666	63852
RSE_1	RE1100	Residential	20516	19598	21889
RSE_1	RE1200	Residential	6204	5493	4934
RSE_11	RE1100	Residential	52417	50016	48412
RSE_11	RE1200	Residential	128833	111994	105833
RSE_12	RE1100	Residential	58506	35883	21904
RSE_12	RE1200	Residential	235384	207755	212788
RSE_3	RE1100	Residential	4381	6539	9928
RSE_E	RE1100	Residential	708451	596304	520909
RSE_E	RE1200	Residential	2147656	1891976	1838597
RSE_E1	RE1200	Residential	9167	8111	8182
RSE_E11	RE1200	Residential	2840	2634	2546
RSE_E12	RE1100	Residential	7080	9678	10507
RSE_E12	RE1200	Residential	77205	69201	72977
RSE_EL	RE1100	Residential	18795	17523	17300
RSE_EL	RE1200	Residential	50871	34211	37537
RSE_EL12	RE1200	Residential	8442	6597	7139
RSE_L	RE1100	Residential	60265	36103	20583
RSE_L	RE1200	Residential	1857	0	8598
RSE_L11	RE1200	Residential	7328	4013	0
RSG	623110	Residential	1622	0	0
RSG	623220	Residential	9703	9085	6534
RSG	RE1100	Residential	14498736	12711197	12106702
RSG	RE1200	Residential	12153857	10704562	10062117
RSG	RE1300	Residential	33568	29483	27961
RSGH	623312	Residential	26640	14570	13982
RSGH	RE1000	Residential	0	20921	21972
RSGH	RE1100	Residential	23227698	17066400	13375153
RSGH	RE1200	Residential	10757534	8905416	7110974
RSGH	RE1300	Residential	103800	56344	14082
RSGH_E	RE1100	Residential	3295593	2405477	1953274
RSGH_E	RE1200	Residential	2952080	2393089	2001777
RSGH_E	RE1300	Residential	52152	30381	3592
RSGH_EL	RE1100	Residential	181880	94617	70720
RSGH_EL	RE1200	Residential	96762	98682	96247
RSGH_E_SP	RE1100	Residential	9483	9598	8203
RSGH_E_SP	RE1200	Residential	38327	31051	42647

RSGH_L	236115	Residential	931	1255	901
RSGH_L	RE1100	Residential	367144	212069	151989
RSGH_L	RE1200	Residential	49313	44393	17977
RSGH_SP	RE1100	Residential	65009	39459	33414
RSGH_SP	RE1200	Residential	70592	70011	58090
RSG_1	RE1100	Residential	94209	88589	69603
RSG_1	RE1200	Residential	80296	76854	78248
RSG_11	RE1100	Residential	186620	146051	96764
RSG_11	RE1200	Residential	74519	49416	39539
RSG_12	RE1100	Residential	414063	363218	318830
RSG_12	RE1200	Residential	289442	219901	202011
RSG_2	RE1100	Residential	20276	18998	10731
RSG_E	RE1100	Residential	2514102	2262387	2137890
RSG_E	RE1200	Residential	2592331	2279914	2191453
RSG_E	RE1300	Residential	7171	4311	4606
RSG_E1	RE1100	Residential	12799	11937	12335
RSG_E1	RE1200	Residential	11290	9635	10125
RSG_E11	RE1100	Residential	8199	8764	8777
RSG_E11	RE1200	Residential	11951	10343	11948
RSG_E12	RE1100	Residential	12523	11012	10027
RSG_E12	RE1200	Residential	44227	25491	23195
RSG_E2	RE1100	Residential	9903	7850	6712
RSG_EL	RE1100	Residential	174513	121224	95487
RSG_EL	RE1200	Residential	87877	70189	60494
RSG_L	RE1100	Residential	216105	188749	171929
RSG_L	RE1200	Residential	44222	43763	45063
RSG_L11	RE1100	Residential	8471	9543	8273
RSG_L12	RE1100	Residential	4577	0	0
RSMM	RE2300	Residential	4380803	4143636	4274527
RT01	RE1100	Residential	1280740	1287599	1265712
RT01	RE1200	Residential	1141	1251	267
RT01_E	RE1100	Residential	87357	71222	47301
RT01_EL	RE1100	Residential	12062	12435	13643
RT01_L	RE1100	Residential	13877	13708	14359
RT02	RE1000	Residential	0	764	13450
RT02	RE1100	Residential	68170030	70261760	75805666
RT02	RE1200	Residential	11169732	14270074	19078626
RT02	RE1300	Residential	104283	129588	142473
RT02_E	RE1100	Residential	8243165	8706995	9418525
RT02_E	RE1200	Residential	4836942	5893302	6831249
RT02_E	RE1300	Residential	41911	36865	34621
RT02_EL	RE1100	Residential	614298	617644	605847
RT02_EL	RE1200	Residential	359531	368168	429468
RT02_EL	RE1300	Residential	5899	4606	4439
RT02_L	RE1100	Residential	1898730	1883054	1867707
RT02_L	RE1200	Residential	205120	210203	231966
RT02_L	RE1300	Residential	22275	19820	21012



RTG5	RE1100	Residential	8828	8155	7820
RTT	RE1100	Residential	0	0	5949
RWCH	RE1100	Residential	0	59	1094
RWE	RE1100	Residential	17729	16604	15236
RWEH	RE1100	Residential	13391	13891	17200
RWEH_E	RE1100	Residential	2919	7155	15662
RWE_E	RE1100	Residential	11138	5897	0
RWG	RE1100	Residential	49894	36185	33699
RWGH	RE1100	Residential	41178	31095	19886
RWGH_E	RE1100	Residential	1758	3283	0
RWG_E	RE1100	Residential	29554	16730	13279
SL_COM_M	221312	Street Lighting	13970	13238	13449
SL_COM_M	925190	Street Lighting	33900	36382	36679
SL_COM_M	925190	Street Lighting	24315	30505	67134
TS	237310	Traffic Signals	1726	1613	1853
TS	922610	Traffic Signals	56162	55461	54724
TS	922610	Traffic Signals	150259	154174	154466
TS	925190	Traffic Signals	18994	18416	18553
TS	925190	Traffic Signals	60522	64225	71936



Generator Activity Data  
Source: SNAQMD

COMPANY	PO	POStatus	Description	Descrpt	Sno	Street	City/locat	Ziplocat	HP	Apprecd	ADDRESS	CITY/MAIL	STATE	ZIP	Aclosed	IssueDate	CancelledDate	FuelRate \$/gwhr	Hour/year	FuelUse \$/year
AERDIET ROCKETEYE, INC.	10294	PO-CANCELLED	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	2001	AERDIET RD	RANCHO CORDOVA	95742	50	12/20/1991	PO BOX 13222	SACRAMENTO	CA	95813-6000	1/21/1992	3/22/1993	6/18/2020	4.01	9.75	39,0975
VERIZON WIRELESS	12555	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	11840	FOLDSOM BLVD	RANCHO CORDOVA	95742	40	4/21/2003	295 PARKSHIRE DRIVE	FOLSOM	CA	95620	6/21/2003	7/7/2011		4.01	9.75	39,0975
VERIZON WIRELESS	22528	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	95742	3361 "C" FITZGERALD RD	RANCHO CORDOVA	95742	80	5/3/2010	295 PARKSHIRE DRIVE	FOLSOM	CA	95620	10/22/2010	7/28/2011		4.6	9.75	44.85
ENTERCOM SACRAMENTO	22796	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	15125	WHITE ROCK RD	RANCHO CORDOVA	95742	88	11/5/2010	5345 MADISON AVE	SACRAMENTO	CA	95841	12/24/2010	8/4/2011		5.1	9.75	49.725
AMPAFC FINE CHEMICALS	18981	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	95700	Highway 50 and Hazel Ave.	RANCHO CORDOVA	95700	91.3	11/27/2005	P.O. BOX 1718	RANCHO CORDOVA	CA	95741	1/5/2006			5.1	6.57	34.17
AMPAFC FINE CHEMICALS	18005	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	95700	Highway 50 and Hazel Ave.	RANCHO CORDOVA	95700	96	11/27/2005	P.O. BOX 1718	RANCHO CORDOVA	CA	95741	1/5/2006			5.1	6.59	35.19
CONTRACTORS WAREHOUSE	19390	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	10000	MILLS STATION RD	RANCHO CORDOVA	95827	96	6/21/2006	1495 EUREKA RD	ROSELVILLE	CA	95866	6/27/2006	6/26/2008		4.8	9.75	46.8
VERIZON WIRELESS	18861	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	11167	TRAVIS CENTER DR	RANCHO CORDOVA	95670	296	10/27/2006	295 PARKSHIRE DRIVE	RANCHO CORDOVA	CA	95620	11/24/2006	1/26/2008		5.2	9.75	52.7
VERIZON WIRELESS	20058	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	2239	CHASE DR	RANCHO CORDOVA	95670	96	12/9/2006	295 PARKSHIRE DRIVE	FOLSOM	CA	95620	4/27/2007	5/15/2009		5.2	9.75	50.7
VERIZON WIRELESS	20096	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	2347	CHASE CENTER DR	RANCHO CORDOVA	95670	96	12/9/2006	295 PARKSHIRE DRIVE	RANCHO CORDOVA	CA	95620	1/23/2007	3/24/2007		5.2	9.75	50.7
VERIZON WIRELESS	21294	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	15255	QUICKSILVER DR	RANCHO CORDOVA	95742	96	7/12/2008	295 PARKSHIRE DRIVE	FOLSOM	CA	95620	8/26/2008	3/26/2009		5	9.75	48.75
AMPAFC FINE CHEMICALS	23232	PO-CANCELLED	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	95670	109	2/29/2012 P.O. BOX 1718	RANCHO CORDOVA	95670	109	2/29/2012 P.O. BOX 1718	RANCHO CORDOVA	CA	95741	10/19/2012	5/23/2013	11/30/2019	6	9.75	58.5
FIRST COVENANT CHURCH	20110	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	10933	ENVERGRET CT	RANCHO CORDOVA	95670	128	1/29/2007	P.O. BOX 274840	SACRAMENTO	CA	95670	3/31/2007	6/29/2007		6	9.75	58.5
HOME DEPOT (C/O BE COMPANY) #052	13407	ACTIVE	IC ENGINE STANDBY - PUMP - FIRE	IC ENGINE COMPRESSION STANDBY	95670	130	10/1/1997 3207 GREY HAWK CT., SUITE 200	RANCHO CORDOVA	95670	130	10/1/1997 3207 GREY HAWK CT., SUITE 200	CARLSBAD	CA	92010	12/7/1997	3/26/1998		6	25.8	154.8
AERDIET ROCKETEYE, INC.	10245	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	95742	184	3/5/1992 P.O. BOX 13222	RANCHO CORDOVA	95742	184	3/5/1992 P.O. BOX 13222	SACRAMENTO	CA	95813-6000	3/5/1992	3/2/1993		6	3.9	23.4
AERDIET ROCKETEYE, INC.	10420	PO-CANCELLED	IC ENGINE STANDBY - PUMP - FIRE	IC ENGINE COMPRESSION STANDBY	95742	152	3/5/1992 P.O. BOX 13222	RANCHO CORDOVA	95742	152	3/5/1992 P.O. BOX 13222	SACRAMENTO	CA	95813-6000	3/5/1992	8/9/1993	8/8/2019	6	3.9	23.4
AERDIET ROCKETEYE, INC.	10440	PO-CANCELLED	IC ENGINE STANDBY - PUMP - FIRE	IC ENGINE COMPRESSION STANDBY	2001	AERDIET RD	RANCHO CORDOVA	95742	152	3/5/1992 P.O. BOX 13222	RANCHO CORDOVA	CA	95813-6000	3/5/1992	3/2/1993	8/8/2019	6	3.9	23.4	
AERDIET ROCKETEYE, INC.	18750	PO-CANCELLED	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	2001	AERDIET RD	RANCHO CORDOVA	95742	153	9/12/2005	PO BOX 13222	SACRAMENTO	CA	95813-6000	9/6/2005	11/23/2006	8/26/2019	5.1	11.2	57.12
SACRAMENTO AREA SEWER DISTRICT (SASD)	24271	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	24271	5/23/2014 10060 GOWEN RD	RANCHO CORDOVA	95827				SACRAMENTO	CA	95827		6/18/2014		7.9	22.6	178.54
CONDUITY STATE AND LOCAL SOLUTIONS INC	26189	ACTIVE	IC ENGINE STANDBY	IC ENGINE COMPRESSION AG	10390	PETER A MCCLELL BLVD	RANCHO CORDOVA	95655	158	4/20/2013	10390 PETER A. MCCLELL BLVD	RANCHO CORDOVA	CA	95655	4/19/2013			8.2	9.75	79.95
CS&I AQUATIC CENTER	12661	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	1901	HAZEL AVE	RANCHO CORDOVA	95670	160	4/12/2004	1901 HAZEL AVE	RANCHO CORDOVA	CA	95670	4/20/2004	11/20/2004		8.9	9.75	86.25
SACRAMENTO REG. COUNTY SANITATION DISTRICT	17092	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	17092	CHASE DR WEST END	RANCHO CORDOVA	95670	157	5/6/2003	8511 LAGUNA STATION ROAD	ELK GROVE	CA	95758	8/5/2003	7/6/2004		9.9	2	19.8
OP PROPERTIES TRUST (DBA BURROU OF AUTOMOTIVE REPA	24631	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	19499	W. MATHER DR	RANCHO CORDOVA	95670	197	12/4/2015	3915 S.TE. 2500	SACRAMENTO	CA	95814	8/24/2015	5/28/2015		9.9	9.75	96.25
STATE OF CALIF FISH & GAME-AMERICAN RIVER HATCHERY	25456	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	2101	NIMBUS RD	RANCHO CORDOVA	95670	208	9/5/2017	2101 NIMBUS RD	RANCHO CORDOVA	CA	95670	12/14/2017	7/30/2018		10.3	8.6	88.58
AERDIET ROCKETEYE, INC.	23611	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	2001	AERDIET RD	RANCHO CORDOVA	95742	217	1/15/2014	PO BOX 13222	SACRAMENTO	CA	95813-6000	4/10/2013	9/12/2014		11.7	5.83	682.11
AERDIET ROCKETEYE, INC.	23951	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	2001	AERDIET RD	RANCHO CORDOVA	95742	230	12/4/2015	PO BOX 13222	SACRAMENTO	CA	95813-6000	9/6/2015	1/11/2016		11.7	8.2	861.24
HEALTHNET FEDERAL SERVICES	24447	PO-CANCELLED	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	2006	AERDIET RD	RANCHO CORDOVA	95670	230	11/16/2014	11971 FOUNDATION PLACE	RANCHO CORDOVA	CA	95670	2/4/2015	4/30/2015	7/18/2020	11.7	25.7	300.69
HOME DEPOT (C/O BE COMPANY) #002	22797	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	95670	217	11/6/2014 3207 GREY HAWK CT., SUITE 200	RANCHO CORDOVA	95670	217	11/6/2014 3207 GREY HAWK CT., SUITE 200	CARLSBAD	CA	92010	12/19/2014	10/18/2015		11.7	16.9	197.73
NIKEE MOTOR CORPORATION (DBA MOTION CONTROL ENGINE	24981	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	95742	1180	WHITE ROCK RD	RANCHO CORDOVA	95742	484	5/23/2015	1180 WHITE ROCK RD	RANCHO CORDOVA	CA	95742	6/12/2016		13.9	9.75	93.25
AMPAFC FINE CHEMICALS	20420	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	95670	230	7/26/2007 P.O. BOX 1718	RANCHO CORDOVA	95670	230	7/26/2007 P.O. BOX 1718	RANCHO CORDOVA	CA	95741	8/24/2007	1/24/2007		13.9	5.7	29.23
NIKEE MOTOR CORPORATION (DBA MOTION CONTROL ENGINE	23021	ACTIVE	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	11210	Highway 50 and Hazel Ave.	RANCHO CORDOVA	95670	230	7/26/2007	1815 72ND AVE SOUTH	WALNUT CREEK	CA	94596	2/26/1998	8/14/1998		13.9	5.7	29.23
LAKE NATOMA ASSOC DBA SACTO DEPT OF CORRECTIONS	20450	PO-CANCELLED	IC ENGINE STANDBY - GENERATOR	IC ENGINE COMPRESSION STANDBY	1960	BIRKMOYER DR	RANCHO CORDOVA	95742	250	2/28/2012	1855 OLYMPIC BLVD, #510	WALNUT CREEK	CA	94596	1/14/2012	9/13/2021		12.4	20.5	154.25
AERDIET ROCKETEYE, INC.	24879	PO-CANCELLED	IC ENGINE STANDBY	IC ENGINE COMPRESSION STANDBY	2001	AERDIET RD	RANCHO CORDOVA	95742	260	6/25/2015	PO BOX 13222	SACRAMENTO	CA	95813-6000	12/3/2015	1/31/2017	2/25/2019	15.4	9.75	150.15
AERDIET ROCKETEYE, INC.	24879	PO-CANCELLED	IC ENGINE STANDBY	IC ENGINE COMPRESSION STANDBY	2001	AERDIET RD	RANCHO CORDOVA	95742	260	6/25/2015	PO BOX 13222	SACRAMENTO	CA	95813-6000	12/3/2015	1/31/2017	2/25/2019	15.4	9.75	150.15
AERDIET ROCKETEYE, INC.	24879	PO-CANCELLED	IC ENGINE STANDBY	IC ENGINE COMPRESSION STANDBY	2001	AERDIET RD	RANCHO CORDOVA	95742	260	6/25/2015	PO BOX 13222	SACRAMENTO	CA	95813-6000	12/3/2015	1/31/2017	2/25/2019	15.4	9.75	150.15
AMPAFC FINE CHEMICALS	25980	ACTIVE	IC ENGINE STANDBY - PUMP - FIRE	IC ENGINE COMPRESSION STANDBY	95742	200	6/25/2015 PO BOX 13222	RANCHO CORDOVA	95742	200	6/25/2015 PO BOX 13222	SACRAMENTO	CA	95813-6000	12/3/2015	1/31/2017	2/25/2019	15.4	9.75	150.15
AMPAFC FINE CHEMICALS	25981	ACTIVE	IC ENGINE STANDBY - PUMP - FIRE	IC ENGINE COMPRESSION STANDBY	95742	200	6/25/2015 PO BOX 13222	RANCHO CORDOVA	95742	200	6/25/2015 PO BOX 13222	SACRAMENTO	CA	95813-6000	12/3/2015	1/31/2017	2/25/2019	15.4	9.75	150.15
AMPAFC FINE CHEMICALS	25982	ACTIVE	IC ENGINE STANDBY - PUMP - FIRE	IC ENGINE COMPRESSION STANDBY	95742	200	6/25/2015 PO BOX 13222	RANCHO CORDOVA	95742	200	6/25/2015 PO BOX 13222	SACRAMENTO	CA	95813-6000	12/3/2015	1/31/2017	2/25/2019	15.4	9.75	150.15
AMPAFC FINE CHEMICALS	25983	ACTIVE	IC ENGINE STANDBY - PUMP - FIRE	IC ENGINE COMPRESSION STANDBY	95742	200	6/25/2015 PO BOX 13222	RANCHO CORDOVA	95742	200	6/25/2015 PO BOX 13222	SACRAMENTO	CA	95813-6000	12/3/2015	1/31/2017	2/25/2019	15.4	9.75	150.15
AMPAFC FINE CHEMICALS	25984	ACTIVE	IC ENGINE STANDBY - PUMP - FIRE	IC ENGINE COMPRESSION STANDBY	95742	200	6/25/2015 PO BOX 13222	RANCHO CORDOVA	95742	200	6/25/2015 PO BOX 13222	SACRAMENTO	CA	95813-6000	12/3/2015	1/31/2017	2/25/2019	15.4	9.75	150.15
AMPAFC FINE CHEMICALS	25985	ACTIVE	IC ENGINE STANDBY - PUMP - FIRE	IC ENGINE COMPRESSION STANDBY	95742	200	6/25/2015 PO BOX 13222	RANCHO CORDOVA	95742	200	6/25/2015 PO BOX 13222	SACRAMENTO	CA	95813-6000	12/3/2015	1/31/2017	2/25/2019	15.4	9.75	150.15
AMPAFC FINE CHEMICALS	25986	ACTIVE	IC ENGINE STANDBY - PUMP - FIRE	IC ENGINE COMPRESSION STANDBY	95742	200	6/25/2015 PO BOX 13222	RANCHO CORDOVA	95742	200	6/25/2015 PO BOX 13222	SACRAMENTO	CA	95813-6000	12/3/2015	1/31/2017	2/25/2019	15.4	9.75	150.15
AMPAFC FINE CHEMICALS	25987	ACTIVE	IC ENGINE STANDBY - PUMP - FIRE	IC ENGINE COMPRESSION STANDBY	95742	200	6/25/2015 PO BOX 13222	RANCHO CORDOVA	95742	200	6/25/2015 PO BOX 13222	SACRAMENTO	CA	95813-6000	12/3/2015	1/31/2017	2/25/2019	15.4	9.75	150.15
AMPAFC FINE CHEMICALS	25988	ACTIVE	IC ENGINE STANDBY - PUMP - FIRE	IC ENGINE COMPRESSION STANDBY	95742	200	6/25/2015 PO BOX 13222	RANCHO CORDOVA	95742	200	6/25/2015 PO BOX 13222	SACRAMENTO	CA	95813-6000	12/3/2015	1/31/2017	2/25/2019	15.4	9.75	150.15
AMPAFC FINE CHEMICALS	25989	ACTIVE	IC ENGINE STANDBY - PUMP - FIRE	IC ENGINE COMPRESSION STANDBY	95742	200	6/25/2015 PO BOX 13222	RANCHO CORDOVA	95742	200	6/25/2015 PO BOX 13222	SACRAMENTO	CA	95813-6000	12/3/2015	1/31/2017	2/25/2019	15.4	9.75	150.15
AMPAFC FINE CHEMICALS	25990	ACTIVE	IC ENGINE STANDBY - PUMP - FIRE	IC ENGINE COMPRESSION STANDBY	95742	200	6/25/2015 PO BOX 13222	RANCHO CORDOVA	95742	200	6/25/2015 PO BOX 13222	SACRAMENTO	CA	95813-6000	12/3/2015	1/31/2017	2/25/2019	15.4	9.75	150.15
AMPAFC FINE CHEMICALS	25991	ACTIVE	IC ENGINE STANDBY - PUMP - FIRE	IC ENGINE COMPRESSION STANDBY	95742	200	6/25/2015 PO BOX 13222	RANCHO CORDOVA	95742	200	6/25/2015 PO BOX 13222	SACRAMENTO	CA	95813-6000	12/3/2015	1/31/2017	2/25/2019	15.4	9.75	150.15
AMPAFC FINE CHEMICALS																				



**VMT Activity Data**

Source: Fehr & Peers

	2016	2019	2027	2030	2035	2040	2045	2050
<b>daily VMT</b>	2,408,283	2,516,684	2,805,753	2,933,217	3,145,658	3,348,275	3,579,727	3,827,179
<b>annual VMT</b>	879,625,366	919,218,798	1,024,801,283	1,071,357,646	1,148,951,585	1,222,957,444	1,307,495,381	1,397,877,073
<b>% Change from 2019</b>			11%	17%	25%	33%	42%	52%

Table 1: Comparison of total daily VMT by origin-destination with Year 2016

City of Rancho Cordova Share of Daily VMT	Year 2016	Year 2027		Year 2035		Year 2040	
	VMT	VMT	% Change Compared to 2016	VMT	% Change Compared to 2016	VMT	% Change Compared to 2016
Origin and Destination Internal	242,951	328,315	135.1%	420,644	173.1%	469,275	193.2%
Origin Internal/Destination External	1,079,248	1,235,084	114.4%	1,360,504	126.1%	1,436,124	133.1%
Origin External/Destination Internal	1,086,084	1,242,354	114.4%	1,364,510	125.6%	1,442,876	132.9%
<b>All Sources</b>	<b>2,408,283</b>	<b>2,805,753</b>	<b>116.5%</b>	<b>3,145,658</b>	<b>130.6%</b>	<b>3,348,275</b>	<b>139.0%</b>



Water Activity Data

Table 1 Summary of Water Supply and Demand for Water Purveyors in the City of Rancho Cordova General Plan Planning Area						
Year	2010	2015	2020	2025	2030	
Supply <sup>1</sup>						
SCWA Zone 40	Surface Water	13,060	44,143	48,772	68,700	69,567
	Groundwater	34,125	28,837	40,470	31,324	39,097
	Recycled Water	4,400	4,400	4,400	4,400	4,400
	<b>Total Supply</b>	<b>51,585</b>	<b>77,380</b>	<b>93,642</b>	<b>104,424</b>	<b>113,064</b>
<b>Total Demands<sup>1</sup></b>	<b>51,585</b>	<b>77,380</b>	<b>93,642</b>	<b>104,424</b>	<b>113,064</b>	
<b>Surplus/Deficit</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
Supply Allocated for SCWA Zone 40 North Service Area (NSA)—Within City's Planning Area (defined in Section 4.1.3)						
<b>Supply</b>					<b>37,314<sup>2</sup></b>	
Supply <sup>3</sup>						
GSWC (all of GSWC's service area is within City's planning area)	Surface Water	15,000	15,000	15,000	15,000	15,000
	Groundwater	9,518	10,499	10,814	10,829	10,829
	<b>Total Supply</b>	<b>24,518</b>	<b>25,499</b>	<b>25,814</b>	<b>25,829</b>	<b>25,829</b>
	<b>Demands<sup>2</sup></b>	<b>19,518</b>	<b>20,499</b>	<b>20,814</b>	<b>20,829</b>	<b>20,829</b>
<b>Surplus/Deficit</b>	<b>5,000</b>	<b>5,000</b>	<b>5,000</b>	<b>5,000</b>	<b>5,000</b>	

Table 1 Summary of Water Supply and Demand for Water Purveyors in the City of Rancho Cordova General Plan Planning Area						
Year	2010	2015	2020	2025	2030	
Supply <sup>3</sup>						
Cal-Am	Groundwater	43,600	33,650	34,180	33,550	33,910
	Wholesale Purchases	4,020	16,860	18,320	20,830	22,280
	<b>Total Supply</b>	<b>47,620</b>	<b>50,510</b>	<b>52,500</b>	<b>54,380</b>	<b>56,190</b>
	<b>Demands<sup>4</sup></b>	<b>47,620</b>	<b>50,510</b>	<b>52,500</b>	<b>54,380</b>	<b>56,190</b>
<b>Surplus/Deficit</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
Supply Allocated for Cal-Am's Service Area within the City's Planning Area						
<b>Supply</b>					<b>14,477</b>	
Supply Available from Purveyors					<b>77,620<sup>5</sup></b>	
Projected Demands						
City of Rancho Cordova General Plan Planning Area	Corporate City Limits (2030) <sup>a</sup>				57,299	
	Non-City Area <sup>6</sup>				71,410	
<b>Total Demands</b>					<b>128,709</b>	
<b>Surplus/(Deficit)</b>					<b>(51,089)</b>	

Notes:  
1. Data from SCWA Zone 41 UWMP, Table 5-1 and 5-2. Because SCWA would implement a conjunctive use water supply program, water supplies would never exceed projected demands because groundwater would be pumped and surface water would be used to meet, not exceed water demands. Supply and demand based on normal year type. (SWCA 2005b)  
2. This supply is part of Zone 40's 2030 water supplies of 113,064 afy (SCWA 2005a).  
3. Data from GSWC UWMP Table 3-1 and 4-9. Supply exceeds demand because GSWC does not plan to use 5,000 afy of its SMUD Water Transfer entitlement due to limited surface water treatment capacity and its desire to maintain its groundwater rights through the Aerojet Replacement Water operations. (GSWC 2005)  
4. Data from Cal-Am UWMP. (Cal-Am 2006)  
5. Sum of SCWA (37,314 afy), GSWC (25,829 afy), and Cal-Am's (14,477 afy) water supplies identified for the City's planning area.  
6. Buildout for non-city area of Rancho Cordova projected to occur after 2030.

Source: City of Rancho Cordova Water Supply Evaluation

Microsoft Word - Rancho Water Supply Report 3.7.06.doc (cityofranchocordova.org)

	AF/year					
	2019	2030				
Total Demand	87,990.30	128,709.00				
	2010	2015	2019	2020	2025	2030
<b>SCWA</b>						
Surface Water	13060	44143	47846.2	48772	68700	69567
% of total	25%	57%	53%	52%	66%	62%
Ground Water	34125	28837	38143.4	40470	31324	39097
% of total	66%	37%	42%	43%	30%	35%
Recycled Water	4400	4400	4400	4400	4400	4400
% of total	9%	6%	5%	5%	4%	4%
<b>Total Supply</b>	<b>51585</b>	<b>77380</b>	<b>90389.6</b>	<b>93642</b>	<b>104424</b>	<b>113064</b>
% change from 2030			17%	4%	12%	8%
City Planning Area	13238	13238	26478	31830	33018	37314
Surface Water	3351	7552	14016	16578	21722	22958.88203
Ground Water	8757	4933	11174	13756	9904	12903
Recycled Water	1129	753	1289	1496	1391	1452
<b>Total</b>	<b>13238</b>	<b>13238</b>	<b>26478</b>	<b>31830</b>	<b>33018</b>	<b>37314</b>
<b>GSWC</b>						
Surface Water	15000	15000	15000	15000	15000	15000
Ground Water	9,518	10,499	10751	10,814	10,829	10,829
<b>Total Supply</b>	<b>24,518</b>	<b>25,499</b>	<b>25751</b>	<b>25814</b>	<b>25829</b>	<b>25829</b>
<b>Cal-Am</b>						
Ground Water	43600	33650	34074	34180	33550	33910
% of total	92%	67%	65%	65%	62%	60%
Wholesale Purchase	4020	16860	18028	18320	20830	22280
% of total	8%	33%	35%	35%	38%	40%
<b>Total Supply</b>	<b>47620</b>	<b>50510</b>	<b>52102</b>	<b>52500</b>	<b>54380</b>	<b>56190</b>
% change from 2030			6%	3%	1%	3%
City Planning Area	12601	12601	13415	13852	13959	14477
Ground Water	11537	8395	8773	9018	8612	8737
Wholesale Purchase	1064	4206	4642	4834	5347	5740
<b>Total</b>	<b>12601</b>	<b>12601</b>	<b>13415</b>	<b>13852</b>	<b>13959</b>	<b>14477</b>

Summary of GHG Emissions (CO2e MT/yr) Associated with Process and Conveyance of Wastewater

2019			
Community	Process Emissions MT CO2e	Conveyance Emissions	TOTAL
Indirect (electricity)	2,346		
N2O effluent	3,203		
N2O process	152		
Biogas	173		
Total	5,874	346	6,220

2030 (BAU NO LEG REDUCT)			
Community	Process Emissions	Conveyance Emissions	
Indirect (electricity)	2,954		
N2O effluent	4,032		
N2O process	152		
Biogas	218		
Total (MT CO2E)	7,356	4,359	11,715

2030 ( LEG REDUCT, RPS)			
Community	Process Emissions	Conveyance Emissions	
Indirect (electricity)	0		
N2O effluent	4,032		
N2O process	152		
Biogas	218		
Total (MT CO2E)	4,403	0	4,403

WW Conveyance Emissions Summary				
	2019	KWH	MWh	CO2e
Community		1,484,320	1484.32	346

2030 (NO LEG REDUC)		2030 (W LEG REDUC)	
	MWH	CO2e	
Community	18706.72	4358.94	18706.72085
			0

Effluent/Person Served 0.030 MG/Person

**Population Data**

City 139,571 City's 2019 Service Population  
 County Employees Employee Data, Sac County. Todd Taylor  
 SRCSD Service Population 1,400,000 Steve Nebozuk (SRCSD) phone conversation with Dimitri on 9/14/2016

**Wastewater Conveyance Intensity Factor Calculation**

Energy Data (pumping/conveyance)

		Unit	Data Year	Source
SASD	3,388,861	KWH	FY 2014/2015	Christoph Dobson and Wayne Zhuang, SASD on 9/14/2016
SRCSD	11,500,000	KWH	2013	Steve Nebozuk, SRCSD on 9/14/2016
TOTAL	14,888,861	KWH	2015	Used to represent 2015, best available data was used.

Effluent Data (represents all water treated within SRCSD service population)

		Unit	Data Year	Source
SRCSD	41,975	Million Gallons/Yr	2019	<a href="#">State of the District 2019 Report</a>
Adjusted	21,481	Million Gallons/Yr	2019	Salam Khan, SASD on 9/16/2016 indicated that City of Folsom, Sacramento, and W. Sac use energy to pump their WW to SRCSD. As such the KWH obtained from SRCSD service population was being underestimated when used in conjunction with the total effluent from the entire service population. To adjust for this, the total effluent associated with Sacramento, W. Sac, and Folsom, was adjusted by 25%

**WW Conveyance Intensity Factor**

354.71 Kwh/MGallon

Annual Growth Rates  
 Population  
 Employment



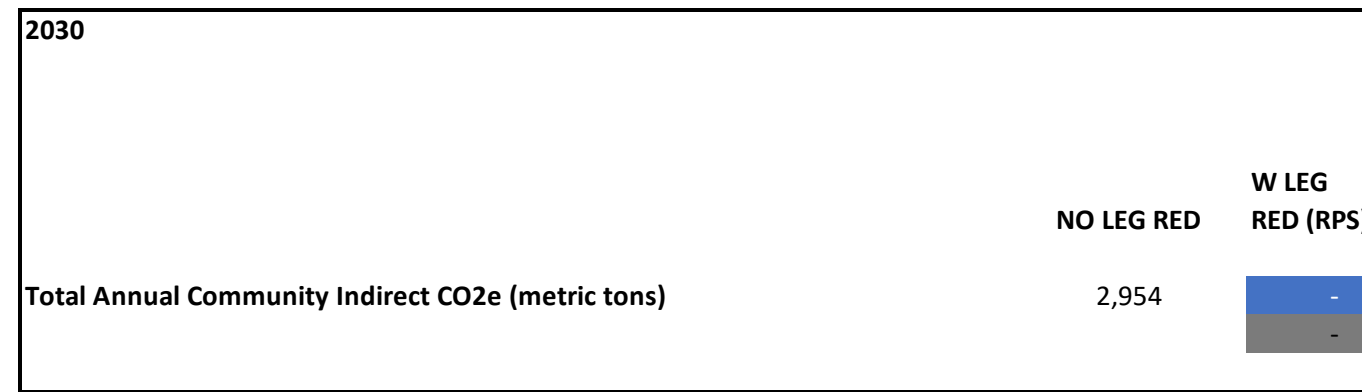
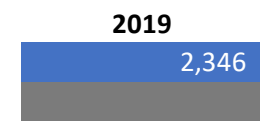
SRWTP Existing Electricity Consumption

**2019**

Total	10,067,581	kwh/yr
<b>Emissions Calculations</b>		
Annual electricity consumption	10,067,581	kW-hr/year
electricity conversion rate	1,000	KW-hr/MW-hr
Annual electricity consumption	10,068	MW-hr/year

Electricity provider	SMUD	unitless
Utility's CO2-e emission factor	0.233	MT/MW-hr

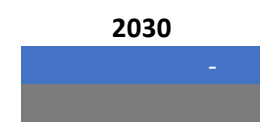
Total Annual Community Indirect CO2e (metric tons)



**2030**

<b>Emissions Calculations</b>		
Annual electricity consumption	12,675,581	kW-hr/year
electricity conversion rate	1,000	KW-hr/MW-hr
Annual electricity consumption	12,676	MW-hr/year
Electricity provider	SMUD	unitless
Utility's CO2-e emission factor	0.000	MT/MW-hr

Total Annual Community Indirect CO2e (metric tons)



**Supplemental Calculations**

Unincorporated Sac County Per Capita Energy Use Calculation

100,985,526	Kwh/yr
1,400,000	Service Population
72	kwh/person
139,571	2019 City Service Population
10,067,581	2019 RC kWh
175,726	2030 City Service Population
12,675,581	2019 RC kWh

**Source**

Steve Nebozuk (SRCSD) email to Dimitri Antoniou (Ascent) 8/10/2016  
 Steve Nebozuk (SRCSD) phone discussion with Dimitri Antoniou (Ascent) 8/10/2016



SRWTP Biogas (methane) Combustion  
2019

**DIRECT EMISSIONS-WWTP Process Emissions**

**Equation 10.2**

**Stationary CH4 from Incomplete Combustion of Digester Gas**

Term	Value	Inputs Unit	Description
population	139,571	people	2019 City Service Population
Digester Gas	1.00	ft <sup>3</sup> /person/day	cubic feet of digester gas produced per person per day
Fraction Methane	0.650	constant	fraction of methane in biogas
Density Methane	662.000	g/m <sup>3</sup>	density of methane
Destruction Efficiency	0.99	constant	methane destruction efficiency
Conversion Factor	0.0283	constant	conversion from ft <sup>3</sup> to m <sup>3</sup>
Conversion Factor	365.25	constant	conversion from days to year
Conversion Factor	0.000001	constant	conversion from g to metric tons
GWP	27.9	constant	global warming potential of methane for CO2e
2030 Community pop	175,726		

	2019	2030
<b>Annual CO2e emissions (MT)</b>	173	218

**Source**

California Air Resource Board, California Climate Action Registry, Local Governments for Sustainability, The Climate Registry (2010). Local Government Operations Protocol-For the quantification and reporting of greenhouse gas emissions inventories. Version 1.1.





SRWTP N2O Effluent Emissions

2019

**DIRECT EMISSIONS-WWTP Process Emissions**

**Equation 10.10**

**Process N2O Emissions from Effluent Discharge<sup>1c</sup>**

Term	Value	<u>Inputs</u> Unit	Description				
City	139,571	people	2019 City Service Population				
constant	1.25	Constant	co-discharge waste into sewer				
N load	0.026	kg N/person/day	N per person served				
N uptake	0.050	kg N/kg BOD	nitrogen uptake for cell growth in aerobic system				
N2O effluent Emission Factor	0.005	kg N2O N/kg sewage-N					
BOD Load	0.09	kg BOD/person/day					
constant	1.57	Constant	molecular weight ratio N2O to N2				
constant	0	Constant	fraction of nitrogen removed from nitrification/denitrification				
Conversion Factor	365	days/year					
Conversion Factor	0.001	metric ton/kg					
N2O Global Warming Potential	298	GWP					
2030 Community pop	175,726						
<b>Annual Community CO2e emissions (MT)</b>			<table border="1"> <thead> <tr> <th>2019</th> <th>2030</th> </tr> </thead> <tbody> <tr> <td style="background-color: #4a7ebb; color: white;">3,203</td> <td style="background-color: #4a7ebb; color: white;">4,032</td> </tr> </tbody> </table>	2019	2030	3,203	4,032
2019	2030						
3,203	4,032						

**Source**

California Air Resource Board, California Climate Action Registry, Local Governments for Sustainability, The Climate Registry (2010). Local Government Operations Protocol-For the quantification and reporting of greenhouse gas emissions inventories. Version 1.1.



# Appendix C

---

Greenhouse Gas Forecast and  
Reduction Target (Technical Memorandum)





# Memo



455 Capitol Mall, Unit 300  
Sacramento, CA 95814  
916.444.7301

**Date:** March 29, 2022 (original)  
February 23, 2023 (revised)

**To:** Stefan Heisler and Darcy Goulart (City of Rancho Cordova)

**From:** Alyssa Way, Andrew Martin, and Honey Walters (Ascent Environmental)

**Subject:** City of Rancho Cordova Climate Action Plan, Greenhouse Gas Emissions Forecasts and Reduction Targets – Technical Memorandum

---

## INTRODUCTION

In 2009, the County of Sacramento prepared a baseline inventory for the unincorporated county and the incorporated cities, including specifically a 2005 baseline year inventory for the City of Rancho Cordova (City). The Sacramento Area Council of Governments (SACOG) 2020 Metropolitan Transportation Plan / Sustainable Communities Strategy (MTP/SCS) Draft Environmental Impact Report included a greenhouse gas (GHG) emissions inventory and forecast for 2016, 2030, 2040, and 2050 that included the City. Though the City was considered in both efforts, an updated communitywide GHG emissions inventory using the latest methodologies with a more recent 2019 baseline year has been prepared for the City's Climate Action Plan (CAP). The next step in this update process is to forecast these GHG emissions for the 2030 target year and 2045 goal. This technical memorandum provides the results of these forecasts as well as associated methods, assumptions, emissions factors, and data sources.

The GHG emissions forecasts will provide a foundation for the forthcoming steps of the CAP development process, including the development of GHG emissions reduction targets and identification of measures the City can take to reduce GHG emissions from activities and sources located in Rancho Cordova.

## ORGANIZATION OF THIS MEMORANDUM

This memorandum consists of two main parts:

- ▶ Section 1: Summary of Inventory Results presents an overview of the updated GHG emissions inventory (baseline 2019).
- ▶ Section 2: Emissions Forecasts summarizes the forecasted GHG emissions under "business-as-usual" (BAU) and legislative-adjusted BAU scenarios for years 2030 and 2045. A BAU scenario is one in which no GHG reductions from actions taken by local, regional, State, or federal agencies are included. A legislative-adjusted BAU scenario reflects GHG reductions from legislative or regulatory actions enacted by regional, State, and federal agencies, without considering any local (City) actions to reduce GHG emissions.

# 1 SUMMARY OF INVENTORY RESULTS

## 1.1 2019 COMMUNITY INVENTORY RESULTS

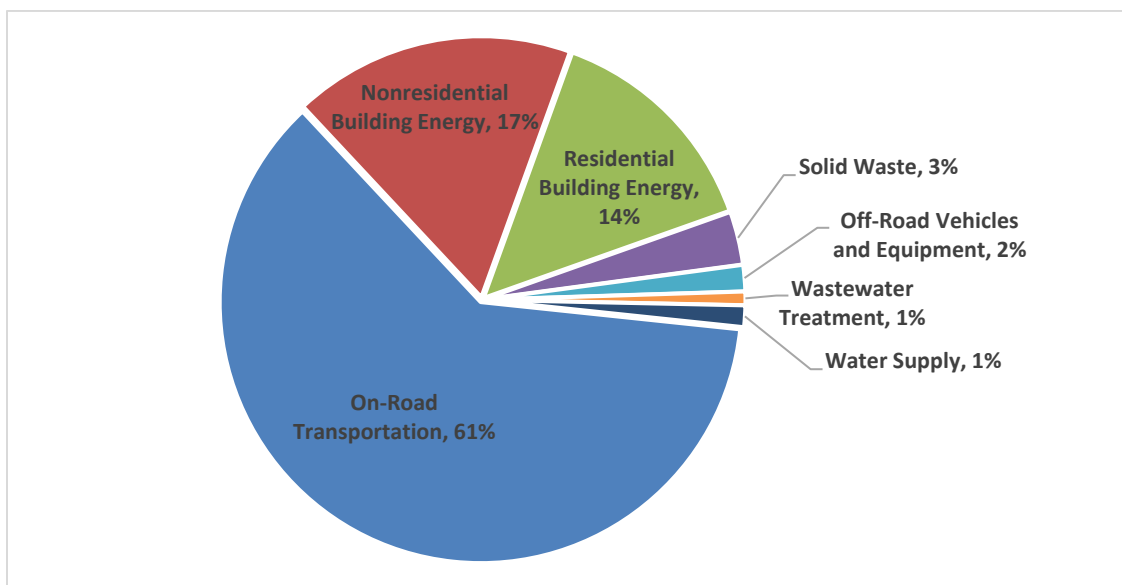
Based on the modeling conducted, community activities in 2019 generated approximately 679,706 metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>e). Major emissions sectors included on-road transportation, residential and nonresidential building energy use, solid waste, water use, and wastewater generation. Table 1 and Figure 1 present the city’s 2019 GHG emissions inventory by sector. A description of each emissions sector, including key sources of emissions, is provided in the Inventory Technical Memorandum, dated March 29, 2022.

**Table 1 2019 City of Rancho Cordova Community Greenhouse Gas Emissions Inventory**

Sectors	MTCO <sub>2</sub> e/year	Percent of Total
On-Road Transportation	417,145	61%
Nonresidential Building Energy	118,801	17%
Residential Building Energy	95,575	14%
Solid Waste	22,397	3%
Off-Road Vehicles and Equipment	11,027	2%
Water Supply	9,071	1%
Wastewater Treatment	5,690	1%
Total	679,706	100%

Notes: MTCO<sub>2</sub>e/year = metric tons of carbon dioxide equivalent per year

Source: Ascent Environmental 2022



Source: Ascent Environmental 2022

Figure 1 2019 City of Rancho Cordova Community Greenhouse Gas Emissions Inventory



## 2 GREENHOUSE GAS EMISSIONS FORECASTS TO 2030

### 2.1 COMMUNITY FORECAST RESULTS

The BAU GHG emissions forecasts provide an assessment of how emissions generated by community activities will change over time without further local, State, or federal action. In addition to accounting for the city’s growth under a BAU scenario, an adjusted BAU forecast was prepared, which includes adopted legislative and regulatory actions at the State and federal levels that would affect emissions without any local action, such as regulatory requirements to increase vehicle fuel efficiency and increase renewable energy sources in grid electricity portfolios. It is important to note that the legislative-adjusted BAU emissions forecasts only include emissions reductions associated with implementation of adopted federal and State legislation and regulations and do not include goals established by executive orders or targets established by federal or State agencies outside of adopted legislation and regulations. These forecasts provide the City with the information needed to focus efforts on emissions sectors and sources that have the greatest opportunities for GHG emissions reductions.

The BAU forecasts described in this section for 2030 and 2045 are aligned with statewide GHG reduction targets established in State law Senate Bill (SB) 32 and Assembly Bill (AB) 1279. The State GHG reduction targets are to reduce statewide emissions levels to:

- ▶ 40 percent below 1990 levels by 2030 (SB 32); and
- ▶ net zero with at least an 85 percent reduction from 1990 levels for anthropogenic sources (AB 1279).

Estimated BAU emissions forecasts were based on population and employment from the SACOG Growth Forecast for the 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS). The SACOG Growth Forecast provides population and employment for 2016 and 2040. These values were interpolated and extrapolated to identify values for 2019, 2030, and 2045. Population and employment are expected to increase by 62 and 36 percent from 2019 to 2045, respectively. These growth factors were used to forecast BAU emissions for most sectors. Additional information regarding the growth factors used for each sector is included in the following sections. Fehr & Peers provided annual vehicle miles traveled (VMT) projections for the years 2027, 2035, and 2040 based on origin-destination data provided by SACOG. Based on these data, annual VMT was interpolated for year 2030 and projected out for 2045. Annual VMT by 2045 is projected to increase by 42 percent from 2019. VMT projections were used to scale emissions from the on-road transportation sector. Table 2 shows projections growth in the city from 2019 to 2045.

**Table 2 Rancho Cordova Demographic and Vehicle Miles Traveled Projections**

Forecast Factor	2019	2030	2045
Population	77,579	102,122	125,427
Employment	61,991	73,604	84,213
Annual VMT	919,218,798	1,071,357,646	1,307,495,381

Notes: VMT = vehicle miles traveled.

Source: SACOG Growth Forecast for the 2020 MTP/SCS; Fehr & Peers; adapted by Ascent Environmental in 2022.

Table 3 shows baseline emissions in 2019 and a BAU emissions forecast for 2030, and 2045.

**Table 3 2019 Rancho Cordova Greenhouse Gas Emissions Inventory and BAU Forecast (MTCO<sub>2e</sub>/year)**

Sector	2019	2030	2045
--------	------	------	------

On-Road Transportation	417,145	486,187	593,347
Nonresidential Building Energy	118,801	141,055	161,388
Residential Building Energy	95,575	125,811	154,521
Solid Waste	22,397	29,483	36,211
Off-Road Vehicles and Equipment	11,027	14,772	18,488
Water Supply	9,071	11,940	14,665
Wastewater Treatment	5,690	7,490	9,200
Total	679,706	816,738	987,820

Notes: Total may not sum exactly due to independent rounding. BAU = business-as-usual; MTCO<sub>2e</sub>/year = metric tons of carbon dioxide equivalent per year.

Source: Forecast prepared by Ascent Environmental in 2022.

Legislative-adjusted BAU emissions forecasts were prepared using the same demographic and VMT data that were used for the BAU forecasts, while accounting for regional, State, and federal legislative actions that would affect local emissions. These forecasts provide the City with a more robust understanding to assist with the prioritization of emissions reduction measures developed to meet the GHG targets. A summary of the legislative reductions applied is provided in Table 4.

**Table 4 Legislative Reductions Summary**

Source	Legislative Reduction	Description	Sectors Applied
Regional	2030 Zero Carbon Plan	Establishes a target for SMUD to supply 100 percent renewable electricity by 2030.	Residential and Nonresidential Building Energy, Water Supply
State	California’s Building Energy Efficiency Standards (2019 Title 24, Part 6)	Requires all new buildings in California to comply with energy efficiency standards established by CEC. Accounts for the energy efficiency gains associated with lighting, heating, cooling, ventilation, and water heating improvements, as well as onsite solar photovoltaic requirements for low-rise residential.	Residential and Nonresidential Building Energy
State	Advanced Clean Car I Standards	Establishes GHG emission reduction standards for model years 2017 through 2025 that are more stringent than federal CAFE standards.	On-Road Transportation
State	Truck and Bus Regulation	Requires diesel trucks and buses that operate in California to be upgraded to reduce GHG emissions.	On-Road Transportation
Federal	Fuel Efficiency Standards for Medium- and Heavy-Duty Vehicles	Establishes fuel efficiency standards for medium- and heavy-duty engines and vehicles.	On-Road Transportation
Federal	EPA Off-Road Compression-Ignition Engine Standards	Establishes standards for phasing of EPA diesel engine tiers for off-road compression-ignition equipment.	Off-Road Vehicles and Equipment

Notes: CAFE = Corporate Average Fuel Economy; CEC = California Energy Commission; EPA = U.S. Environmental Protection Agency; GHG = greenhouse gas; SMUD = Sacramento Municipal Utility District

Source: Forecasts prepared by Ascent Environmental in 2022.

The city’s legislative-adjusted BAU emissions would decrease by approximately 22 percent between 2019 and 2045, as shown below in Table 5 and Figure 2. Figure 2 also shows the emissions trend that would occur without

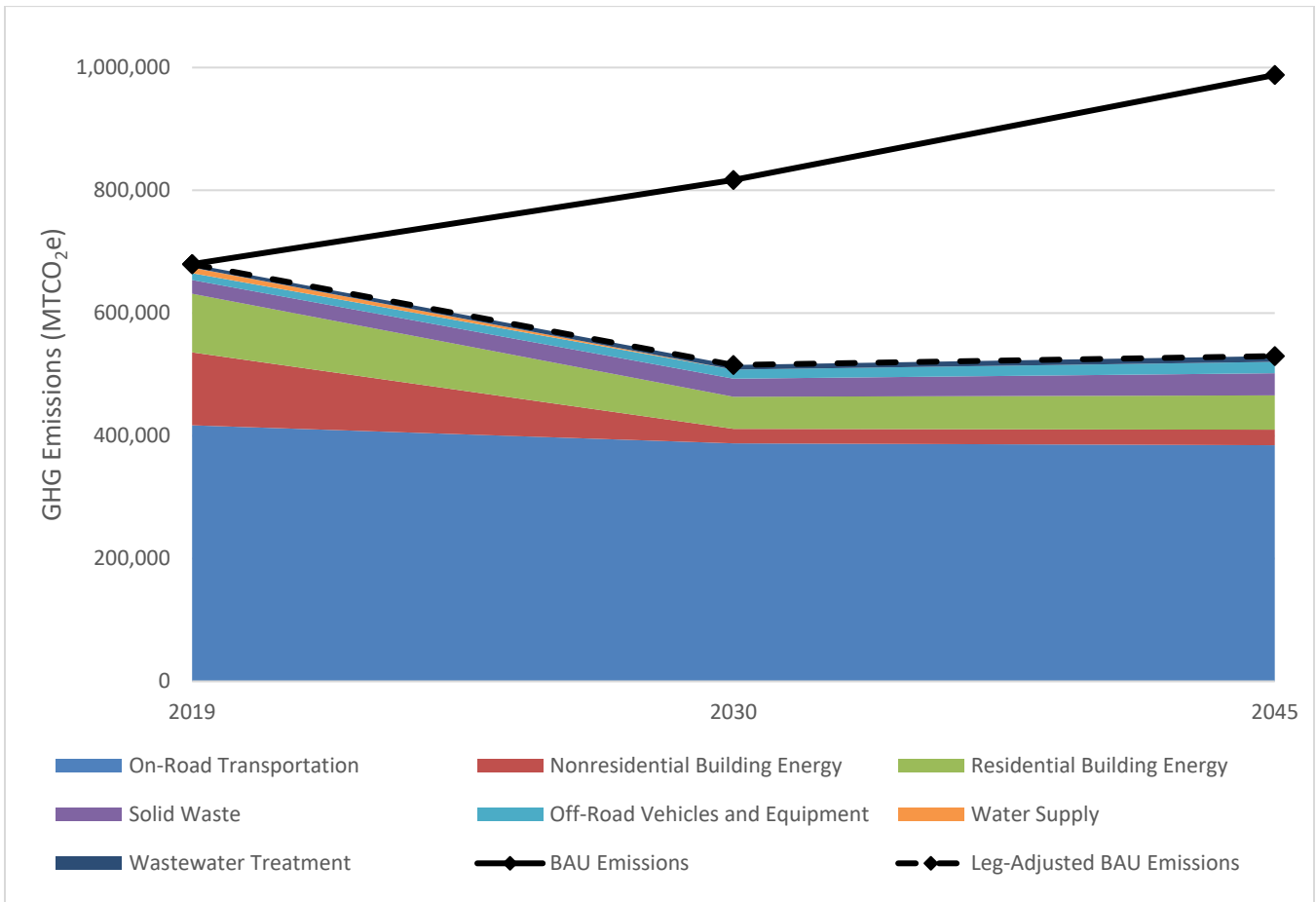
anticipated legislative reductions, accounting only for population, employment, and annual VMT increases. Without the legislative reductions (the BAU forecast), emissions would be 86 percent higher in 2045 compared to the legislative-adjusted BAU forecast. Emissions forecasts are detailed for each sector and discussed below beginning with Section 2.1.1.

**Table 5 2019 Rancho Cordova Greenhouse Gas Emissions Inventory and Legislative-Adjusted BAU Forecasts (MTCO<sub>2</sub>e/year)**

Sector	2019	2030	2045
On-Road Transportation	417,145	387,784	384,651
Nonresidential Building Energy	118,801	23,605	25,335
Residential Building Energy	95,575	52,217	55,903
Solid Waste	22,397	29,483	36,211
Off-Road Vehicles and Equipment	11,027	14,772	18,488
Water Supply	9,071	0	0
Wastewater Treatment	5,690	7,490	9,200
Total	679,706	515,352	529,788

Notes: Total may not sum exactly due to independent rounding. BAU = business-as-usual; MTCO<sub>2</sub>e/year = metric tons of carbon dioxide equivalent per year.

Source: Forecasts prepared by Ascent Environmental in 2022.



Source: Ascent Environmental 2022

Figure 2 2019 Rancho Cordova Greenhouse Gas Emissions Inventory with BAU and Legislative-Adjusted BAU Forecasts

## 2.1.1 Building Energy

Emissions from future electricity, natural gas, and backup generator use for buildings were estimated by multiplying anticipated energy use with forecasted emissions factors. Future energy use was forecasted in three parts. First, energy use was scaled by population and employment growth factors detailed in Table 2. Second, electricity emissions factors were adjusted to reflect the Sacramento Metropolitan Utility District’s (SMUD) 2030 Zero Carbon Plan of 100 percent of electricity from zero carbon sources by 2030. Electricity emissions factors are anticipated to decline based on current regulations, while natural gas and diesel emissions factors are anticipated to be constant. Third, energy intensity factors were adjusted to reflect increased stringency under California’s Building Energy Efficiency Standards (California Code of Regulations Title 24 Part 6, hereafter referred to as “Title 24”). The 2019 Title 24 standards, which became effective in 2020, are expected to achieve decreases in electricity consumption in new construction. The assumptions for energy efficiency and future electricity emissions factors are described below. Table 6 summarizes the scaling factors and legislative reductions used to forecast building use by energy type.



**Table 6 Building Energy Emissions Forecast Methods and Legislative Reductions by Source**

Energy Type	Forecast Methods	
	Scale Factor	Applied Legislative Reductions
Electricity	Scaled by population growth for residential building energy; scaled by employment growth for nonresidential building energy.	Scheduled targets (i.e., 100 percent renewable by 2030) applied to SMUD’s emissions factors. Accounts for Title 24 energy efficiency gains in new construction based on the best available data for average building energy efficiency.
Natural Gas		
Backup Generators	Scaled by employment growth for nonresidential building energy.	Accounts for Title 24 energy efficiency gains in new nonresidential construction.

Notes: SMUD = Sacramento Metropolitan Utility District.

Source: Forecasts prepared by Ascent Environmental in 2022.

## RESIDENTIAL BUILDING ENERGY

Between 2019 and 2045, electricity and natural gas emissions from residential buildings would decrease by approximately 42 percent from 95,575 to 55,903 MTCO<sub>2e</sub> per year with legislative adjustments and overall population growth of 62 percent over the same time. While GHG emissions associated with residential electricity usage are anticipated to decline through 2045 and reflect SMUD’s goal for zero carbon electricity by 2030, emissions from residential natural gas consumption are expected to rise gradually. This increase is due to population growth in the city and reflects adopted legislation. Table 7 shows the 2019 inventory and legislative-adjusted BAU forecasted emissions from the residential building energy sector by energy type for 2030 and 2045.

**Table 7 2019 Residential Building Energy Greenhouse Gas Emissions Inventory and Legislative-Adjusted BAU Emissions Forecasts (MTCO<sub>2e</sub>/year)**

Energy Type	2019	2030	2045
Electricity	47,238	0	0
Natural Gas	48,336	52,217	55,903
Total	95,575	52,217	55,903

Notes: Totals may not sum exactly due to independent rounding. BAU = business-as-usual; MTCO<sub>2e</sub>/year = metric tons of carbon dioxide equivalent per year.

Source: Forecasts prepared by Ascent Environmental in 2022.

## NONRESIDENTIAL BUILDING ENERGY

Between 2019 and 2045, electricity, natural gas, and back-up generator emissions from nonresidential buildings would decrease by 79 percent from 118,801 to 25,335 MTCO<sub>2e</sub> per year with legislative adjustments and overall employment growth of 36 percent over the same time. GHG emissions associated with nonresidential electricity usage are anticipated to decline through 2045 and reflect SMUD’s carbon neutrality goals and emissions from nonresidential natural gas consumption and backup generators are expected to rise gradually. Table 8 shows the 2019 inventory and legislative-adjusted BAU forecasted emissions for the nonresidential building energy sector by energy type for 2030 and 2045.

**Table 8 2019 Nonresidential Building Energy Greenhouse Gas Emissions Inventory and Legislative-Adjusted BAU Forecasts (MTCO<sub>2</sub>e/year)**

Energy Type	2019	2030	2045
Electricity	97,089	0	0
Natural Gas	20,769	22,580	24,235
Backup Generators	943	1,025	1,101
Total	118,801	23,605	25,335

Notes: Totals may not sum exactly due to independent rounding. BAU = business-as-usual; MTCO<sub>2</sub>e/year = metric tons of carbon dioxide equivalent per year.

Source: Forecasts prepared by Ascent Environmental in 2022.

### Electricity Emissions Factors

Electricity emissions from the building sector are anticipated to decrease to zero by 2030 and beyond without additional City action, despite growth, due to State and regional measures already in place that affect the carbon intensity of grid electricity. SMUD’s emissions factor for CO<sub>2</sub> in 2019 was provided by SMUD. Electricity emissions factors for methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) were obtained from the U.S. Environmental Protection Agency’s (EPA’s) Emissions & Generation Resource Integrated Database (eGRID) 2018 Annual Output Emissions Rates (EPA 2020).

California utility providers, including SMUD, were scheduled to reach a 33 percent renewable electricity generation mix in 2020 and, pursuant to SB 100, are scheduled to achieve 60 percent renewable electricity by 2030 and 100 percent carbon-free electricity by 2045. However, SMUD’s is scheduled to achieve 100 percent renewable by 2030 under the utility’s carbon neutrality goal. SMUD’s 2019 emissions factors is 232.1 grams of CO<sub>2</sub> per kilowatt hour (g CO<sub>2</sub>/kWh). The carbon-free electricity requirement results in a 2030 and 2045 emissions factor of zero g CO<sub>2</sub>/kWh. CH<sub>4</sub> and N<sub>2</sub>O electricity emissions factors in future years are assumed to follow the same trends as the CO<sub>2</sub> emissions factors.

### Natural Gas Emissions Factors

Natural gas emissions are based on emissions factors obtained from The Climate Registry’s (TCR’s) 2020 Default Emission Factors, which are estimated to be 5,306 pounds of carbon dioxide equivalent per therm (g CO<sub>2</sub>e/therm) for stationary combustion in buildings. Emissions factors associated with natural gas combustion are not anticipated to change over time, as there are no legislative actions that would reduce the energy intensity of natural gas.

### Diesel Emissions Factors

Emissions from diesel fuel used to power backup generators are based on emissions factors from TCR, which are estimated to be 10,210 grams of carbon dioxide equivalent per gallon (g CO<sub>2</sub>e/gal). Emissions factors associated with diesel combustion are not anticipated to change over time, as there are no legislative actions that would reduce the energy intensity of diesel.

### Energy Efficiency

Title 24 standards apply to both new construction and existing buildings. The 2019 Title 24 standards went into effect January 2020. The California Energy Commission (CEC) estimates that new residential buildings built to the 2019 standards are 53 percent more efficient than residential buildings built to the previous standards (CEC 2018). CEC estimates that new nonresidential buildings built to the 2019 standards are 30 percent more efficient than nonresidential buildings built to the previous standards (CEC 2018).

In addition to the current iteration of Title 24, previous versions of the standards have also achieved energy efficiencies for residential and nonresidential buildings. Energy efficiency savings have been quantified by CEC and the collective effect of Title 24 was accounted for in the forecasted emissions. Based on these data, the analysis assumes that all new residential construction occurring between 2020 and 2045 would be 75 percent more energy efficient than buildings constructed under previous Title 24 standards, and nonresidential construction would be 53 percent more energy efficient compared to buildings constructed under previous Title 24 standards. This includes the energy efficiencies gained through the 2008, 2013, 2016, and 2019 versions of Title 24. Additional efficiencies to be achieved in future code cycles are yet unknown and therefore not factored into the forecast.

## 2.1.2 Transportation

### ON-ROAD TRANSPORTATION

Between 2019 and 2045, annual legislative-adjusted BAU GHG emissions from on-road vehicles would decrease by approximately 8 percent from 417,147 to 384,651 MTCO<sub>2</sub>e per year based on future vehicle emission factors modeled in the California Air Resources Board’s (CARB’s) Emission Factor (EMFAC) 2017 model, despite an increase in VMT of 42 percent. VMT projections were provided by Fehr & Peers based on origin-destination data from SACOG. With respect to the legislative adjustments included in this forecast, State and federal regulations incorporated in the on-road vehicle sector include the Advanced Clean Car I (ACC) Standards, and fuel efficiency standards for medium- and heavy-duty vehicles. These standards are included in EMFAC2021’s emissions factor estimates and forecasts. It should be noted that the Low Carbon Fuel Standard was excluded in EMFAC2021 forecasts because the emissions benefits originate from upstream fuel production and do not directly reduce vehicle tailpipe emissions that affect the city’s GHG emissions forecasts. Table 9 summarizes the scaling factor and legislative reductions used to forecast on-road transportation emissions.

**Table 9 On-Road Transportation Forecast Methods and Legislative Reductions**

Source	Forecast Methods	
	Scale Factor	Applied Legislative Reductions
On-Road Vehicles	Scaled by VMT estimates provided by Fehr & Peers.	EMFAC2021 forecasts vehicle fleet distributions by vehicle type and the emissions factors anticipated for each vehicle category based on both vehicle emissions testing and approved legislative reductions. EMFAC2021’s forecasts incorporate the effects of the ACC I Standards, and fuel efficiency standards for medium- and heavy-duty vehicles, as well as truck and bus regulations.

Notes: ACC I = Advanced Clean Cars I; CAFE = Corporate Average Fuel Economy; EMFAC2021 = California Air Resources Board’s Emission Factor 2021 model.

Source: Forecasts prepared by Ascent Environmental in 2022.

Table 10 shows the 2019 inventory and legislative-adjusted BAU forecasted emissions from on-road transportation for 2030 and 2045.

**Table 10 2019 On-Road Transportation Greenhouse Gas Emissions Inventory and Legislative-Adjusted BAU Forecasts (MTCO<sub>2</sub>e/year)**

EMFAC Vehicle Category	EMFAC Vehicle Category Description	2019	2030	2045
LDA	Passenger Cars	148,453	132,269	142,439

LDT2	Light-Duty Trucks (GVWR <6000 lb)	78,535	73,483	80,220
MDV	Medium-Duty Trucks (GVWR 5751-8500 lb)	65,206	60,725	65,244
LDT1	Light-Duty Trucks (GVWR <6000 lb)	17,554	17,356	18,083
LHD1	Light-Heavy-Duty Trucks (GVWR 8501- 10000 lbs)	29,056	28,522	19,887
T7 Trucks	Heavy-Heavy Duty Trucks	38,318	36,057	31,532
T6 Trucks	Medium-Heavy Duty Trucks	23,818	23,123	14,868
LHD2	Light-Heavy-Duty Trucks (GVWR 10001- 14000 lb)	7,083	7,041	5,053
MCY	Motorcycles	891	987	1,161
MH	Motor Homes	1,826	2,033	2,440
UBUS	Urban Buses	1,597	1,384	7
OBUS	Other Buses	1,515	1,516	915
SBUS	School Buses	897	935	667
All Other Buses	All Other Buses	749	743	849
PTO	Power Take Off	1,138	1,051	658
Motor Coach	Motor Coach	511	561	630
Total	-	417,145	387,784	384,651

Notes: Totals may not sum exactly due to independent rounding. BAU = business-as-usual; MTCO<sub>2</sub>e/year = metric tons of carbon dioxide equivalent per year.

Source: Forecasts prepared by Ascent Environmental in 2022.

## OFF-ROAD VEHICLES AND EQUIPMENT

Between 2019 and 2045, emissions associated with off-road vehicles and equipment used in the city would increase by 69 percent from 12,470 to 21,074 MTCO<sub>2</sub>e per year, with legislative adjustments applied and overall growth in various demographics. Emissions were obtained from CARB's OFFROAD2007 and OFFROAD2021 models. With respect to the legislative adjustments in the off-road vehicle sector, CARB's latest off-road emissions model, OFFROAD2021, was used, which incorporates regulatory actions such as reformulated fuels and more stringent emission standards. However, some off-road vehicle and equipment sources that are included in the OFFROAD2007 model are excluded from OFFROAD2021. For these sectors, emissions were obtained from OFFROAD2007. In addition, OFFROAD2021 provides CO<sub>2</sub> emissions but does not provide emissions from CH<sub>4</sub> and N<sub>2</sub>O. Ratios of CH<sub>4</sub> and N<sub>2</sub>O to CO<sub>2</sub> reported in OFFROAD2007 were calculated and applied to CO<sub>2</sub> data from OFFROAD2021 to calculate CH<sub>4</sub> and N<sub>2</sub>O emissions, as recommended by CARB.

Sacramento County-level emissions from off-road vehicles and equipment were scaled using changes in city-specific demographic factors. Table 11 summarizes the scaling factors and legislative reductions used to forecast off-road vehicle and equipment emissions.



**Table 11 Off-Road Vehicles and Equipment Forecast Methods and Legislative Reductions by Source**

Source	Forecast Methods	
	Scale Factor	Applied Legislative Reductions
Construction and Mining Equipment	Service Population	OFFROAD2007 and OFFROAD2021 emission factor considerations include EPA off-road compression-ignition engine standards implementation schedule.
Entertainment Equipment	Employment	
Industrial Equipment	Employment	
Lawn and Garden Equipment	Population	
Light Commercial Equipment	Employment	
Portable Equipment	Employment	
Recreational Equipment	Population	
Transportation Refrigeration Units	Service Population	

Notes: EPA = U.S. Environmental Protection Agency; OFFROAD2007 = California Air Resources Board’s OFFROAD2007 model; OFFROAD2021 = California Air Resources Board’s OFFROAD2021 model.

Source: Forecasts prepared by Ascent Environmental in 2022.

Table 12 shows the 2019 inventory and legislative-adjusted BAU forecasted emissions from the off-road vehicles and equipment sector for 2030 and 2045.

**Table 12 2019 Off-Road Vehicles and Equipment Greenhouse Gas Emissions Inventory and Legislative-Adjusted BAU Forecasts (MTCO<sub>2e</sub>/year)**

Source	2019	2030	2045
Construction and Mining Equipment	5,350	7,500	9,675
Entertainment Equipment	54	67	80
Industrial Equipment	1,426	1,787	2,129
Lawn and Garden Equipment	138	211	287
Light Commercial Equipment	839	1,052	1,253
Portable Equipment	2,478	3,105	3,699
Recreational Equipment	81	123	168
Transportation Refrigeration Units	661	927	1,196
Total	11,027	14,772	18,488

Notes: Totals may not sum exactly due to independent rounding. BAU = business-as-usual; MTCO<sub>2e</sub>/year = metric tons of carbon dioxide equivalent per year.

Source: Forecasts prepared by Ascent Environmental in 2022.

### 2.1.3 Solid Waste

Between 2019 and 2045, solid waste emissions generated from community activities in the city would increase by approximately 62 percent from 22,397 to 36,211 MTCO<sub>2e</sub>, due to overall population growth of approximately 62 percent over the same period. Solid waste sector emissions include CH<sub>4</sub> emissions from the decay of waste generated annually, which were scaled by population growth within the city between 2019 and 2045. There are no applicable legislative reductions to apply to this sector and future disposal rates, so legislative-adjusted BAU emissions are equivalent to BAU emissions. Table 13 shows the 2019 inventory and legislative-adjusted BAU forecasted emissions from the solid waste sector for 2030 and 2045.

**Table 13 2019 Solid Waste Greenhouse Gas Emissions Inventory and Legislative-Adjusted BAU Forecasts (MTCO<sub>2</sub>e/year)**

Source	2019	2030	2045
Community-Generated Solid Waste	22,397	29,483	36,211

Notes: Totals may not sum exactly due to independent rounding. BAU = business-as-usual; MTCO<sub>2</sub>e/year = metric tons of carbon dioxide equivalent per year.

Source: Forecasts prepared by Ascent Environmental in 2022.

## 2.1.4 Water Supply

Between 2019 and 2045, water supply emissions from community activities in the city would be reduced to zero by 2030 onward due to SMUD’s 2030 Zero Carbon Plan. Table 14 summarizes the scaling factor and legislative reduction used to forecast water supply emissions.

**Table 14 Water Supply Forecast Methods and Legislative Reductions by Source**

Source	Forecast Methods	
	Scale Factor	Applied Legislative Reductions
Water Consumption	Population growth.	Assumes electricity use for extraction, conveyance, distribution, and treatment follow the 2030 goal of carbon-free electricity.

Source: Forecasts prepared by Ascent Environmental in 2022.

Table 15 shows the 2019 inventory and legislative-adjusted BAU forecasted emissions from the water supply sector for 2030 and 2045.

**Table 15 2019 Water Supply Greenhouse Gas Emissions Inventory and Legislative-Adjusted BAU Forecasts (MTCO<sub>2</sub>e/year)**

Source	2019	2030	2045
Water Supply	9,070	0	0

Notes: BAU = business-as-usual; MTCO<sub>2</sub>e/year = metric tons of carbon dioxide equivalent per year.

Source: Forecasts prepared by Ascent Environmental in 2022.

## 2.1.5 Wastewater Treatment

Between 2019 and 2045, wastewater treatment emissions from the community would increase by 62 percent from 5,690 to 9,200 MTCO<sub>2</sub>e per year, accounting for overall population growth of 62 percent over the same time. Wastewater treatment-related emissions are generated from centralized wastewater treatment plants (WWTPs). Table 16 shows the 2019 inventory and legislative-adjusted BAU forecasted emissions from wastewater treatment sources for 2030 and 2045.

**Table 16 2019 Wastewater Treatment Greenhouse Gas Emissions Inventory and Legislative-Adjusted BAU Forecasts (MTCO<sub>2</sub>e/year)**

Source	2019	2030	2045
Centralized WWTPs	5,690	7,490	9,200

Notes: BAU = business-as-usual; MTCO<sub>2</sub>e/year = metric tons of carbon dioxide equivalent per year.

Source: Forecasts prepared by Ascent Environmental in 2022.

## 2.1.6 Discussion

As discussed above, the community legislative-adjusted BAU emissions would decrease by 22 percent between 2019 and 2045. This is a result of reductions that would be achieved from several regional, State, and federal legislative actions including:

- ▶ 100 percent of electricity from zero carbon sources by 2030;
- ▶ improved building energy efficiency through compliance with Title 24 standards (75 percent energy reduction for residential, 53 percent for nonresidential); and
- ▶ reductions in on-road vehicle emissions factors forecasted in EMFAC2021 and off-road vehicle and equipment emissions factors forecasted in OFFROAD2021.

From 2030 to 2045, new legislative actions that would affect emissions are anticipated to be adopted by the State and federal government; however, because information regarding these regulatory changes is currently unavailable or not final, emissions reductions from future potential legislative actions are not quantified in this memorandum. Without future legislative actions and despite growth in the city, emissions would decline from 2019 through 2045. Additional reductions could occur in the future due to State and/or federal actions requiring improvements in vehicle and equipment fuel economy and increased share of electric vehicle and equipment options, which would be reflected in future updates to the EMFAC2021 and OFFROAD2021 models. Other previous legislative actions would also continue to apply in the future and ultimately outpace growth in population and employment. Where new State regulations or programs are imminent and reasonably foreseeable, they can be incorporated as complementary actions to locally based GHG reduction measures.

## 3 REDUCTION TARGETS

### 3.1 STATEWIDE GREENHOUSE GAS REDUCTION TARGETS AND GOALS

As directed in AB 32, SB 32, and AB 1279, the State aims to reduce annual GHG emissions to:

- ▶ 1990 levels by 2020;
- ▶ 40 percent below 1990 levels by 2030; and
- ▶ Net zero emissions with at least an 85 percent reduction from 1990 levels for anthropogenic sources

Signed on September 16, 2022, AB 1279, the California Climate Crisis Act, established a statewide goal to achieve net zero emissions as soon as possible, and no later than 2045, and achieve net negative emissions thereafter, and to ensure that by 2045, statewide anthropogenic greenhouse gas emissions are reduced to at least 85 percent below 1990 levels..

The City aims to reduce its fair-share of communitywide emissions in proportion to the State's targets and goals. Community emissions levels from 1990 are not available, which is the case for most local jurisdictions in California. Thus, community GHG reduction targets for the City's CAP were developed relative to the 2019 community emissions inventory, consistent with guidance provided by CARB. The methodology used to calculate the City's emissions reduction targets is described below.

## 3.2 COMMUNITY GREENHOUSE GAS EMISSIONS REDUCTION TARGETS

Based on a review of the 2017 Scoping Plan and the 2022 Scoping Plan and an understanding of activities occurring within the city, the City has direct or indirect jurisdiction over activities that generate emissions and contribute to reductions in four of the eight emissions sectors included in the 2017 Scoping Plan and the 2022 Scoping Plan: residential and commercial, electric power, recycling and waste, and transportation. The City has limited influence over high GWP gases, and industrial activities in the city are limited. Lastly, while facilities regulated under Cap-and-Trade do exist within city boundaries, the State is responsible for achieving emissions reductions from these sources, and the City has limited ability to influence Cap-and-Trade facilities' GHG emissions. Therefore, by excluding these sectors under this approach, community GHG reduction targets have been established in proportion with statewide reductions for all sectors relevant to City jurisdiction to the extent feasible using available data. This target setting approach is consistent with the California Supreme Court decision in *Center for Biological Diversity v. California Department of Fish and Wildlife and Newhall Land and Farming (2015) 62 Cal.4th 204*, which determined that the approach of assessing a project's consistency with statewide emissions reduction goals must include a "reasoned explanation based on substantial evidence" that links the project's emission to the statewide GHG reduction goals.

The City kicked off the project in 2021 after which the City prepared GHG emissions inventories and forecasts and set GHG reduction targets. CARB's 2017 Scoping Plan was the adopted statewide Plan at the time the targets were developed and hence was used for setting the City's 2030 target and developing emissions reduction strategies and measures that meet the 2030 target. The City's 2045 goal has been developed using the 2022 Scoping Plan (adopted in December 2022) in response to the statewide 2045 GHG reduction goal established in AB 1279. The following sections detail the methodology for setting the City's 2030 target and 2045 goal:

### 2030 Emissions Reduction Target

The first step in determining community targets is to compare the State's GHG inventories for 1990 and 2019 (i.e., the City's baseline inventory year) for the four relevant sectors. According to the inventories available from CARB using the 2017 Scoping Plan, statewide emissions from the relevant sectors were approximately 431 million MTCO<sub>2e</sub> (MMTCO<sub>2e</sub>) in 1990 and 418 MMTCO<sub>2e</sub> in 2019 (CARB 2021) (note: sector-specific emissions totals and reductions reflect rounding). Thus, 2019 statewide emissions were approximately 13 MMTCO<sub>2e</sub> (3 percent) lower than the 1990 level and the State's 2020 GHG target (i.e., reduce emissions to 1990 levels by 2020).

According to the 2017 Scoping Plan, statewide emissions from sectors relevant to the City's inventory must be reduced to 311 MMTCO<sub>2e</sub> by 2020 for the State to achieve its 2020 target. CARB's statewide inventory reports 2019 emissions levels of 278 MMTCO<sub>2e</sub> for these sectors, which demonstrates the achievement of the 2020 target.

According to the 2017 Scoping Plan, statewide emissions from the sectors relevant to the City's inventory must be reduced to 179 MMTCO<sub>2e</sub> by 2030 for the State to achieve its 2030 target. This represents an emissions reduction of approximately 99 MMTCO<sub>2e</sub>, or 36 percent, by 2030, relative to 2019 levels of 278 MMTCO<sub>2e</sub>.

### 2045 Emissions Reduction Goal

The first step in determining community targets is to compare the State's GHG inventories for 1990 and 2019 (i.e., the City's baseline inventory year) for the four relevant sectors. According to the inventories available from CARB using the 2022 Scoping Plan, statewide emissions from the relevant sectors were approximately 438 million MTCO<sub>2e</sub> (MMTCO<sub>2e</sub>) in 1990 and 418 MMTCO<sub>2e</sub> in 2019 (CARB 2021) (note: sector-specific emissions totals and reductions reflect rounding). Thus, 2019 statewide emissions were approximately 20 MMTCO<sub>2e</sub> (5 percent) lower than the 1990 level and the State's 2020 GHG target (i.e., reduce emissions to 1990 levels by 2020).



According to the 2022 Scoping Plan, statewide emissions from sectors relevant to the City’s inventory must be reduced to 311 MMTCO<sub>2e</sub> by 2020 for the State to achieve its 2020 target. CARB’s statewide inventory reports 2019 emissions levels of 278 MMTCO<sub>2e</sub> for these sectors, which demonstrates the achievement of the 2020 target.

According to the 2022 Scoping Plan, statewide emissions from the sectors relevant to the City’s inventory must be reduced to 53 MMTCO<sub>2e</sub> by 2045 for the State to achieve its 2045 goal. This represents an emissions reduction of approximately 330 MMTCO<sub>2e</sub>, or 81 percent, by 2030, relative to 2019 levels of 278 MMTCO<sub>2e</sub>.

Consistent with State targets and goals and considering relevant emissions sectors, the City’s community GHG reduction targets are as follows:

- ▶ 2030 target: 36 percent below 2019 levels (438,283 MTCO<sub>2e</sub>); and
- ▶ 2045 target: 81 percent below 2019 levels (129,252 MTCO<sub>2e</sub>)

Table 17 shows how the City’s targets were derived based on adjusted statewide GHG emissions data and projections and summarizes the City’s legislative-adjusted BAU forecasts and targets for 2030 and 2045.

**Table 17 Rancho Cordova GHG Emissions Reduction Targets and Legislative-Adjusted BAU Summary**

Source	2019	2030	2045
2017 Scoping Plan Emissions Limit (MMTCO <sub>2e</sub> )	NA	259	NA
Adjusted 2017 Scoping Plan Emissions Limit <sup>1</sup> (MMTCO <sub>2e</sub> )	NA	179	NA
2022 Scoping Plan Emissions Limit (MMTCO <sub>2e</sub> )	NA	NA	66
Adjusted 2022 Scoping Plan Emissions Limit <sup>1</sup> (MMTCO <sub>2e</sub> )	NA	NA	53
Statewide Target Percent Reduction from 2019 Levels	NA	36%	85%
Baseline Emissions and Legislative-Adjusted BAU Forecast (MTCO <sub>2e</sub> )	679,706	515,352	529,788
Target Percent Reduction Below Baseline (%)	NA	36%	81%
Target Annual Emissions (MTCO <sub>2e</sub> )	NA	438,283	129,252
Reduction Needed to Meet Target (MTCO <sub>2e</sub> )	NA	77,070	400,536

Notes: BAU = business-as-usual; GHG = greenhouse gases; MTCO<sub>2e</sub> = metric tons of carbon dioxide equivalent; MMTCO<sub>2e</sub> = million metric tons of carbon dioxide equivalent; NA = not available; 2017 Scoping Plan = California’s 2017 Climate Change Scoping Plan.

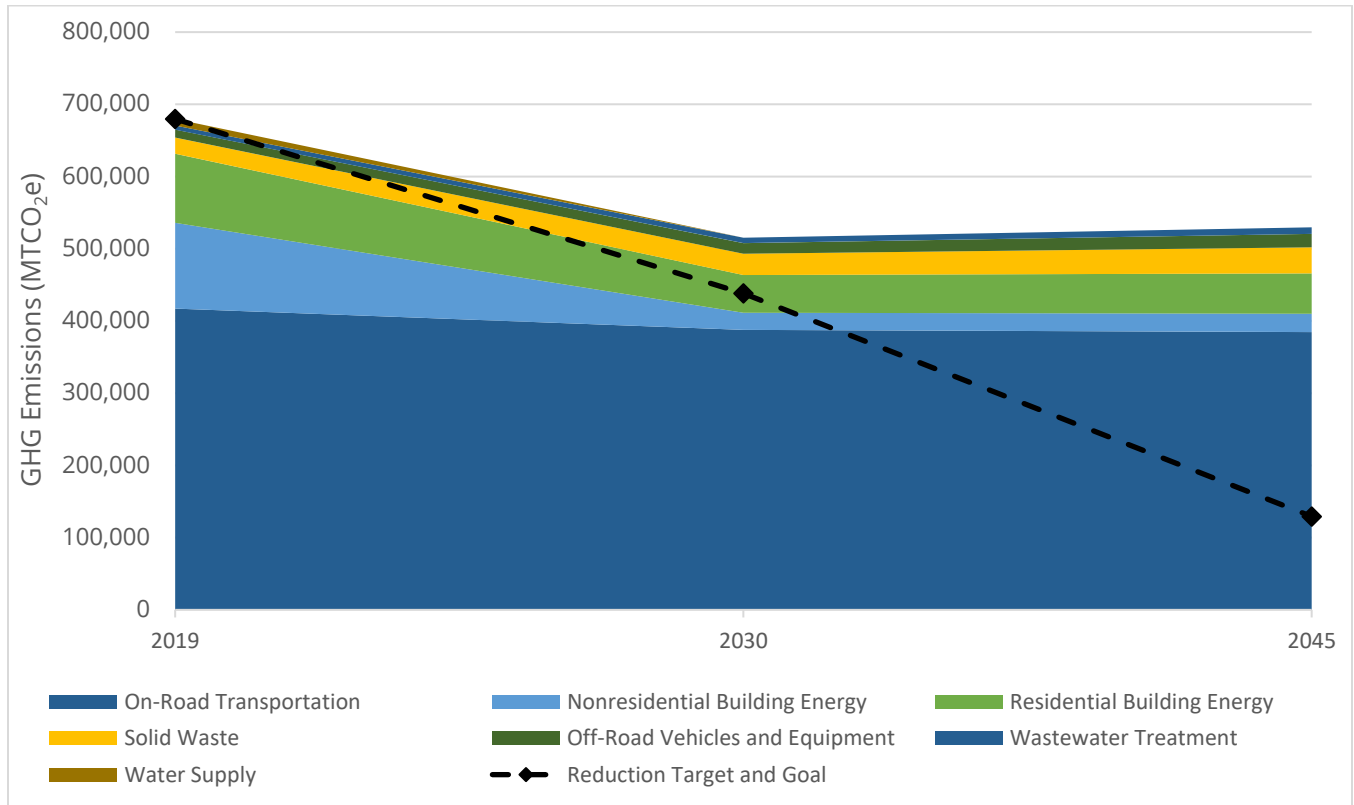
<sup>1</sup> Excludes agriculture, high GWP, industrial, and cap-and-trade sectors because they are not relevant to the City’s inventory.

Source: CARB 2017; Ascent Environmental 2022.

Figure 3 below depicts the 2019 baseline and legislative-adjusted BAU GHG emissions forecasts by sector, as distinguished by the colored wedges. The sum of the wedges represents the anticipated annual GHG emissions each year. Each wedge shows how an emissions sector is expected to contribute to the community-wide GHG inventory over time. The black line indicates the City’s GHG reduction target for 2030 and 2045 relative to the City’s 2019 GHG inventory, consistent with guidance provided by CARB.

The City’s 2030 GHG reduction target would be 36 percent below 2019 levels (438,283 MTCO<sub>2e</sub>), and 81 percent below 2019 levels (129,252 MTCO<sub>2e</sub>) by 2045. The space between the trajectory of the black line and the top of the colored wedges represents the “gap” in emissions that will need to be addressed through local actions for the City to meet its future GHG reduction targets. These emissions reductions are in addition to anticipated reductions provided

by legislative actions at the State and federal levels. Supporting information and detailed calculation results are included in Attachment A.



Source: Ascent Environmental 2022

Figure 3 Rancho Cordova Legislative-Adjusted Business-as-Usual Forecast Emissions by Sector and 2030 Emission Reduction Target and 2045 Emission Reduction Goal

## REFERENCES

- California Air Resources Board. 2017. *California's 2017 Climate Change Scoping Plan*. Available: [https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping\\_plan\\_2017.pdf](https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf). Accessed March 2, 2022.
- California Air Resources Board. 2022. *California's 2022 Climate Change Scoping Plan*. Available: [https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp\\_1.pdf](https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf).
- . 2021. California GHG Emissions for 2000 to 2019 (2021 Edition). Available: <https://www.arb.ca.gov/cc/inventory/data/data.htm>. Accessed March 2, 2022.
- California Energy Commission. 2018 (March). 2019 Building Energy Efficiency Standards Frequently Asked Questions. Available: [https://www.energy.ca.gov/sites/default/files/2020-03/Title\\_24\\_2019\\_Building\\_Standards\\_FAQ\\_ada.pdf](https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf). Accessed February 7, 2022.
- CARB. See California Air Resources Board.
- CEC. See California Energy Commission.
- EPA. See U.S. Environmental Protection Agency.
- Fehr & Peers. 2021. Review of Rancho Cordova VMT Data. Technical Memorandum.
- TCR. See The Climate Registry.
- The Climate Registry. 2020. *2020 Default Emission Factor Document*. Available: <https://www.theclimateregistry.org/wp-content/uploads/2020/04/The-Climate-Registry-2020-Default-Emission-Factor-Document.pdf>. Accessed February 7, 2022.
- U.S. Environmental Protection Agency. 2020. *Emissions & Generation Integrated Database (eGRID), Annual Output Emissions Rates*. Available: <https://www.epa.gov/egrid/download-data>. Accessed February 7, 2022.





# Appendix D

---

## Greenhouse Gas Reduction Target Worksheet



**2045 Goal**

**California GHG Emissions Inventory (by scoping plan sector)**

Included Emissions	2019
Agriculture	31.8
Commercial and Residential	43.8
Electric Power	58.8
High GWP	20.6
Industrial	88.2
Recycling and Waste	8.9
Transportation	166.1

Source: CARB 2021. California GHG Emissions for 2000 to 2019 (2021 Edition). <https://www.arb.ca.gov/cc/inventory/data/data.htm>

**CARB Scoping Plan Emissions Targets by Sector**

CARB GHG Inventory		2045 Target Ranges	
Sectors	1990	2019	2022 Scoping Plan Scenario
Agriculture	26	32	14
Residential and Commercial	44	44	4
Electric Power	108	59	31
High GWP	3	21	9
Industrial	98	88	18
Recycling and Waste	7	9	8
Transportation	152	166	10
Cap-and-Trade Program			0
CDR			-80
Natural and Working Lands	-7	26	-30
<b>Total</b>	<b>431</b>	<b>444</b>	<b>-15</b>

Source: California PATHWAYS Model Outputs, Energy & Environmental Economics, May 02, 2022

Natural and Working Lands data for the California Air Resources Board's 2022 Scoping Plan Update, CARB, May 10th, 2022

**Applicable Emission Sectors**

Emission Sectors	Applicable to Rancho Cordova?
Agriculture	No
Residential and Commercial	Yes
Electric Power	Yes
High GWP	No
Industrial	No
Recycling and Waste	Yes
Transportation	Yes
Cap and Trade	No

**GHG Reduction Targets**

Milestone Year	All Sectors		Selected Sectors	
	Statewide Existing and Target Emissions (MMTCO <sub>2e</sub> )	Target Percent Reduction from 2019	Statewide Existing and Target Emissions (MMTCO <sub>2e</sub> )	Target Percent Reduction from 2019
1990	438	NA		
2019	418	NA	278	
2020	438	-5%	311	-12%
2045	66	85%	53	81%

Notes: CARB statewide inventory current through 2019. 2040 target interpolated between 2030 target and 2045 goal under AB32, SB32, and EO B-55-18.

Source: CARB 2021. California GHG Emissions for 2000 to 2019 (2021 Edition). <https://www.arb.ca.gov/cc/inventory/data/data.htm>

Rancho Cordova Target Emissions and Target Percent Reduction from 2019 Emissions Levels		
	Target Emissions	Target Percent Reduction from 2019
2019	679,706	--
2045	129,252	81%

**2030 Target**

**California GHG Emissions Inventory (by scoping plan sector)**

Included Emissions	2019
Agriculture	31.8
Commercial	43.8
Electric Power	58.8
High GWP	20.6
Industrial	88.2
Recycling and W	8.9
Transportation	166.1

Source: CARB 2021. California GHG Emissions for 2000 to 2019 (2021 Edition). <https://www.arb.ca.gov/cc/inventor>.

**CARB Scoping Plan Emissions Targets by Sector**

CARB GHG Inventory			2030 Scoping Plan Range
Sectors	1990	2019	
Agriculture	26	32	24
Residential and Commercial	44	44	38
Electric Power	108	59	30
High GWP	3	21	8
Industrial	98	88	83
Recycling and W	7	9	8
Transportation	152	166	103
Cap-and-Trade	n/a	n/a	-34
Natural and Wetlands	-7		
<b>Total</b>	<b>431</b>	<b>418</b>	<b>260</b>

Source: 2017 Climate Change Scoping Plan. Table 3.

[https://www.arb.ca.gov/cc/scopingplan/scoping\\_plan\\_2017.pdf](https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf)

Note: the Scoping Plan-reported emissions by sector reflect rounding.

**Applicable Emission Sectors**

Emission Sector	Applicable to Rancho Cordova?
Agriculture	No
Residential and Commercial	Yes
Electric Power	Yes
High GWP	No
Industrial	No
Recycling and W	Yes
Transportation	Yes
Cap and Trade	No

**GHG Reduction Targets**

Milestone Year	All Sectors		Selected Sectors	
	Statewide Existing and Target Emissions (MMTCO <sub>2e</sub> )	Target Percent Reduction from 2019	Statewide Existing and Target Emissions (MMTCO <sub>2e</sub> )	Target Percent Reduction from 2019
1990	431	NA		
2019	418	NA	278	
2020	431	-3%	311	-12%
2030	259	38%	179	36%

Notes: CARB statewide inventory current through 2019. 2040 target interpolated between 2030 target and 2045 goal under AB32, SB32, and EO B-55-18.

Source: CARB 2021. California GHG Emissions for 2000 to 2019 (2021 Edition). <https://www.arb.ca.gov/cc/inventor>.

Rancho Cordova Target Emissions and Target Percent Reduction from 2019 Emissions Levels		
	Target Emissions	Target Percent Reduction from 2019
2019	679,706	--
2030	438,283	36%



# Appendix E

---

Greenhouse Gas Reduction  
Strategies and Measures Worksheet



## Table of Contents

Summary Sheet

Summary of Getting To, From, and Around the City (On-road Transportation Sector) measures

Calculations sheets: Getting To, From, and Around the City (On-road Transportation Sector)

Summary of Using Energy in Homes and Businesses (Building Energy Sector) measures

Calculations sheets: Using Energy in Homes and Businesses (Building Energy Sector)

Summary of Using Equipment for Landscaping and Construction (Off-Road Vehicle and Equipment Sector) measures

Calculations sheets: Using Equipment for Landscaping and Construction (Off-Road Vehicle and Equipment Sector)

Summary of Using Water and Disposing of Waste at Homes and Businesses (Water and Solid Waste Sectors) measures

Calculations sheets: Using Water and Disposing of Waste at Homes and Businesses (Water and Solid Waste Sectors)

Summary of Planting and Managing Trees (Carbon Sequestration Sector) measures

Calculations sheets: Planting and Managing Trees (Carbon Sequestration Sector)

City of Rancho Cordova						
Communitywide Greenhouse Gas Emissions Reduction Measures Quantification Sheet						
Summary Sheet						
Strategy Code and Title	Measure Code	Measure Title	GHG Reduction Potential in 2030 (MTCO2e)	GHG Reduction Potential in 2045 (MTCO2e)	Percent of Total Reductions in 2030	Percent of Total Reductions in 2045
<b>Getting To, From, and Around the City (On-road Transportation Sector)</b>						
Strategy Transportation-1. Support development of walkable, interconnected neighborhoods, villages, and districts	Transportation-1.1	Enforce the City's <b>Transportation Impact Guidelines</b> , which require developers to include features in their projects that decrease the amount of driving alone and <b>encourage</b> people to make trips by <b>walking, biking, or using public transit</b>	6,669	17,134	8%	6%
	Transportation-1.2	Reduce or <b>eliminate</b> requirements to provide a <b>minimum number of off-street parking</b> spaces in new development projects	NA	NA	NA	NA
	Transportation-1.3	<b>Improve street connectivity</b> , for example by providing walkways at the ends of existing cul-de-sacs, or requiring walkable street systems in new developments	NA	NA	NA	NA
	Transportation-1.4	<b>Limit</b> the number of <b>drive-through</b> businesses	NA	NA	NA	NA
Strategy Transportation-2. Make walking and biking safe and attractive for people of all ages and abilities	Transportation-2.1	<b>Update Bike and Pedestrian Master Plans</b> to increase the number of low-stress bikeways and walkways that connect homes to destinations	11,536	12,755	14%	4%
	Transportation-2.2	Install <b>roundabouts</b> to control traffic at intersections, instead of stop signs or traffic signals	NA	NA	NA	NA
	Transportation-2.3	Provide temporary or permanent <b>car-free zones or "slow streets"</b> in specified areas, for example, individual blocks or residential streets	NA	NA	NA	NA
	Transportation-2.4	Install measures to reduce vehicle speeds and <b>calm traffic</b> on city streets	NA	NA	NA	NA
Strategy Transportation-3. Provide transit options that are accessible, reliable, and convenient	Transportation-3.1	<b>Increase the frequency</b> of SacRT bus, CordoVan service, and/or light rail service, or <b>extend service</b> to cover new areas or times of day	5,768	10,204	7%	3%
	Transportation-3.2	Implement <b>Transit-Supportive Roadway Treatments</b> (for example, transit signal priority, bus-only signal phases, queue jumps, curb extensions to speed passenger loading, and dedicated bus lanes)				
	Transportation-3.3	Provide <b>discounted or fare-free transit</b> service (could be universal or targeted to specific areas and/or populations, for example, youth under 18)				
	Transportation-3.4	Expand the Smart Ride area and <b>convert the shuttles to electric shuttles</b>				
Strategy Transportation-4. Reduce drive alone vehicle trips	Transportation-4.1	Implement a <b>Commuter Trip Reduction Program (CTR)</b> in which <b>companies</b> provide employees with services, infrastructure, and incentives for not driving alone to work and instead ridesharing, taking transit, biking, walking, or teleworking	3,845	6,803	5%	2%
	Transportation-4.2	Implement an <b>Electric Vehicle Carshare Program</b> in which vehicles are available for users <b>on-demand</b> for short-term rentals	NA	NA	NA	NA
	Transportation-4.3	Implement a <b>bikeshare/scooter share</b> program in which conventional or electric powered bikes or scooters are available to users on-demand for short-term rentals	NA	NA	NA	NA
	Transportation-4.4	Provide Community-Based Travel Planning (CBTP) to households in the city in which trained travel advisors visit households to provide them with customized <b>information, incentives</b> , and support to encourage use of transportation options other than driving alone	NA	NA	NA	NA
Strategy Transportation-5. Transition to electric and zero emission vehicles	Transportation-5.1	<b>Install EV chargers</b> in new residential, commercial, and industrial projects	26,997	171,334	34%	56%
	Transportation-5.2	Install <b>publicly accessible EV chargers</b> on existing private property				
	Transportation-5.3	Install <b>EV chargers on public property</b>				
	Transportation-5.4	<b>Electrify loading docks</b> and/or require idling-reduction systems				
	Transportation-5.5	<b>Limit new gasoline/diesel fueling stations</b>				
<b>Using Energy in Homes and Businesses (Building Energy Sector)</b>						
Strategy Energy-1a. Increase energy efficiency and electrification in existing residential buildings	Energy-1.1	Retrofit existing residential buildings to improve energy efficiency and reduce natural gas consumption for end uses like space and water heating, clothes drying, cooking	9,667	29,002	12%	9%
Strategy Energy-1b. Increase energy efficiency and electrification in existing nonresidential buildings	Energy-1.2	Retrofit existing nonresidential buildings to improve energy efficiency and reduce natural gas consumption for end uses like space and water heating, clothes drying, cooking.	2,077	9,969	3%	3%
Strategy Energy-2a. Increase energy efficiency and electrification in new residential buildings	Energy-2.1	Require new residential development to be all-electric, zero net energy (ZNE) buildings (where the amount of energy used in a year equals the amount of energy generated on the site)	1,411	5,097	2%	2%
Energy-2b. Increase energy efficiency and electrification in new nonresidential buildings	Energy-2.2	Require new nonresidential development to achieve energy efficiency above minimum State building code requirements (CAL Green Tier 2)	428	1,545	0%	1%
<b>Using Equipment for Landscaping and Construction (Off-Road Vehicle and Equipment Sector)</b>						
Strategy Offroad-1. Transition to electric and zero emissions technologies for landscaping equipment	Offroad-1.1	Replace existing gasoline and diesel-powered landscaping equipment with electric or zero emission alternatives	83	138	0%	0%
	Offroad-1.2	Convert new landscaping equipment to electric or zero-emission alternatives	46	123	0%	0%
Strategy Offroad-2. Transition to electric and zero emissions technologies for construction equipment	Offroad-2.1	Increase electrification and use of alternative fuels in construction projects	1,681	9,248	2%	3%
	Offroad-2.2	Reduce construction vehicle idling	NA	NA	NA	NA
<b>Using Water and Disposing of Waste at Homes and Businesses (Water and Solid Waste Sectors)</b>						
Strategy Water-1. Conserve water	Water-1.1	Reduce indoor water use in existing and new buildings	0	0	NA	NA
	Water-1.2	Reduce outdoor water use for landscaping and irrigation in existing and new developments	0	0	NA	NA
Strategy Solid Waste-1. Avoid disposal of organic waste in landfills	Solid Waste-1.1	Increase recovery of edible food waste	8,845	32,590	11%	11%
	Solid Waste-1.2	Eliminate disposal of organic waste in landfills (food waste, yard waste)				
<b>Planting and Managing Trees (Carbon Sequestration Sector)</b>						
Strategy Carbon Sequestration-1. Remove emissions from the atmosphere	Carbon Storage-1.1	Increase the number of trees in the city, through new plantings and management of existing trees	441	1,042	1%	0%
<b>Total Reductions from City Measures</b>			<b>79,628</b>	<b>307,625</b>		
Legislative-Adjusted BAU Forecast Emissions (without CAP measures)			515,352	529,788		
Target Percent Reduction below 2019 Levels			36%	81%		
Target Annual Emissions			438,283	129,252		
<b>Reductions Needed to Achieve Target</b>			<b>77,070</b>	<b>400,536</b>		
Legislative-Adjusted BAU Forecast Emissions with CAP Measures			435,724	222,163		
<b>Gap Needed to Achieve Target*</b>			<b>-2559</b>	<b>92,911</b>		
Percent of Target Achieved			103%	77%		

Notes: NA = not applicable (non-quantified measure; supportive of quantified measures).  
\* Negative numbers indicate target has been achieved with a surplus of emissions reductions; positive values indicate an emissions reduction gap still exists.



Strategy Code and Title	Measure Code	Measure Title	GHG Reduction Potential in 2030 (MTCO2e)	GHG Reduction Potential in 2045 (MTCO2e)	Percent of Total Reductions in 2030	Percent of Total Reductions in 2045	Quantification Approach
<b>Getting To, From, and Around the City (On-road Transportation Sector)</b>							
Strategy Transportation-1. Support development of walkable, interconnected neighborhoods, villages, and districts	Transportation-1.1	Enforce the City's <b>Transportation Impact Guidelines</b> , which require developers to include features in their projects that decrease the amount of driving alone and <b>encourage</b> people to make trips by <b>walking, biking, or using public transit</b>	6,669	17,134	8%	6%	Assumes a 10% reduction in new passenger VMT and 15% reduction in commercial VMT by 2030, and a 15% reduction in both passenger and commercial VMT by 2045. All reductions from new VMT that would be achieved from other measures are assumed to be captured under this measure. "New VMT" refers to forecasted VMT growth between 2019 and the target years.
	Transportation-1.2	Reduce or <b>eliminate</b> requirements to provide a <b>minimum number of off-street parking</b> spaces in new development projects	NA	NA	NA	NA	Non-quantified measure.
	Transportation-1.3	<b>Improve street connectivity</b> , for example by providing walkways at the ends of existing cul-de-sacs, or requiring walkable street systems in new developments	NA	NA	NA	NA	Non-quantified measure.
	Transportation-1.4	<b>Limit</b> the number of <b>drive-through</b> businesses	NA	NA	NA	NA	Non-quantified measure.
Strategy Transportation-2. Make walking and biking safe and attractive for people of all ages and abilities	Transportation-2.1	<b>Update Bike and Pedestrian Master Plans</b> to increase the number of low-stress bikeways and walkways that connect homes to destinations	11,536	12,755	14%	4%	Assumes a 6% reduction in existing (2019) passenger VMT by 2030 and 7.5% by 2045.
	Transportation-2.2	Install <b>roundabouts</b> to control traffic at intersections, instead of stop signs or traffic signals	NA	NA	NA	NA	Non-quantified measure.
	Transportation-2.3	Provide temporary or permanent <b>car-free zones</b> or " <b>slow streets</b> " in specified areas, for example, individual blocks or residential streets	NA	NA	NA	NA	Non-quantified measure.
	Transportation-2.4	Install measures to reduce vehicle speeds and <b>calm traffic</b> on city streets	NA	NA	NA	NA	Non-quantified measure.
Strategy Transportation-3. Provide transit options that are accessible, reliable, and convenient	Transportation-3.1	<b>Increase the frequency</b> of SacRT bus, CordoVan service, and/or light rail service, or <b>extend service</b> to cover new areas or times of day	5,768	10,204	7%	3%	Assumes a 3% reduction in existing (2019) passenger VMT by 2030 and 6% by 2045. Grouped all measures together based on CAPCOA transit-related measures (maximum transit-related emissions reductions from increased frequency, expanded coverage, reduced fare, rapid transit -- 15% reduction).
	Transportation-3.2	Implement <b>Transit-Supportive Roadway Treatments</b> (for example, transit signal priority, bus-only signal phases, queue jumps, curb extensions to speed passenger loading, and dedicated bus lanes)					
	Transportation-3.3	Provide <b>discounted or fare-free transit</b> service (could be universal or targeted to specific areas and/or populations, for example, youth under 18)					
	Transportation-3.4	Expand the SmaRT Ride area and convert the shuttles to electric shuttles					
Strategy Transportation-4. Reduce drive alone vehicle trips	Transportation-4.1	Implement a Commuter <b>Trip Reduction Program</b> (CTR) in which <b>companies</b> provide employees with services, infrastructure, and incentives for not driving alone to work and instead ridesharing, taking transit, biking, walking, or teleworking	3,845	6,803	5%	2%	Assumes a 2% reduction in existing (2019) passenger VMT by 2030 and 4% by 2045.
	Transportation-4.2	Implement an <b>Electric Vehicle Carshare Program</b> in which vehicles are available for users <b>on-demand</b> for short-term rentals	NA	NA	NA	NA	Reductions captured in EV measures (Transportation-5.1 - 5.3).
	Transportation-4.3	Implement a <b>bikeshare/scooter share</b> program in which conventional or electric powered bikes or scooters are available to users on-demand for short-term rentals	NA	NA	NA	NA	Non-quantified measure (negligible reductions).
	Transportation-4.4	Provide Community-Based Travel Planning (CBTP) to households in the city in which trained travel advisors visit households to provide them with customized <b>information, incentives</b> , and support to encourage use of transportation options other than driving alone	NA	NA	NA	NA	Reductions from this measure are reflected in Transportation-4.1
Strategy Transportation-5. Transition to electric and zero emission vehicles	Transportation-5.1	<b>Install EV chargers</b> in new residential, commercial, and industrial projects	26,997	171,334	34%	56%	Quantified using EMFAC projections and statewide EV targets under the 2020 Mobile Source Strategy and AB 2172.
	Transportation-5.2	Install <b>publicly accessible EV chargers</b> on existing private property					
	Transportation-5.3	Install <b>EV chargers on public property</b>					
	Transportation-5.4	<b>Electrify loading docks</b> and/or require idling-reduction systems	NA	NA	NA	NA	Non-quantified measure.
	Transportation-5.5	<b>Limit new gasoline/diesel fueling stations</b>	NA	NA	NA	NA	Non-quantified measure.

**Transportation-1.1****Enforce the City's Transportation Impact Guidelines, which require developers to include features in their projects that decrease the amount of driving alone and encourage people to make trips by walking, biking, or using public transit****2019****2030****2045****10% reduction in new project-generated VMT from implementation of the City's VMT****Thresholds of Significance for Development Projects**

Annual passenger vehicle miles traveled (VMT)	705,862,131	822,688,562	1,004,017,191
New passenger VMT		116,826,431	298,155,061
Percent VMT reduction from SB 743		10%	15%
Reduced passenger VMT from SB 743		11,682,643	44,723,259
Passenger vehicle emissions factor (MTCO <sub>2e</sub> /mile)		0.000272	0.000241
<b>GHG reductions from new passenger vehicles (MTCO<sub>2e</sub>)</b>		<b>3,182</b>	<b>10,775</b>
Annual commercial vehicle miles traveled (VMT)	213,356,667	248,669,088	303,478,188
New commercial VMT		35,312,421	90,121,520
Percent VMT reduction from SB 743		15%	15%
Reduced commercial VMT from SB 743		5,296,863	13,518,228
Commercial vehicle emissions factor (MTCO <sub>2e</sub> /mile)		0.000658	0.000470
<b>GHG reductions from new commercial vehicles (MTCO<sub>2e</sub>)</b>		<b>3,487</b>	<b>6,359</b>
<b>GHG Reductions from Transportation-1.1 (MTCO<sub>2e</sub>)</b>		<b>6,669</b>	<b>17,134</b>

**Sources:**

City of Rancho Cordova Transportation Impact Guidelines

**Transportation-2.1**

<b>Update Bike and Pedestrian Master Plans to increase the number of low-stress bikeways and walkways that connect homes to destinations</b>	<b>2019</b>	<b>2030</b>	<b>2045</b>
<b>Increased active transportation</b>			
Annual existing passenger vehicle miles traveled (VMT)	705,862,131	705,862,131	705,862,131
Percent reduction in existing citywide passenger VMT from comprehensive active transportation improvements [1]		6.0%	7.5%
Passenger VMT reduction		42,351,728	52,939,660
Passenger vehicle emissions factor (MTCO <sub>2e</sub> /mile)		0.000272	0.000241
<b>GHG reductions from existing passenger vehicles (MTCO<sub>2e</sub>)</b>		<b>11,536</b>	<b>12,755</b>

**Sources:**

[1] CAPCOA. 2021. GHG Handbook. Available:

[https://www.airquality.org/ClimateChange/Documents/Final%20Handbook\\_AB434.pdf](https://www.airquality.org/ClimateChange/Documents/Final%20Handbook_AB434.pdf).

T-18 Pedestrian Network Improvement, T-19 Bike Facility/Boulevard, and T-20 Expand Bikeway Network (maximum neighborhood design-related emissions reduction = 7.5% reduction)

**Bicycle Master Plan (2016)**

Develop continuous, convenient, and family friendly bikeway network.

Ensure new development extends the bike network to all neighborhoods and attractors.

Ensure adequate support facilities throughout Rancho Cordova's bicycle network.

Increase awareness of bicyclist safety and responsibility through education and enforcement of bicyclists and drivers.

Eliminate all traffic fatalities and reduce the number of bicycle related injuries by 50 percent by 2027.

Pursue innovative funding sources and partnership opportunities to enhance bicycle facilities, and provide education and encouragement opportunities.

Increase the percentage of all trips made by bicyclists from 1.1 percent to 2.2 percent in Rancho Cordova by 2021.

Establish Rancho Cordova as a destination for recreational bicycling through creation of a signature trail network and encouragement of bicycling and bicycling events.

**Table 4-1: Proposed Bikeway Network Mileage by Class**

<b>Path Type</b>	<b>Existing</b>	<b>Proposed</b>	<b>Total</b>
Class I Paths	13.9	77	90.9
Class II Bike Lanes	14.7	12.5	27.2
Class III Bike Routes	2.4	3.2	5.6
Class III Bike Boulevards	0	14.5	14.5
Class IV Protected Bikeways	0	3.6	3.6
<b>Total</b>	<b>31</b>	<b>110.8</b>	<b>141.8</b>

<https://www.cityofranchocordova.org/home/showpublisheddocument/11416/635996042085130000>

Transportation-3.1, Transportation-3.2, Transportation-3.3, Transportation-3.4

Increase the frequency of SacRT bus, CordoVan service, and/or light rail service, or extend service to cover new areas or times of day. Implement Transit-Supportive Roadway Treatments (e.g., transit signal priority, bus-only signal phases, queue jumps, curb extensions to speed passenger loading, and dedicated bus lane). Provide discounted or fare-free bus service (could be citywide or targeted to specific areas and/or populations, e.g., youth under 18). Expand the SmaRT Ride area and convert the shuttles to electric shuttles

	2019	2030	2045
<b>Comprehensive transit system improvements</b>			
Annual existing passenger vehicle miles traveled (VMT)	705,862,131	705,862,131	705,862,131
Percent reduction in existing citywide passenger VMT from comprehensive transit improvements [1] [2] [3]		3.0%	6.0%
Passenger VMT reduction		21,175,864	42,351,728
Passenger vehicle emissions factor (MTCO <sub>2e</sub> /mile)		0.000272	0.000241
<b>GHG reductions from existing passenger vehicles (MTCO<sub>2e</sub>)</b>		5,768	10,204

**Sources:**

[1] Mozingo. 2021. *Zero-Carbon Buildings in California: A Feasibility Study*. The Center for Resource Efficient Communities and the Center for the Built Environment, UC Berkeley. (5.8% to 14.8% reduction)

[2] CAPCOA. 2021. *GHG Handbook*. Available: [https://www.airquality.org/ClimateChange/Documents/Final%20Handbook\\_AB434.pdf](https://www.airquality.org/ClimateChange/Documents/Final%20Handbook_AB434.pdf). T-25 Extend Coverage/Hours, T-26 Increase Frequency, T-27 Roadway Treatments, T-28 Rapid Transit, and T-29: Reduce Transit Fares (maximum transit-related emissions reduction = 15% reduction)

[3] Handy, S. et al. (2013). *Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document*. California Air Resources Board. Retrieved from: <https://arb.ca.gov/cc/sb375/policies/policies.htm>. (0.5% to 10.5% reduction)



**Transportation-4.1**

<b>Implement a Commuter Trip Reduction Program (CTR) in which companies provide employees with services, infrastructure, and incentives for not driving alone to work and instead ridesharing, taking transit, biking, walking, or teleworking</b>	<b>2019</b>	<b>2030</b>	<b>2045</b>
<b>Passenger VMT reductions from CTR Program</b>			
Annual existing passenger vehicle miles traveled (VMT)	705,862,131	705,862,131	705,862,131
Percent reduction in existing citywide passenger VMT from CTR Program (voluntary and mandatory programs estimated 4% and 26%) [1]		2.0%	4.0%
Passenger VMT reduction		14,117,243	28,234,485
Passenger vehicle emissions factor (MTCO <sub>2e</sub> /mile)		0.000272	0.000241
<b>GHG reductions from existing passenger vehicles (MTCO<sub>2e</sub>)</b>		<b>3,845</b>	<b>6,803</b>

**Sources:**

[1] CAPCOA. 2021. GHG Handbook. Available: [https://www.airquality.org/ClimateChange/Documents/Final%20Handbook\\_AB434.pdf](https://www.airquality.org/ClimateChange/Documents/Final%20Handbook_AB434.pdf).

TR-5 Implement Voluntary CTR Program and TR-6 Implement Mandatory CTR Program. (Note: Scale of Application for these measure is Project/Site, with a reduction of 4-26%. Maximum reduction for Plan/Community is 2.3%.)

Transportation-5.1, Transportation-5.2, Transportation-5.3			
Install EV chargers in new residential, commercial, and industrial projects; Install publicly accessible EV chargers on existing private property; Install EV chargers on public property	2019	2030	2045
<b>Statewide Light-Duty EV Forecasts and Targets</b>			
Statewide Light Duty Population [1]	26,905,738	27,823,204	30,102,489
Statewide Light Duty EV population [1]	301,382	1,413,449	2,333,152
Statewide Light Duty EV Population Target under EO N-79-20 (5 million baseline scenario, 8 million high scenario) [2]		5,000,000	25,587,116
<b>Target Percent EVs in Passenger Vehicles Statewide</b>		<b>18%</b>	<b>85%</b>
<b>Target Percent EVs in Passenger Vehicles for Rancho Cordova</b>		<b>18%</b>	<b>85%</b>
<b>EMFAC2021 Forecasts</b>			
Light Duty eVMT in Sacramento County [1]		757,645,077	1,174,264,221
Light Duty VMT in Sacramento County [1]		13,097,501,302	14,315,240,607
Percent eVMT in Sacramento County		<b>5.8%</b>	<b>8.2%</b>
<b>Forecasted eVMT in Rancho Cordova</b>			
Rancho Cordova Passenger VMT after reduction from other measures		733,361,084	835,768,059
Forecasted eVMT in Rancho Cordova		42,422,398	68,557,180
Target eVMT in Rancho Cordova		131,789,474	710,402,850
<b>Additional eVMT needed to meet State Targets</b>		<b>89,367,076</b>	<b>641,845,670</b>
<b>Additional GHG emissions from EV charger use</b>			
Additional eVMT needed to meet State Targets		89,367,076	641,845,670
Average Efficiency of EV LDV (kWh/100-mi) [3]		34	34
Charged amount (kWh)		3,005,236,404	21,583,988,989
Electricity emissions factor (MTCO <sub>2e</sub> /MWh)		0	0
Additional GHG emissions from EVs (MTCO <sub>2e</sub> )		-	-
<b>Emissions from Equivalent Gasoline/Diesel Vehicles</b>			
Additional eVMT needed to meet State Targets		89,367,076	641,845,670
Avg emissions factor for non-electric light-duty vehicles (MTCO <sub>2e</sub> /mi)		0.000302089	0.000266939
Equivalent GHG emissions avoided from increased EV chargers (MTCO <sub>2e</sub> )		26,997	171,334
<b>Sources:</b>			
[1] EMFAC 2021. (Note: EMFAC 2021 does not account for statewide EV targets under EO N-79-20.)			
[2] Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment (Staff Report). January 2021.			
[3] <a href="https://www.driveclean.ca.gov/pev/Charging.php">https://www.driveclean.ca.gov/pev/Charging.php</a>			
<b>Notes</b>			
16 public charging stations ( <a href="https://chargehub.com/en/countries/united-states/california/rancho-cordova.html">https://chargehub.com/en/countries/united-states/california/rancho-cordova.html</a> )			
70 total stations ( <a href="https://www.plugshare.com/directory/us/california/rancho-cordova">https://www.plugshare.com/directory/us/california/rancho-cordova</a> )			
	<b>2019</b>	<b>2030</b>	<b>2045</b>
Rancho Cordova Passenger VMT	705,862,131	822,688,562	1,004,017,191
Sac County Passenger VMT (EMFAC)	11,549,499,458	13,097,501,302	14,315,240,607
Percent Rancho Cordova	6.11%	6.28%	7.01%
Sac County Increase in EV Population Needed		202,817	1,073,091
Rancho Cordova EV Population Needed		12,739	75,263
Rancho Cordova Existing EVs		500	500
Statewide Chargers Needed to Support 5mil ZEV by 2030		755,157	
Statewide Chargers Needed to Support 8mil ZEV by 2030		1,228,880	
Percent Difference		163%	
Sacramento County Chargers Needed to Support 8mil ZEV by 2030		39,633	
Sacramento County Chargers Needed to Support 5mil ZEV by 2030		24,355	
Rancho Cordova Chargers Needed to Support 5mil ZEV by 2030		1,530	

Strategy Code and Title	Measure Code	Measure Title	GHG Reduction Potential in 2030 (MTCO2e)	GHG Reduction Potential in 2045 (MTCO2e)	Percent of Total Reductions in 2030	Percent of Total Reductions in 2045	Quantification Approach
<b>Using Energy in Homes and Businesses (Building Energy Sector)</b>							
Strategy Energy-1a. Increase energy efficiency and electrification in existing residential buildings	Energy-1.1	Retrofit existing residential buildings to improve energy efficiency and reduce natural gas consumption for end uses like space and water heating, clothes drying, cooking	9,667	29,002	12%	9%	Assumes a 20% reduction in existing residential natural gas by 2030 and 60% reduction by 2045.
Strategy Energy-1b. Increase energy efficiency and electrification in existing nonresidential buildings	Energy-1.2	Retrofit existing nonresidential buildings to improve energy efficiency and reduce natural gas consumption for end uses like space and water heating, clothes drying, cooking.	2,077	9,969	3%	3%	Assumes a 13% reduction in existing nonresidential natural gas by 2030 and 48% reduction by 2045.
Strategy Energy-2a. Increase energy efficiency and electrification in new residential buildings	Energy-2.1	Require new residential development to be all-electric, zero net energy (ZNE) buildings (where the amount of energy used in a year equals the amount of energy generated on the site)	1,411	5,097	2%	2%	Assumes a 100% reduction in new residential natural gas starting in 2026.
Energy-2b Increase energy efficiency and electrification in new nonresidential buildings	Energy-2.2	Require new nonresidential development to achieve energy efficiency above minimum State building code requirements (CAL Green Tier 2)	428	1,545	0%	1%	CAL Green Tier 2: 30% reduction in new nonresidential energy use starting in 2026.

<b>Energy-1.1</b>			
<b>Retrofit existing residential buildings to improve energy efficiency and reduce natural gas consumption for end uses like space and water heating, clothes drying, cooking</b>	<b>2019</b>	<b>2030</b>	<b>2045</b>
<b>Electrification in existing residential buildings</b>			
Existing residential buildings natural gas usage (therms)	9,082,624	9,082,624	9,082,624
Target electrification rate for existing residential buildings (natural gas) [1]		20%	60%
Reduced natural gas usage (therms)		1,816,525	5,449,574
Natural gas emissions factor (MTCO <sub>2e</sub> /therm)		0.005322	0.005322
<b>GHG reductions from existing residential buildings natural gas savings (MTCO<sub>2e</sub>)</b>		<b>9,667</b>	<b>29,002</b>
<b>Additional electricity use and emissions</b>			
Assumed average efficiency of natural gas heating [2] [3]		78%	78%
Assumed average efficiency of electric heating [4]		100%	100%
kWh per therm conversion		29.3	29.3
Total therms offset from natural gas heating use (therms)		1,816,525	9,082,624
Total electricity needed to offset natural gas heating (MWh)		41,515	207,574
Electricity emissions factor (MTCO <sub>2e</sub> /MWh)		0	0
Additional GHG emissions from electricity use (MTCO <sub>2e</sub> )		0	0
<b>GHG Reductions from Energy-1.1 (MTCO<sub>2e</sub>)</b>		<b>9,667</b>	<b>29,002</b>
<b>Sources:</b>			
[1] Mazingo. 2021. <i>Zero-Carbon Buildings in California: A Feasibility Study</i> . Available: <a href="https://crec.berkeley.edu/uploads/16RD004_CREZCB_Final_Report_w_Appendices_(1).pdf">https://crec.berkeley.edu/uploads/16RD004_CREZCB_Final_Report_w_Appendices_(1).pdf</a>			
[2] <a href="https://www.energy.gov/sites/prod/files/2014/05/f15/fupwg_may2014_new_gas_technologies.pdf">https://www.energy.gov/sites/prod/files/2014/05/f15/fupwg_may2014_new_gas_technologies.pdf</a>			
[3] <a href="https://www.aceee.org/sites/default/files/publications/researchreports/a1602.pdf">https://www.aceee.org/sites/default/files/publications/researchreports/a1602.pdf</a>			
[4] U.S. DOE. 2021. <i>Electric Resistance Heating</i> . Available: <a href="https://www.energy.gov/energysaver/home-heating-systems/electric-resistance-heating#:~:text=Electric%20resistance%20heating%20is%20100,the%20fuel's%20energy%20into%20electricity.">https://www.energy.gov/energysaver/home-heating-systems/electric-resistance-heating#:~:text=Electric%20resistance%20heating%20is%20100,the%20fuel's%20energy%20into%20electricity.</a>			
	Total Housing Units	20,000	
	Percent retrofitted by 2030	4000	
	Percent retrofitted by 2045	12000	



<b>Energy-1.2</b>			
<b>Retrofit existing nonresidential buildings to improve energy efficiency and reduce natural gas consumption for end uses like space and water heating, clothes drying, cooking.</b>	<b>2019</b>	<b>2030</b>	<b>2045</b>
<b>Electrification in existing nonresidential buildings</b>			
Existing nonresidential buildings natural gas usage (therms)	3,902,601	3,902,601	3,902,601
Target electrification rate for existing nonresidential buildings (natural gas) [1]		10%	48%
Reduced natural gas usage (therms)		390,260	1,873,248
Natural gas emissions factor (MTCO <sub>2e</sub> /therm)		0.005322	0.005322
<b>GHG reductions from existing nonresidential buildings natural gas savings (MTCO<sub>2e</sub>)</b>		<b>2,077</b>	<b>9,969</b>
<b>Additional electricity use and emissions</b>			
Assumed average efficiency of natural gas heating [2] [3]		78%	78%
Assumed average efficiency of electric heating [4]		100%	100%
kWh per therm conversion		29.3	29.3
Total therms offset from natural gas heating use (therms)		390,260	3,902,601
Total electricity needed to offset natural gas heating (MWh)		8,919	89,190
Electricity emissions factor (MTCO <sub>2e</sub> /MWh)		0	0
<b>Additional GHG emissions from electricity use (MTCO<sub>2e</sub>)</b>		<b>0</b>	<b>0</b>
<b>GHG Reductions from Energy-1.2 (MTCO<sub>2e</sub>)</b>		<b>2,077</b>	<b>9,969</b>
<b>Sources:</b>			
[1] Mazingo. 2021. <i>Zero-Carbon Buildings in California: A Feasibility Study</i> . Available: <a href="https://crec.berkeley.edu/uploads/16RD004_CREC_ZCB_Final_Report_w_Appendices_(1).pdf">https://crec.berkeley.edu/uploads/16RD004_CREC_ZCB_Final_Report_w_Appendices_(1).pdf</a>			
[2] <a href="https://www.energy.gov/sites/prod/files/2014/05/f15/fupwg_may2014_new_gas_technologies.pdf">https://www.energy.gov/sites/prod/files/2014/05/f15/fupwg_may2014_new_gas_technologies.pdf</a>			
[3] <a href="https://www.aceee.org/sites/default/files/publications/researchreports/a1602.pdf">https://www.aceee.org/sites/default/files/publications/researchreports/a1602.pdf</a>			
[4] U.S. DOE. 2021. <i>Electric Resistance Heating</i> . Available: <a href="https://www.energy.gov/energysaver/home-heating-systems/electric-resistance-heating#:~:text=Electric%20resistance%20heating%20is%20100,the%20fuel's%20energy%20into%20electricity.">https://www.energy.gov/energysaver/home-heating-systems/electric-resistance-heating#:~:text=Electric%20resistance%20heating%20is%20100,the%20fuel's%20energy%20into%20electricity.</a>			

<b>Energy-2.1</b>				
<b>Require new residential development to be all-electric, zero net energy (ZNE) buildings (where the amount of energy used in a year equals the amount of energy generated on the site)</b>	<b>2019</b>	<b>2026</b>	<b>2030</b>	<b>2045</b>
<b>All-electric new residential development</b>				
Annual residential natural gas usage with legislative reductions (therms)	9,082,624	9,546,705	9,811,893	10,504,366
New natural gas usage (therms)		464,081	729,269	1,421,742
Reduced residential natural gas usage from all-electric new residential development starting in <u>2026</u> (therms)			265,189	957,662
Natural gas emissions factor (MTCO <sub>2</sub> e/therm)			0.005322	0.005322
<b>GHG reductions from new residential buildings natural gas savings (MTCO<sub>2</sub>e)</b>			<b>1,411</b>	<b>5,097</b>
<b>Additional electricity use and emissions</b>				
Assumed average efficiency of natural gas heating [1] [2]			78%	78%
Assumed average efficiency of electric heating [3]			100%	100%
kWh per therm conversion			29.3	29.3
Total therms offset from natural gas heating use (therms)			265,189	10,504,366
Total electricity needed to offset natural gas heating (MWh)			6,061	240,067
Electricity emissions factor (MTCO <sub>2</sub> e/MWh)			0	0
Additional GHG emissions from electricity use (MTCO <sub>2</sub> e)			0	0
<b>GHG Reductions from Energy-2.1 (MTCO<sub>2</sub>e)</b>			<b>1,411</b>	<b>5,097</b>
<b>Sources:</b>				
[1] <a href="https://www.energy.gov/sites/prod/files/2014/05/f15/fupwg_may2014_new_gas_technologies.pdf">https://www.energy.gov/sites/prod/files/2014/05/f15/fupwg_may2014_new_gas_technologies.pdf</a>				
[2] <a href="https://www.aceee.org/sites/default/files/publications/researchreports/a1602.pdf">https://www.aceee.org/sites/default/files/publications/researchreports/a1602.pdf</a>				
[3] U.S. DOE. 2021. Electric Resistance Heating. Available: <a href="https://www.energy.gov/energysaver/home-heating-systems/electric-resistance-heating#:~:text=Electric%20resistance%20heating%20is%20100,the%20fuel's%20energy%20into%20electricity.">https://www.energy.gov/energysaver/home-heating-systems/electric-resistance-heating#:~:text=Electric%20resistance%20heating%20is%20100,the%20fuel's%20energy%20into%20electricity.</a>				

<b>Energy-2.2</b>				
<b>Require new nonresidential development to achieve energy efficiency above minimum State building code requirements (CAL Green Tier 2)</b>	<b>2019</b>	<b>2026</b>	<b>2030</b>	<b>2045</b>
<b>Efficient new nonresidential development - CAL Green Tier 2</b>				
Annual nonresidential natural gas usage with legislative reductions (therms)	9,082,624	9,546,705	9,811,893	10,504,366
New natural gas usage (therms)		464,081	729,269	1,421,742
Annual nonresidential electricity usage with legislative reductions (kWh)	416,664,459	439,785,444	452,997,435	486,192,548
New electricity usage (kWh)		23,120,985	36,332,976	69,528,089
Annual nonresidential diesel usage with legislative reductions (gal)	92,209	97,326	100,250	107,596
New diesel usage (gal)		5,117	8,041	15,387
Reduction in new energy use from CAL Green Tier 2 compared to Title 24			30%	30%
Reduced natural gas usage from new nonresidential development starting in <u>2026</u> (therms)			79,557	287,299
Reduced electricity usage from new nonresidential development starting in <u>2026</u> (therms)			1,981,799	6,961,066
Reduced diesel usage from new nonresidential development starting in <u>2026</u> (therms)			439	1,541
Natural gas emissions factor (MTCO <sub>2</sub> e/therm)			0.005322	0.005322
Electricity emissions factor (MTCO <sub>2</sub> e/MWh)			0	0
Diesel emissions factor (MTCO <sub>2</sub> e/gal)			0.010229	0.010229
<b>GHG reductions from new nonresidential buildings energy savings (MTCO<sub>2</sub>e)</b>			<b>428</b>	<b>1,545</b>
<b>Additional electricity use and emissions</b>				
Assumed average efficiency of natural gas heating [1] [2]			78%	78%
Assumed average efficiency of electric heating [3]			100%	100%
kWh per therm conversion			29.3	29.3
Total therms offset from natural gas heating use (therms)			79,557	10,504,366
Total electricity needed to offset natural gas heating (MWh)			1,818	240,067
Electricity emissions factor (MTCO <sub>2</sub> e/MWh)			0	0
Additional GHG emissions from electricity use (MTCO <sub>2</sub> e)			0	0
<b>GHG Reductions from Additional GHG emissions from electricity use (MTCO<sub>2</sub>e) (MTCO<sub>2</sub>e)</b>			<b>428</b>	<b>1,545</b>
<b>Sources:</b>				
[1] <a href="https://www.energy.gov/sites/prod/files/2014/05/f15/fupwg_may2014_new_gas_technologies.pdf">https://www.energy.gov/sites/prod/files/2014/05/f15/fupwg_may2014_new_gas_technologies.pdf</a>				
[2] <a href="https://www.aceee.org/sites/default/files/publications/researchreports/a1602.pdf">https://www.aceee.org/sites/default/files/publications/researchreports/a1602.pdf</a>				
[3] U.S. DOE. 2021. <i>Electric Resistance Heating</i> . Available: <a href="https://www.energy.gov/energysaver/home-heating-systems/electric-resistance-">https://www.energy.gov/energysaver/home-heating-systems/electric-resistance-</a>				

Strategy Code and Title	Measure Code	Measure Title	GHG Reduction Potential in 2030 (MTCO2e)	GHG Reduction Potential in 2045 (MTCO2e)	Percent of Total Reductions in 2030	Percent of Total Reductions in 2045	Quantification Approach
<b>Using Equipment for Landscaping and Construction (Off-Road Vehicle and Equipment Sector)</b>							
Strategy Offroad-1. Transition to electric and zero emissions technologies for landscaping equipment	Offroad-1.1	Replace existing gasoline and diesel-powered landscaping equipment with electric or zero emission alternatives	83	138	0%	0%	Assumes a 30% electrification rate of existing fossil fuel landscaping equipment by 2030, and 100% by 2045. Assumes a 30% renewable diesel/alternative fuels conversion rate by 2030.
	Offroad-1.2	Convert new landscaping equipment to electric or zero-emission alternatives	46	123	0%	0%	Assumes 100% of new landscaping equipment are zero-emission by 2024. Consistent with CARB's SORE regulations.
Strategy Offroad-2. Transition to electric and zero emissions technologies for construction equipment	Offroad-2.1	Increase electrification and use of alternative fuels in construction projects	1,681	9,248	2%	3%	Assumes a 10% electrification rate of existing fossil fuel construction equipment by 2030, and 50% by 2045. Assumes a 10% renewable diesel/alternative fuels conversion rate by 2030, and 40% by 2045. Assumes a 10% reduction in diesel generator use by 2030 and a 60% reduction by 2045.
	Offroad-2.2	Reduce construction vehicle idling	NA	NA	NA	NA	Non-quantified measure.



<b>Offroad-1.1</b>			
<b>Replace existing gasoline and diesel-powered landscaping equipment with electric or zero emission alternatives</b>	<b>2019</b>	<b>2030</b>	<b>2045</b>
<b>Electric landscaping equipment</b>			
Existing landscaping equipment emissions (MTCO <sub>2</sub> e)	138	138	138
Target electrification rate for existing landscaping equipment [1]		30%	100%
Reduced landscaping emissions (MTCO <sub>2</sub> e)		41	138
<b>GHG reductions from electric landscaping equipment (MTCO<sub>2</sub>e)</b>		<b>41</b>	<b>138</b>
<b>Renewable diesel or other alternative fuels landscaping equipment</b>			
Existing landscaping equipment emissions (MTCO <sub>2</sub> e)	138	138	138
Target renewable diesel/alternative fuels rate for existing landscaping equipment [1]		30%	0%
Reduced landscaping emissions (MTCO <sub>2</sub> e)		41	0
<b>GHG reductions from renewable diesel landscaping equipment (MTCO<sub>2</sub>e)</b>		<b>41</b>	<b>-</b>
<b>GHG Reductions from Offroad-1.1 (MTCO<sub>2</sub>e)</b>		<b>83</b>	<b>138</b>
<b>Sources:</b>			
[1] California Air Resources Board. 2021. 2021 SORE Rulemaking Staff Report. Available: <a href="https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2021/sore21/isor.pdf">https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2021/sore21/isor.pdf</a>			

<b>Offroad-1.2</b>				
<b>Convert new landscaping equipment to electric or zero-emission alternatives</b>	<b>2019</b>	<b>2023</b>	<b>2030</b>	<b>2045</b>
<b>Zero-emission new landscaping equipment starting in 2024</b>				
Landscaping equipment emissions (MTCO2e)	138	164	211	287
New landscaping equipment emissions (MTCO2e)		26	73	150
New landscaping equipment emissions starting in 2024 (MTCO2e)			46	123
Percent of new landscaping equipment that is zero-emission [1]			100%	100%
Reduced landscaping emissions (MTCO2e)			46	123
<b>GHG Reductions from Offroad-1.2 (MTCO2e)</b>			<b>46</b>	<b>123</b>
<b>Sources:</b>				
[1] California Air Resources Board. 2021. CARB approves updated regulations requiring most new small off-road engines be zero emission by 2024. Available: <a href="https://ww2.arb.ca.gov/news/carb-approves-updated-regulations-requiring-most-new-small-road-engines-be-zero-emission-2024">https://ww2.arb.ca.gov/news/carb-approves-updated-regulations-requiring-most-new-small-road-engines-be-zero-emission-2024</a>				

<b>Offroad-2.1</b>			
	<b>2019</b>	<b>2030</b>	<b>2045</b>
<b>Increase electrification and use of alternative fuels in construction projects</b>			
<b>Electric construction equipment</b>			
Construction emissions (MTCO2e)	5,350	7,500	9,675
Target electrification rate for construction equipment		10%	50%
Reduced construction equipment emissions (MTCO2e)		750	4,837
<b>GHG reductions from electric construction equipment (MTCO2e)</b>		<b>750</b>	<b>4,837</b>
<b>Alternatively fueled construction equipment</b>			
Construction emissions (MTCO2e)	5,350	7,500	9,675
Target renewable diesel or other alternative fuels rate for construction equipment		10%	40%
Reduced construction equipment emissions (MTCO2e)		750	3,870
<b>GHG reductions from alternatively fueled construction equipment (MTCO2e)</b>		<b>750</b>	<b>3,870</b>
<b>Renewable diesel and other clean generator alternatives</b>			
Dwelling Units	28,926	38,574	47,780
Employees	61,991	73,604	84,213
SQFT per employee (for average office space)	200	200	200
Total Commercial Office SQFT	12,398,275	14,720,777	16,842,698
<b>CalEEMod Results for Construction-related generators used to construct new single family homes and commercial office space</b>			
<u>CalEEMod Inputs</u>		<b>2019-2030</b>	<b>2030-2045</b>
Single Family Homes (Dwelling Unit)		9,648	9,206
Office Park (sqft)		2,322,502	2,121,921
<u>Adjusted down to account for 33 acre limitation in CalEEMod 2020.4.0</u>			
Single Family Homes (Dwelling Unit)		102	97
Office Park (sqft)		24,447	22,336
Adjustment Factor		95	95
Total Reported Construction Generator Emissions (MTCO2e)		209	142
Annual Reported Construction Generators Emissions (MTCO2e)		19	9
Readjusted Annual Construction Generator Emissions (MTCO2e)		1,808	901
Target reduction in diesel generator use from renewable diesel or other clean alternatives		10%	60%
<b>GHG reductions from renewable diesel or other clean generators (MTCO2e)</b>		<b>181</b>	<b>541</b>
<b>GHG Reductions from Offroad-2.1 (MTCO2e)</b>		<b>1,681</b>	<b>9,248</b>
<b>Sources:</b>			
[1] CAPCOA. 2021. GHG Handbook. Available: <a href="https://www.airquality.org/ClimateChange/Documents/Final%20Handbook_AB434.pdf">https://www.airquality.org/ClimateChange/Documents/Final%20Handbook_AB434.pdf</a> . C-1-A Use Electric or Hybrid Powered Equipment and C-1-B Use Cleaner-Fuel Equipment			
[2] CARB OFFROAD 2021 (Sacramento County 2019)			

Strategy Code and Title	Measure Code	Measure Title	GHG Reduction Potential in 2030 (MTCO2e)	GHG Reduction Potential in 2045 (MTCO2e)	Percent of Total Reductions in 2030	Percent of Total Reductions in 2045	Quantification Approach
<b>Using Water and Disposing of Waste at Homes and Businesses (Water and Solid Waste Sectors)</b>							
Strategy Solid Waste-1. Avoid disposal of organic waste in landfills	Solid Waste-1.1	Increase recovery of edible food waste	8,845	32,590	11%	11%	Assumes a 30% reduction in landfill disposed waste compared to 2019 by 2030, and a 90% reduction by 2045.
	Solid Waste-1.2	Eliminate disposal of organic waste in landfills (food waste, yard waste)					



<b>Solid Waste-1.1, Solid Waste-1.2</b>			
<b>Increase recovery of edible food waste; Elimite disposal of organic waste in landfills (food waste, yard waste)</b>	<b>2019</b>	<b>2030</b>	<b>2045</b>
<b>Achieve Zero Waste (i.e., 90% reduction below 2019 levels) by 2045</b>			
Solid waste emissions (MTCO <sub>2e</sub> )	22,397	29,483	36,211
Percent reduction in landfill disposed waste compared to 2019		30%	90%
Reduced solid waste emissions (MTCO <sub>2e</sub> )		8,845	32,590
<b>GHG Reductions from Solid Waste-1.1, Solid Waste-1.2 (MTCO<sub>2e</sub>)</b>		<b>8,845</b>	<b>32,590</b>
<b>Sources:</b>			
<i>Senate Bill 1383</i>			
	2030	2045	
Tons of waste	78,276	96,139	
Reduced tons of waste	23,483	86,525	

Strategy Code and Title	Measure Code	Measure Title	GHG Reduction Potential in 2030 (MTCO2e)	GHG Reduction Potential in 2045 (MTCO2e)	Percent of Total Reductions in 2030	Percent of Total Reductions in 2045	Quantification Approach
<b>Using Water and Disposing of Waste at Homes and Businesses (Water and Solid Waste Sectors)</b>							
Strategy Water-1. Conserve water	Water-1.1	Reduce indoor water use in existing and new buildings	0	0	NA	NA	Annual reduction of 15,000 acre-feet (AF) of indoor water usage by 2030 and 28,000 AF by 2045.
	Water-1.2	Reduce outdoor water use for landscaping and irrigation in existing and new developments	0	0	NA	NA	Annual reduction of 15,000 AF of outdoor water usage by 2030 and 29,000 AF by 2045.

<b>Water-1.1</b>			
<b>Reduce indoor water use in existing and new buildings</b>	<b>2019</b>	<b>2030</b>	<b>2045</b>
<b>Water use reduction in existing buildings</b>			
Total existing water use (AF)	65,645	65,645	65,645
Total existing water-related electricity use (MWh)	38,926	38,926	38,926
Assumed percentage of indoor water use [1] [2]	60%	60%	60%
Indoor water use in existing buildings (AF)	39,387	39,387	39,387
Indoor water-related electricity use in existing buildings (MWh)	23,355	23,355	23,355
Percent reduction in indoor water use in existing buildings [1] [2] [3]		25%	40%
Reduction in indoor water use in existing buildings (AF)		9,847	15,755
Reduction in indoor water-related electricity use in existing buildings (MWh)		5,839	9,342
Electricity emissions factor (MTCO <sub>2e</sub> /MWh)		0	0
Reduced indoor water emissions from existing buildings (MTCO <sub>2e</sub> )		0	0
<b>Water use reduction in new buildings</b>			
Total water use (AF)	65,645	86,412	106,132
Total water-related electricity use (MWh)	38,926	51,240	62,934
Total water use in new buildings (AF)		20,767	40,487
Total water-related electricity use in new buildings (MWh)		12,315	24,008
Assumed percentage of indoor water use [1] [2]	60%	60%	60%
Indoor water use in new buildings (AF)		12,460	24,292
Indoor water-related electricity use in new buildings (MWh)		7,389	14,405
Percent reduction in indoor water use in new buildings [1] [2] [3] [4]		40%	50%
Reduction in indoor water use in new buildings (AF)		4,984	12,146
Reduction in indoor water-related electricity use in new buildings (MWh)		2,956	7,202
Electricity emissions factor (MTCO <sub>2e</sub> /MWh)		0	0
Reduced indoor water emissions from new buildings (MTCO <sub>2e</sub> )		0	0
<b>GHG Reductions from Water-1.1 (MTCO<sub>2e</sub>)</b>		<b>0</b>	<b>0</b>
<b>Sources:</b>			
[1] Pacific Institute and Natural Resources Defense Council. 2014. <i>Urban Water Conservation and Efficiency Potential in California</i> . Available: <a href="https://pacinst.org/wp-content/uploads/2014/06/ca-water-urban.pdf">https://pacinst.org/wp-content/uploads/2014/06/ca-water-urban.pdf</a>			

[2] U.S. Environmental Protection Agency. 2022. *WaterSense - Statistics and Facts*. Available: <https://www.epa.gov/watersense/statistics-and-facts>

[3] CAPCOA. 2010. *Quantifying Greenhouse Gas Mitigation Measures. WUW-1*. Available: <http://www.capcoa.org/wp-content/uploads/downloads/2010/09/CAPCOA-Quantification-Report-9-14-Final.pdf>

WUW-1: 20% for residential and 31% for nonresidential low-flow fixtures. Assuming increase for ultra-low-flow, especially in new development

[4] U.S. Environmental Protection Agency. 2017. *Water-Smart Landscapes -Start with WaterSense*. Available: <https://www.epa.gov/sites/default/files/2017-01/documents/ws-outdoor-water-efficient-landscaping.pdf>

<b>Water-1.2</b>			
<b>Reduce outdoor water use for landscaping and irrigation in existing and new developments</b>	<b>2019</b>	<b>2030</b>	<b>2045</b>
<b>Outdoor water use reduction in existing buildings</b>			
Total existing water use (AF)	65,645	65,645	65,645
Total existing water-related electricity use (MWh)	38,926	38,926	38,926
Assumed percentage of outdoor water use [1] [2]	40%	40%	40%
Outdoor water use in existing buildings (AF)	26,258	26,258	26,258
Outdoor water-related electricity use in existing buildings (MWh)	15,570	15,570	15,570
Percent reduction in outdoor water use in existing buildings [1] [2] [3] [4]		40%	60%
Reduction in outdoor water use in existing buildings (AF)		10,503	15,755
Reduction in outdoor water-related electricity use in existing buildings (MWh)		6,228	9,342
Electricity emissions factor (MTCO <sub>2e</sub> /MWh)		0	0
Reduced outdoor water emissions from existing buildings (MTCO <sub>2e</sub> )		0	0
<b>Outdoor water use reduction in new buildings</b>			
Total water use (AF)	65,645	86,412	106,132
Total water-related electricity use (MWh)	38,926	51,240	62,934
Total water use in new buildings (AF)		20,767	40,487
Total water-related electricity use in new buildings (MWh)		12,315	24,008
Assumed percentage of outdoor water use [1] [2]	40%	40%	40%
Outdoor water use in new buildings (AF)		8,307	16,195
Outdoor water-related electricity use in new buildings (MWh)		4,926	9,603
Percent reduction in outdoor water use in new buildings [1] [2] [3] [4]		50%	80%
Reduction in outdoor water use in new buildings (AF)		4,153	12,956
Reduction in outdoor water-related electricity use in new buildings (MWh)		2,463	7,683
Electricity emissions factor (MTCO <sub>2e</sub> /MWh)		0	0
Reduced outdoor water emissions from new buildings (MTCO <sub>2e</sub> )		0	0
<b>GHG Reductions from Water-1.2 (MTCO<sub>2e</sub>)</b>		<b>0</b>	<b>0</b>
<b>Sources:</b>			
[1] Pacific Institute and Natural Resources Defense Council. 2014. <i>Urban Water Conservation and Efficiency Potential in California</i> . Available: <a href="https://pacinst.org/wp-content/uploads/2014/06/ca-water-urban.pdf">https://pacinst.org/wp-content/uploads/2014/06/ca-water-urban.pdf</a>			
[2] U.S. Environmental Protection Agency. 2022. <i>WaterSense - Statistics and Facts</i> . Available: <a href="https://www.epa.gov/watersense/statistics-and-facts">https://www.epa.gov/watersense/statistics-and-facts</a>			
[3] CAPCOA. 2010. <i>Quantifying Greenhouse Gas Mitigation Measures. WUW-2 through WUW-6</i> . Available: <a href="http://www.capcoa.org/wp-content/uploads/downloads/2010/09/CAPCOA-Quantification-Report-9-14-Final.pdf">http://www.capcoa.org/wp-content/uploads/downloads/2010/09/CAPCOA-Quantification-Report-9-14-Final.pdf</a>			
[4] U.S. Environmental Protection Agency. 2017. <i>Water-Smart Landscapes -Start with WaterSense</i> . Available: <a href="https://www.epa.gov/sites/default/files/2017-01/documents/ws-outdoor-water-efficient-landscaping.pdf">https://www.epa.gov/sites/default/files/2017-01/documents/ws-outdoor-water-efficient-landscaping.pdf</a>			

Strategy Code and Title	Measure Code	Measure Title	GHG Reduction Potential in 2030 (MTCO2e)	GHG Reduction Potential in 2045 (MTCO2e)	Percent of Total Reductions in 2030	Percent of Total Reductions in 2045	
<b>Planting and Managing Trees (Carbon Sequestration Sector)</b>							
Strategy Carbon Sequestration-1. Remove emissions from the atmosphere	Carbon Storage-1.1	Increase the number of trees in the city, through new plantings and management of existing trees	441	1,042	1%	0%	Assumed 750 new residential trees and 750 new City-managed trees planted every year. Used existing (2019) tree inventory and carbon sequestration data from the City's 2022 Urban Forest Master Plan.



<b>Carbon Storage-1.1</b>			
<b>Increase the number of trees in the city, through new plantings and management of existing trees</b>	<b>2019</b>	<b>2030</b>	<b>2045</b>
<b>Planting new trees</b>			
Existing trees [1]	3,910		
Annual carbon sequestration from existing trees (metric tons carbon/year) [1]	29		
Conversion factor for carbon to carbon dioxide (ratio of molecular weights = 44/12)	3.67		
Annual carbon sequestration per tree (MTCO <sub>2</sub> e/tree/year)	0.02673		
New residential trees per year [1]	750		
New City-managed trees per year [1]	750		
Total new trees [1]		16,500	39,000
Increased carbon sequestration from new trees (MTCO <sub>2</sub> e)		441	1,042
<b>GHG Reductions from Carbon Storage-1.1 (MTCO<sub>2</sub>e)</b>		<b>441</b>	<b>1,042</b>
<b>Sources:</b>			
[1] City of Rancho Cordova. 2022. Rancho Cordova Urban Forest Master Plan. Available: <a href="https://www.cityofranhocordova.org/home/showpublisheddocument/18231/637880482211700000">https://www.cityofranhocordova.org/home/showpublisheddocument/18231/637880482211700000</a>			

# Appendix F

---

Vulnerability Assessment  
(Technical Memorandum)





455 Capitol Mall, Suite 300  
Sacramento, CA 95814  
916.444.7301

**Date:** October 11, 2021  
**To:** Stefan Heisler  
**From:** Kai Lord-Farmer, Dan Krekelberg, and Honey Walters (Ascent Environmental)  
**Subject:** City of Rancho Cordova Climate Action Plan - Vulnerability Assessment

## 1 INTRODUCTION

Global climate change is projected to exacerbate the impacts of certain hazards that the City of Rancho Cordova (City) is already exposed to under current conditions. These hazards include indirect impacts from wildfires and effects on air quality, extreme heat, heat wave events, long-term drought, and flooding. While many of these hazards have existed historically for the City, the frequency and intensity of these hazards will increase as a result of global climate change. This Vulnerability Assessment (VA) serves to identify and analyze impacts of climate change that will most directly affect the City. The VA includes a climate change vulnerability assessment and serves to inform development of adaptation strategies by analyzing the City's exposure to existing hazards, sensitivity to these hazards, potential climate-related impacts from these hazards, and the City's existing capacity to prepare and adapt for these impacts, known as adaptive capacity.

### 1.1 CLIMATE CHANGE MITIGATION AND ADAPTATION

The effects of climate change are already being experienced today. The combustion of fossil fuels, among other human activities, since the Industrial Revolution in the 19th century has introduced greenhouse gases (GHGs) into the atmosphere at an accelerated pace, intensifying the greenhouse effect and leading to a trend of warming of the Earth's climate, known as global climate change or global warming. Climate change has more recently become a priority on an international, national, and local scale as recent climate data reveal more extreme weather patterns, increased average global temperatures, and the rapid melting of the Earth's Arctic and Antarctic poles and glaciers.

The Intergovernmental Panel on Climate Change (IPCC), the international body charged with compiling and interpreting the data surrounding climate change, estimates that global average temperatures will increase by 3.7 degrees Celsius (°C) (6.7 to 8.6 degrees Fahrenheit [°F]) by the end of the century unless additional efforts to reduce GHG emissions are made (IPCC 2014). A more recent IPCC report indicates that average global temperatures will likely increase by 1.5 °C (2.7 °F) between 2030 and 2052 if global GHG emissions continue their current rate (IPCC 2018). There is consensus among the scientific community that a 1.5 °C (2.7 °F) rise in global temperatures will likely cause catastrophic environmental disasters in certain locations including extreme heat, sea-level rise, and more severe and damaging precipitation events. These changes to Earth's climate would contribute to more frequent storms and flooding, the displacement of coastal and tropical populations, food and water insecurity, catastrophic wildfire events, economic hardships, loss of biological resources, increased spread of vector-borne diseases, and degraded ambient air quality (IPCC 2018).

In August 2021, IPCC released the Six Assessment report which assess scientific, technical, and socio-economic information concerning climate change. In this report, the IPCC states that observed increases in GHG concentrations in the atmosphere since around the year 1750 are unequivocally caused by human activities. As a result, Each of the last four decades has been successively warmer than any decade that preceded it since 1850 (IPCC 2021). The findings of highlight key new insights into the importance of global climate tipping points, thresholds in the global climate (e.g., global temperatures) that, when exceeded, can lead to large changes in the state of the climate system with one impact rapidly leading to a series of cascading events.

The Six Assessment report contain the body's strongest warnings yet on the causes and impacts of climate change. Importantly, the report notes that, in terms of solutions, "We need transformational change operating on processes and behaviors at all levels: individual, communities, business, institutions and governments. We must redefine our way of life and consumption (IPCC 2021)."

Efforts that focus on reducing the sources of climate change are termed climate change mitigation, GHG mitigation, or climate action. Efforts to reduce harm from the effects of a changing climate, are referred to as climate adaptation and resilience. Figure 1 illustrates the relationship between these two approaches. State law requires communities to address climate change mitigation in local planning and environmental review processes and climate adaptation in local long-range planning processes, such as general plans (CalOES 2020). Included below is a summary of the State requirements to address climate adaptation as part of the local planning process.

- ▶ **Senate Bill 379** – This bill requires all cities and counties to include climate adaptation and resiliency strategies in the next update of their General Plans beginning January 1, 2017. The update must include:
  - A vulnerability assessment that identifies the risks that climate change poses to the local jurisdiction and the geographic areas at risk from climate change impacts;
  - A set of adaptation and resilience goals, policies, and objectives based on the information specified in the climate vulnerability assessment for the protection of the community; and
  - A set of feasible implementation measures designed to carry out the goals, policies, and objectives identified pursuant to the adaptation objectives
- ▶ **Assembly Bill 747** – Requires the safety elements for cities and counties to be reviewed and updated as necessary to identify evacuation routes and their capacity, safety, and viability under a range of emergency scenarios upon the next revision of a local hazard mitigation plan on or after January 1, 2022, or beginning on or before January 1, 2022 if a local jurisdiction has not adopted a local hazard mitigation plan.
- ▶ **Senate Bill 99** - This bill requires cities and counties, upon the next revision of the housing element on or after January 1, 2020, to review and update the safety element to include information identifying residential developments in hazard areas that do not have at least 2 emergency evacuation routes.
- ▶ **Senate Bill 1035** – This bill requires cities and counties to revise the safety element upon each revision of the housing element or local hazard mitigation plan, but not less than once every 8 years, to identify new information relating to flood and fire hazards and climate adaptation and resiliency strategies applicable to the city or county that was not available during the previous revision of the safety element.





Source: CalOES 2020, adapted by Ascent Environmental in 2021.

Figure 1 Relationship Between Climate Mitigation and Adaptation

## 1.2 GUIDANCE DOCUMENTS

This section provides a summary of the guidance documents and resources that were used to help develop the VA.

### California Adaptation Planning Guide

The most recent version of the California Adaptation Planning Guide (APG) was released in March 2020. This guidance builds upon the first iteration of the APG released in 2012. The APG was developed by the California Office of Emergency Services (CalOES) and California Natural Resources Agency (CNRA). The APG provides guidance to local governments for adaptation and climate change resiliency planning. The APG includes a step-by-step process that communities may use to help plan for the impacts of climate change. The APG is designed to be flexible and guide communities through an adaptation planning process that is best suited for their needs (CalOES 2020).

### California's Fourth Climate Assessment

CNRA, the Governor's Office of Planning and Research (OPR), and the California Energy Commission (CEC) prepared California's Fourth Climate Change Assessment (Climate Assessment) in 2018. The Climate Assessment was designed to address critical information gaps that decisionmakers at the State, regional, and local levels need to close to protect and build the resilience of people, infrastructure, natural systems, working lands, and waterways from climate-related impacts. The Climate Assessment also includes regional reports which analyze and discuss the impacts to

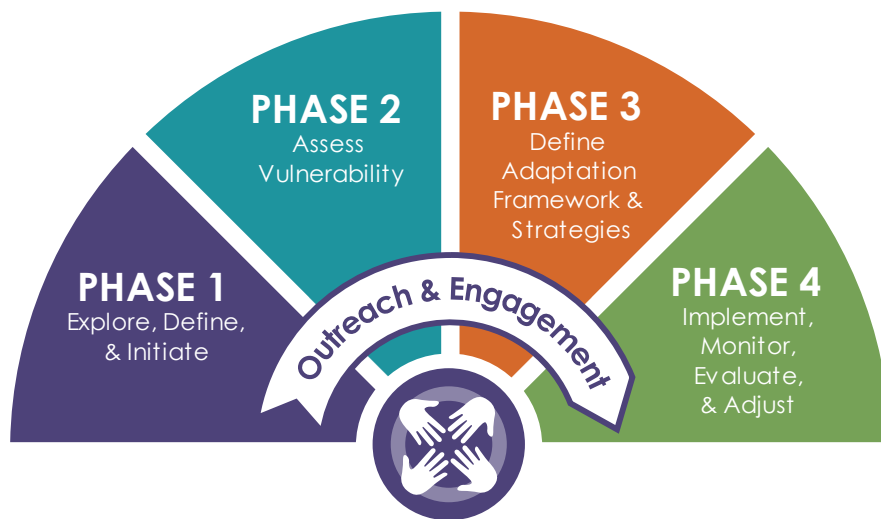
specific regions in the state. The regional report for the City and County is the California's Fourth Climate Change Assessment Sacramento Valley Region Report (Regional Report). The Climate Assessment and Regional Report are referenced throughout this VA to provide information regarding regional climate change impacts.

## Safeguarding California Plan

Alongside the update to the Climate Assessment, CNRA released the Safeguarding California Plan in 2018 which provides a roadmap for State government action to build climate resilience. The Safeguarding California Plan identifies actions the State government will take to protect communities, infrastructure, services, and the natural environment from climate change impacts and includes strategies for use as local examples for climate adaptation.

### 1.3 ADAPTATION PLANNING PROCESS

The APG provides guidance for communities throughout the state in planning for and adapting to the impacts of climate change. The APG includes a four-phase process, illustrated in Figure 2 which allows communities to assess their specific climate vulnerabilities and provides guidance on developing strategies to reduce climate change-related risks and prepare for current and future impacts of climate change.



Source: CalOES 2020, adapted by Ascent Environmental in 2021.

Figure 2 Adaptation Planning Process

- ▶ **Phase 1, "Explore, Define, and Initiate,"** includes scoping and defining the adaptation planning effort. Phase 1 also involves identifying key roles and stakeholders in the local government and throughout the community to contribute to the planning process. Potential climate change effects and important physical, social, and natural assets in the community are identified for further analysis.
- ▶ **Phase 2, "Assess Vulnerability,"** includes an analysis of potential climate change impacts and adaptive capacity to determine the vulnerability of populations, natural resources, and community assets. The vulnerability assessment is composed of four steps: exposure, sensitivity and potential impacts, adaptive capacity, and vulnerability scoring. Phase 2 also integrates stakeholder and public input to provide a comprehensive assessment of the community's sensitivity to climate change and its ability to adapt.

- ▶ **Phase 3, “Define Adaptation Framework and Strategies,”** focuses on creating an adaptation framework and developing adaptation strategies based on the results of the vulnerability assessment. Adaptation strategies identify how the community will address the potential for harm based on the community’s resources, goals, values, needs, and regional context. Community input is needed to prioritize adaptation strategies, identify co-benefits of strategies, and determine implementation steps.
- ▶ **Phase 4, “Implement, Monitor, Evaluate, and Adjust,”** the adaptation framework is implemented, consistently monitored, evaluated, and adjusted based on continual learning, feedback, or triggers. The adaptation planning process is intended to be cyclical in nature. Adaptation goals and strategies will be included in the City’s CAP which will contain a chapter that enumerates implementation planning policies. This section of the CAP will guide the implementation, monitoring, and evaluation of the adaptation policies.

The ultimate goal of the adaptation planning process is to improve community resilience in the face of a changing climate. A resilient community is one that is prepared for current and future hazardous conditions and experiences less harm when a disaster happens. Resilient communities can prepare for and recover from hazards with an understanding that the climate is going to continue to change in predictable and unforeseen ways. Ongoing learning and monitoring of strategy implementation allow for adjustments to be made in response to new information and opportunities.

## 2 VULNERABILITY ASSESSMENT

This section provides a comprehensive assessment of the City’s vulnerabilities to climate change. It identifies and characterizes the climate-related hazards and other climate effects that are anticipated to affect the City. The vulnerability assessment follows the process outlined in Phase 2 of the APG and is composed of the following four steps:

**Exposure:** The purpose of this step is to understand existing hazards within the City and how changes in climate variables (e.g., average temperature, precipitation) are projected to affect these hazards. Existing hazards that can be worsened by the effects of climate change are identified and described, based on historical data from sources such as the City’s Local Hazard Mitigation Plan.

**Sensitivity and Potential Impacts:** This step identifies a list of population groups and community assets that are sensitive to localized climate impacts. Climate-related hazards (e.g., flooding, wildfire) are generally projected to increase in severity, with the potential for climate change to generate new impacts that communities have not experienced historically. Using historical data, research from regional and State reports on climate impacts, and input from stakeholders, this step seeks to understand how sensitive populations and assets may be affected by climate impacts. Each hazard included in the VA is analyzed and given a qualitative score based on the criteria listed below in Table 1.

**Table 1 Potential Impact Scoring**

Score	Potential Impact
Low	Impact is unlikely based on projected exposure; would result in minor consequences to public health, safety, and/or other metrics of concern.
Medium	Impact is somewhat likely based on projected exposure; would result in some consequences to public health, safety, and/or other metrics of concern.
High	Impact is highly likely based on projected exposure; would result in substantial consequences to public health, safety, and/or other metrics of concern.

Source: CalOES 2020.

**Adaptive Capacity:** The City, partner agencies, and regional organizations (e.g., Sacramento County, Sacramento Area Council of Governments) have already taken steps to build resilience and protect sensitive populations and assets from existing hazards. A full summary of partner agencies and regional organizations and their climate adaptation-

related work is included in Section 2.6 “Adaptive Capacity”. Thus, the purpose of this step is to identify the City’s and partner agencies’ current capacity to address future climate impacts, referred to as adaptive capacity. The ability of the City to adapt to each of the identified climate impacts is determined through a review of existing plans, policies, and programs, and through stakeholder engagement. Adaptive capacity ratings are described in Table 2.

**Table 1 Potential Impact and Adaptive Capacity Scoring**

Score	Adaptive Capacity
Low	The population or asset lacks capability to manage climate impact; major changes would be required.
Medium	The population or asset has some capacity to manage climate impact; some changes would be required.
High	The population or asset has high capacity to manage climate impact; minimal to no changes are required.

Source: CalOES 2020.

**Vulnerability Scoring:** This step determines the City’s priority climate vulnerabilities through a scoring process. Vulnerability scores are based on several factors including the severity of projected climate impacts, how sensitive certain populations and assets are to anticipated climate impacts, and whether sufficient adaptive capacity exists to manage future climate impacts. Table 3 presents the rubric used to determine the overall vulnerability scores based on the ratings for potential impacts and adaptive capacity.

**Table 3 Vulnerability Scoring**

		Vulnerability Score		
Potential Impacts	High	3	4	5
	Medium	2	3	4
	Low	1	2	3
		High	Medium	Low
		Adaptive Capacity		

Source: CalOES 2020.

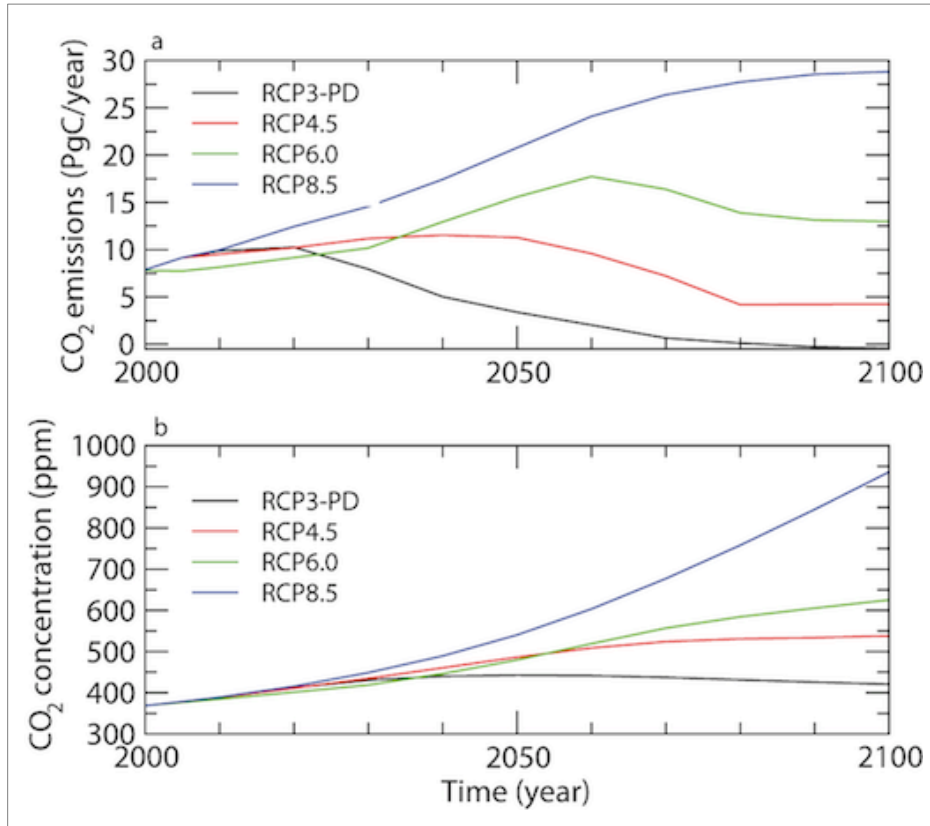
The vulnerability assessment helps the City understand which climate vulnerabilities are most urgent and should be prioritized during the adaptation strategy development phase as well as during strategy implementation.

## Climate Change Impact Modeling and Projections

According to the work of IPCC and research conducted by the State alongside partner agencies and organizations, climate change is already affecting and will continue to affect the physical environment throughout California, including the City. To identify the local impacts of climate change in California, the CEC, and the University of California, Berkeley Geospatial Innovation Facility developed the scenario planning tool Cal-Adapt. The Cal-Adapt tool uses global climate simulation model data downscaled to a local and regional resolution to identify localized impacts from various climate metrics. Developers of the Cal-Adapt tool selected four priority global climate models to include in projections provided in the tool. This analysis uses the average of these four models to identify changes in temperature and extreme heat events.

The projected effects of climate change over the next century will vary depending on global GHG emissions trends. The Cal-Adapt tool includes global climate simulation model data from two emissions scenarios, known as Representative Concentration Pathways (RCPs), that were used in the IPCC’s Fifth Assessment Report. The RCPs represent scenarios that estimate the level of global GHG emissions through 2099. The RCP scenarios used in the Cal-Adapt tool are the RCP 8.5 (High Emissions) scenario, which represents a business-as-usual future emissions scenario that would result in atmospheric CO<sub>2</sub> concentrations exceeding 900 parts per million (ppm) by 2100, and the RCP 4.5 (Medium Emissions) scenario, which represents a lower GHG emissions future and likely the best-case scenario for

climate impacts, under which GHG emissions would peak in 2040 and then decline through the rest of the century, resulting in a CO<sub>2</sub> concentration of about 550 ppm by 2100. The RCP trends assumed in the analysis are illustrated in Figure 3. The emissions scenarios depend on global GHG emissions trends in the future and the efficacy of global GHG reduction strategies proposed by the international community. Because the efficacy of the GHG reduction strategies and the likelihood that a certain RCP scenario will occur are uncertain, a discussion of both emissions scenarios and their subsequent impacts are included in this analysis.



Notes: CO<sub>2</sub>= carbon dioxide; ppm = parts per million; PgC = one billion metric tons of carbon; RCP = Representative Concentration Pathway.

Source: Goosse et al. 2010.

**Figure 3 Representative Concentration Pathway Used in Global Climate Modeling**

The State's *Adaptation Planning Guide 2.0* (CalOES 2020) provides guidance on choosing appropriate RCP scenarios to be included in the analysis. For analysis of impacts through 2050, the draft *Adaptation Planning Guide 2.0* suggests using a conservative approach based on the High Emissions scenario, but notes that impacts by 2050 under the Medium and High Emissions scenarios will vary based on local context.

The Cal-Adapt tool provides data on projected changes in annual average temperature and changes in the frequency and severity of extreme heat events. This analysis uses Cal-Adapt data to evaluate increases in annual average maximum temperatures, as well as shifts in the duration and frequency of extreme heat events in the future. The analysis also identifies at what point over the next approximately 80 years (2021–2099) changes in temperature and extreme heat events will begin to occur and at what magnitude. This exposure analysis uses the following time periods to analyze changes in climate variables under the Medium Emissions scenario for the near-term and midterm periods and Medium and High Emissions scenarios for the long-term period. The time periods are established as 30-year time intervals to gather accurate data on average changes in the climate, which is typically measured over 30-



year time periods or longer. This results in overlap among some time periods. Due to annual fluctuations in climate variables, climate data on shorter time periods may be less accurate and not reflect long-term averages (NOAA 2018). The three time periods are:

- ▶ near-term (2021–2050),
- ▶ midterm (2040–2070), and
- ▶ long-term (2070–2099).

## 2.1 COMMUNITY OVERVIEW

The City covers approximately 34.8 square miles of land, the majority of which historically consisted of flat grassland and oak woodlands. The City is generally bordered by the American River to the north, Hazel Ave and the boundary of the 100-year floodplain for the Consumnes River on the east, Jackson Highway on the south, and Bradshaw Road on the west.

### Population Overview

The U.S. Census bureau estimates the City’s population to be 75,086 persons as of July 2019 (U.S. Census Bureau 2021). Table 4 illustrates the City’s demographics by sex, race, and age according to the U.S. Census. As shown, the majority of residents identify as white with those identifying as Hispanic being the second largest demographic group. In terms of youth and elderly populations, 42 percent of City residents are either under 18 years or over 65 years old, populations at increased risk from climate-related hazards. The City is highly educated: 88 percent of the population over 25 years old has at least a high school degree, and 29 percent of the population over 25 years old has a bachelor’s degree or higher (U.S. Census Bureau 2021).

**Table 4 City Demographics by Sex, Race, and Age**

Demographic Characteristics	City of Rancho Cordova	Sacramento County
Population	47,459	1,552,058
Male	48%	49%
Female	52%	51%
White alone	42%	44%
Hispanic or Latino	23%	39%
Asian alone	14%	16%
Two or more races	9%	6%
Black or African American alone	10%	9%
American Indian and Alaska Native alone	0.4%	0.4%
Persons under 18 years	28%	23%
Between 18 and 64 years	59%	62%
Persons 65 years and older	13%	14%

Source: U.S. Census Bureau 2021.

## 2.2 TEMPERATURE AND EXTREME HEAT ANALYSIS

### Existing and Future Temperatures and Extreme Heat

The City has a mediterranean climate characterized by mild winters and hot, dry summers. The wet season runs from October through April, though there is occasional light rainfall in the summer months. The annual temperature mean is 61.1 °F, with monthly means ranging from 45.8°F in December to 75.4 °F in July. Summer high temperatures are often moderated by the “delta breeze”: which comes through the Sacramento-San Joaquin River Delta from the San Francisco Bay. The City experiences temperatures in excess of 100°F during the summer and fall months, reaching daily maximum temperatures of 105-115°F (Sacramento County 2021).

As discussed in *California’s Fourth Climate Change Assessment Sacramento Valley Region Report*, changes in temperature and extreme heat events in northern California are anticipated to affect the Sacramento Valley Region (boundary defined in the Regional Report) (OPR et al. 2018). Changes for the Sacramento Valley region include more warming in the summer than the winter (with July–September increases of 2.7°F–10.8°F) and greater warming inland than in coastal regions (by as much as 7.2°F) (Pierce et al. 2018). Table 5 provides a summary of the projected temperature increases over the century for the City.

### Future Changes in Temperature and Extreme Heat

As shown in Table 5, both annual maximum and minimum are projected to increase throughout the 21<sup>st</sup> century. The average annual maximum temperature in the City is projected to increase approximately six percent from 74.2°F historically (1961-1990) to 78.3°F in the near-term and increase approximately eight percent to 79.8°F in the midterm. The average annual maximum temperature is projected to increase eight to 12 percent to 80.2°F and 83.1°F in the late-century period under the medium and high emissions scenarios, respectively. The average annual minimum temperature in the City is projected to increase approximately five percent from 49.3°F historically (1961-1990) to 52.9°F in the near-term and increase approximately six percent to 54.1°F in the midterm. In the late-century period, average annual minimum temperature is projected to increase between seven and 11 percent to 54.3°F and 57.7°F under the medium and high emissions scenarios, respectively (CEC 2021a). Increased temperatures in the City will influence secondary climate effects, including extreme heat events, wildfire, and drought. Figure 4 below illustrate the changes in annual average maximum temperature in the City and the County, highlighting the variability in temperature increases across the County throughout the 21<sup>st</sup> century.

**Table 5 Changes in Average Annual Temperature in the City of Rancho Cordova**

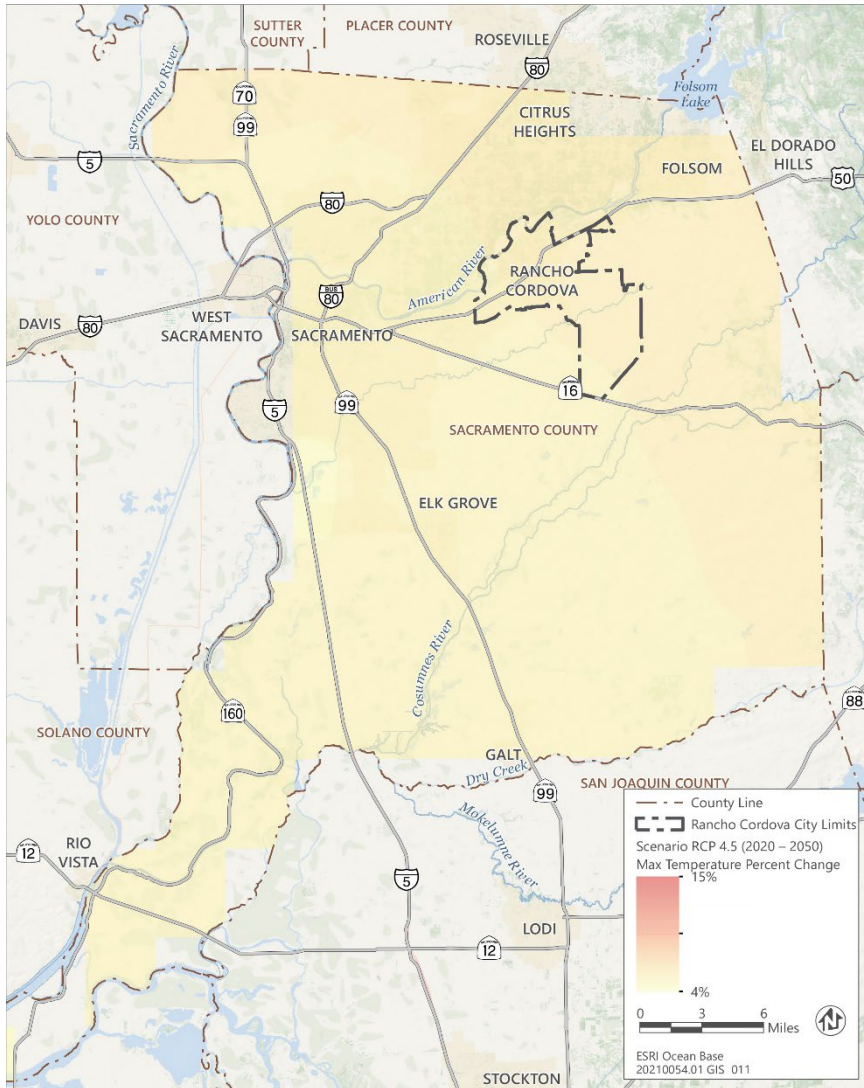
Geography	Average Annual Temperature	Historic Average Annual Temperature (1961-1990)	Near-Term (2021-2050)	Midterm (2040-2070)	Late-Century (2070-2099)	
					Medium Emissions	High Emissions
City of Rancho Cordova	Maximum Temperature (°F)	74.2	78.3	79.8	80.2	83.1
	Minimum Temperature (°F)	49.3	52.9	54.1	54.3	57.7

Notes: °F = degrees Fahrenheit.

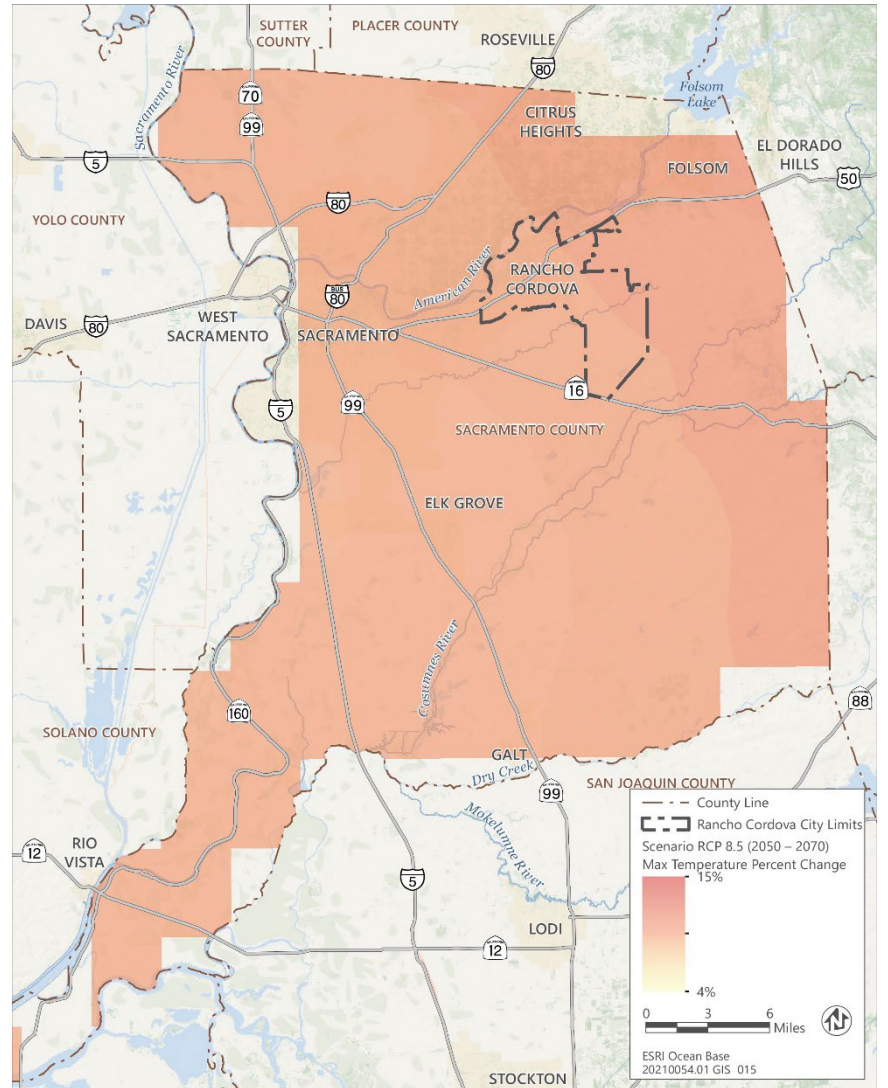
Source: CEC 2021a.



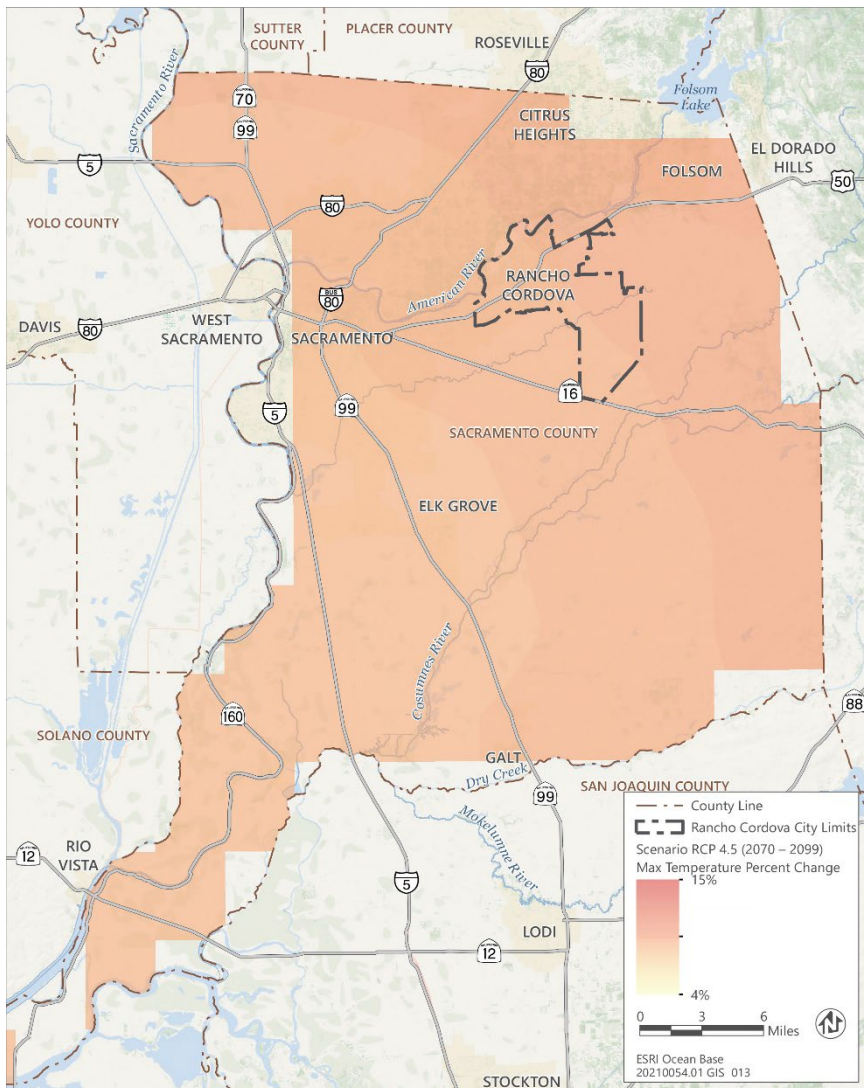
Near-Term (2021 – 2050)



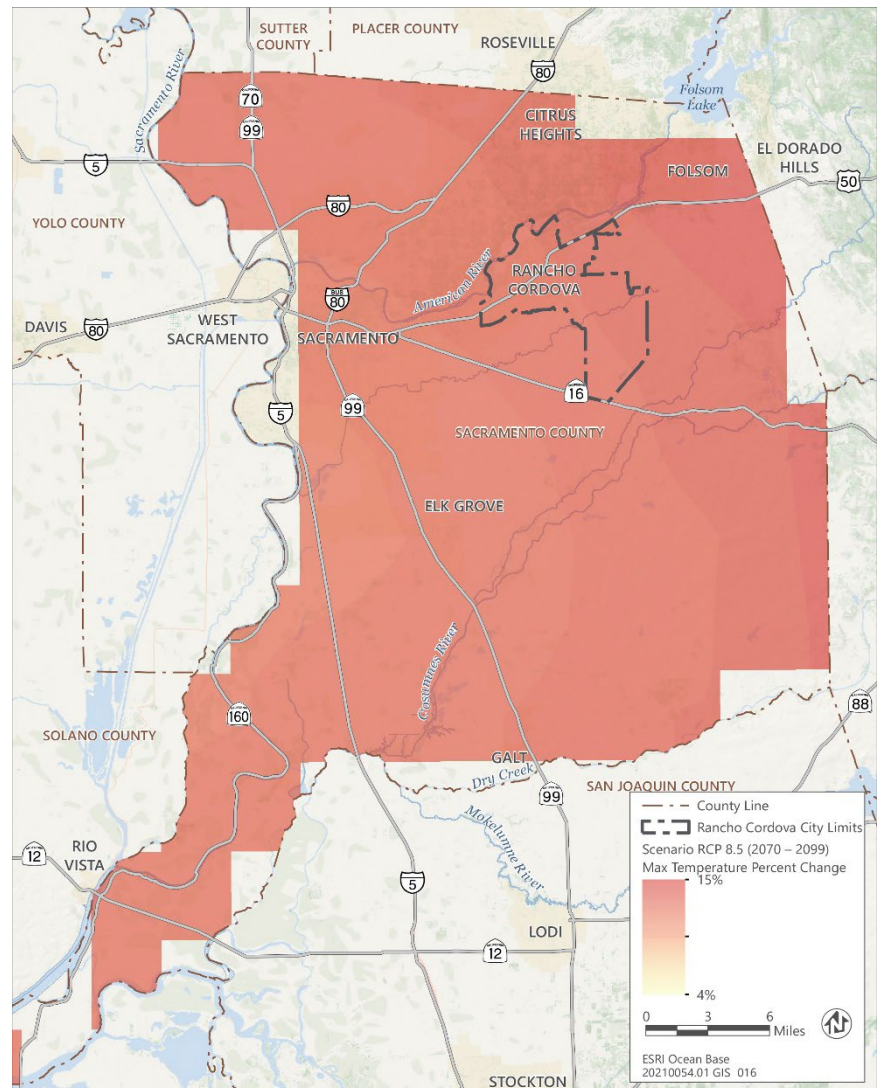
Midterm (2040 – 2070)



Medium Emissions - Late Term (2070 – 2099)



High Emissions - Late Term (2070 – 2099)



Source: Data downloaded from CEC and DWR in 2019.

Figure 4 Sacramento County Annual Average Maximum Temperature through 2099





Along with increases in annual average temperature, the City is anticipated to experience increases in the average number of extreme heat days per year, as well as increases in the frequency and duration of heat wave events. Based on the parameters set in Cal-Adapt and for the purposes of this analysis, an extreme heat day is defined as a day between April and October with a maximum temperature of 103.6°F or above. This threshold was chosen because it is the 98th percentile of historic maximum temperature for days in the historic period (1961–1990), meaning 98 percent of all recorded temperatures in this period were below 103.6°F. This is also the recommended threshold by the Extreme Heat tool in Cal-Adapt. For the purposes of this analysis, a heat wave event is defined as a series of 4 or more days above 103.6°F. Table 6 illustrates the projected changes in extreme heat events. In the historic period, the maximum duration of days above 103.6°F is 2.5 days, which does not qualify as a heat wave based on the heat wave threshold used. By the midterm period, the City will experience heat wave events that qualify based on the established threshold.

**Table 6 Changes in Extreme Heat in the City of Rancho Cordova**

Extreme Heat Event	Extreme Heat Event Metric	Historic (1961-1990)	Near-Term (2021-2050)	Midterm (2040-2070)	Late-Century (2070-2099)	
					Medium Emissions	High Emissions
Extreme heat days	Days above 103.6°F	4	19	32	29	48
Heat wave events	4-day period above 103.6°F	0.2	1.4	4.8	4.0	7.8
Heat wave duration	Consecutive days above 103.6°F	2.5	6.3	7.2	8.5	14.2

Notes: °F = degrees Fahrenheit.

Source: CEC 2021a.

As shown in Table 6, while heat waves have historically been infrequent in the City, with a historical average of less than one heat wave annually, climate change is expected to increase the frequency of heat waves. Under the high emissions scenario, the City is projected to still experience 19 extreme heat days in the near-term and 32 extreme heat days annually in the mid-term. By the late-century, the City will experience 29 extreme heat days per year under the medium emissions scenario and 48 extreme heat days per year under the high emissions scenarios.

In terms of heat wave events, the City is projected to experience approximately 1.4 heat waves per year in the near-term and 4.8 heat wave events in the midterm. By the late-century, the City is projected to experience 4 heat waves per year under the medium emissions scenario and 7.8 heat waves per year under the high emissions scenarios. The average number of days in the longest stretch of consecutive extreme heat days per year is also projected to increase. Historically, the longest stretch of consecutive extreme heat days lasted for an average duration of approximately two-and-a-half days. The longest stretch of consecutive extreme heat days is projected to increase significantly to 6.3 days in the near-term period and 7.2 days by the midterm period. By late-century, the duration is projected to increase to a maximum length of 8.5 days under the medium emissions scenario and 14.2 days under the high emissions scenario (CEC 2021b). The timing of extreme heat days is also projected to change over the 21<sup>st</sup> century with more extreme heat days and heat wave events occurring earlier in the year (April through May) and more severe events occurring in the historically hot months of September and October (CEC 2021b).

## Extreme Heat Sensitivity and Impacts

This section provides an overview of the anticipated impacts on the City from the increases in temperature and extreme heat, discussed above, and subsequent secondary impacts. The impact discussion is organized around the three analysis time periods.

Based on the information included in the exposure analysis, the impact analysis is intended to identify and describe impacts on the City's built environment, vulnerable populations, and community functions anticipated to result from temperature increases and increases in the frequency and severity of extreme heat events. To help better understand

how and when these impacts will occur, a series of threshold indicators are used to assess how various aspects of the City's normal functions are affected when temperature-related thresholds are exceeded.

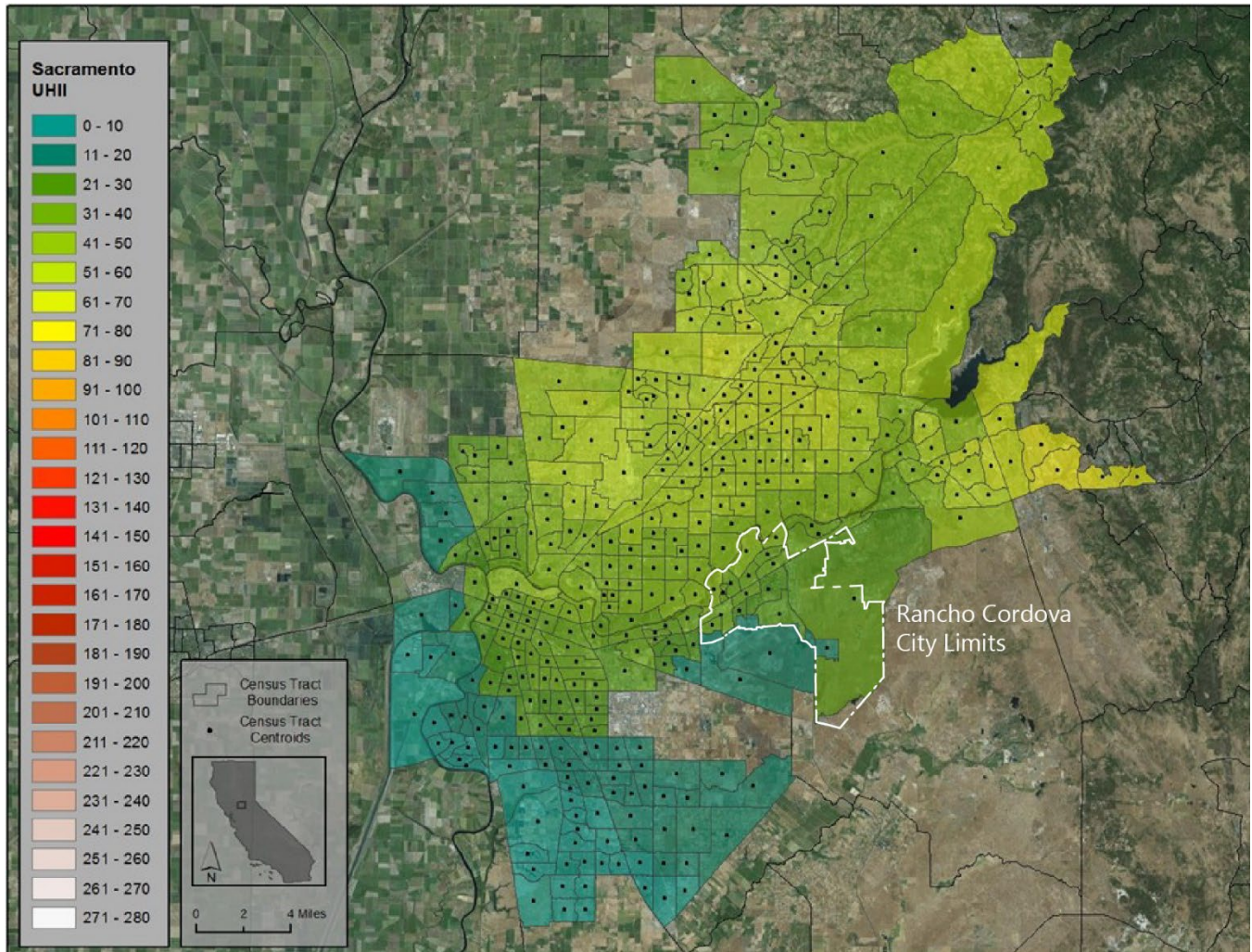
### **Existing Heat Sensitivities and Urban Heat Island Effect**

Although the City's mediterranean climate includes high temperatures during summer and fall months, the City's urban land use patterns can intensify periods of extreme heat through the "urban heat island" (UHI) effect. The UHI effect is generally understood as the phenomenon of urban areas being significantly warmer than surrounding rural areas because of human activity and land use patterns in the built environment. Several factors contribute to the effect, with the primary cause being changes in land surfaces (EPA 2008). The albedo of a surface is the measure of the surface's ability to reflect or absorb solar radiation, with darker surfaces having a lower albedo and absorbing more solar radiation. As urban areas develop over time, resulting in the development of more land surfaces with low albedos (e.g., asphalt pavement, dark building surfaces), more solar radiation is absorbed in these materials causing increased ambient temperatures and warmer nighttime temperatures. Another factor contributing to the UHI effect is the loss of evapotranspiration in urban areas. Evapotranspiration, the movement of water to the air from sources such as the soil, plants, and bodies of water, reduces ambient air temperatures (EPA 2008). As cities grow and often reduce the extent of available vegetation that contributes to evapotranspiration, UHI effects are exacerbated. Additionally, waste heat from human activities involving machinery (e.g., vehicle traffic, using air conditioning, industrial activity) can also contribute to the UHI effect, with excess heat absorbed by surrounding surfaces (Sailor 2011; Zhu et al. 2017).

### **Sensitive Land Uses**

Land use patterns and the design of the built environment in urban areas play a large role in an area's exposure to the UHI effect (Stone and Rodgers 2001; Solecki et al. 2005). Urban land uses with large, paved areas, low albedo, and less vegetation (e.g., commercial, industrial uses) tend to be subject to the UHI effect and have higher nearby ambient temperatures. Conversely, land uses with smaller percentages of paved surfaces and abundant vegetation (e.g., parks) tend to have lower average temperatures compared to other portions of urban areas. A study looking at the relationship between land use patterns and the UHI effect in Toronto, Canada found a statistically significant difference between average maximum temperatures for commercial and resource/industrial land uses and other surrounding land uses. The study also found the average low temperatures for parks, recreational land, and water bodies to be lower than those for surrounding land uses, likely because of increased evapotranspiration (Rinner and Hussain 2011). Additionally, areas that have higher concentrations of commercial and industrial land uses clustered together can have increased ambient and surface temperatures, with temperatures increasing relative to the size of these areas (Rinner and Hussain 2011). Increased temperatures in areas with concentrations of commercial and industrial land uses can also result in secondary impacts, including increased cooling demand for buildings, pavement deterioration, decreased air quality, and reduced stormwater quality from above-average-temperature runoff entering natural waterways and nearby ecosystems (Rinner and Hussain 2011).

The California Environmental Protection Agency has developed a UHI index (UHII) to assess the severity of the UHI effect in various urban areas throughout the state. The scores are based on the temperature difference over time between urban census tracts and nearby upwind rural reference points to demonstrate the relative difference in temperature caused by the urban environment (CalEPA 2019). Figure 5 shows the UHII effect for the County by census tract.



Source: CalEPA 2019.

**Figure 5** Urban Heat Island Index for Sacramento County

As shown in Figure 5, compared to other urban areas in County, census tracts in the City being affected by the UHI effect but not as severely as other areas in the County. As discussed above, a number of factors contribute to the UHI effect. Factors that could be contributing to the City's relatively low UHII score include the presence of rural land uses surrounding the City, particularly to the south and east of the City's more urban areas. As the City continues to grow, developing medium and high-density transit-oriented land use patterns will be an important part of helping the City achieve its greenhouse gas emissions reduction targets included in the City's CAP. However, as this growth occurs, it is also important to consider how new development may contribute to the UHI effect and include strategies to mitigate the UHI effect from new development in the City.

### Transportation System Heat Sensitivities

Transportation systems are designed and constructed to withstand certain variabilities in weather and temperature based on observations of historical weather trends for specific climate regions (Li et al. 2011). The performance of transportation assets may begin to decline when the severity of extreme heat periods exceeds historical ranges, for example, rail buckling at temperatures above 111°F. The characteristics of extreme heat events will affect different transportation assets differently. Provided below is a summary of the quantitative and qualitative thresholds used to assess the impacts of climate change on the City's transportation system. These thresholds were applied to the specific geography of the City using Cal-Adapt data and are presented in Table 7.

### **Pavement Deterioration**

The effect of temperature on the performance and integrity of pavement depends on a variety of factors, including material type (asphalt versus concrete), the albedo of the material, details specific to the material mixing and placement, and soils and materials in the subbase of the roadway (Harvey et al. 2000). The performance of pavement also is dependent on the traffic volumes and types of vehicles using the roadway (Harvey et al. 2000). Based on the City's Standard Construction Specifications, based on Sacramento County Standards (Sacramento County 2016), roadways in the City use a binder within the asphalt mix with a Performance Grade of 64-16 means that roadways using this binder can withstand 7 consecutive days of pavement temperatures up to 64°C (147°F), after which point the heat can result in rutting along high-volume roadways and cause considerable safety issues. Based on guidance in the FHWA's *Vulnerability Assessment and Adaptation Framework* (FHWA 2017), this pavement temperature threshold can be translated into an ambient air temperature of 111°F. The UHI effect can increase ambient temperatures between 1.8°F and 5.4°F in urban areas compared to surrounding rural areas. Because the Cal-Adapt tool does not account for the added effects of the UHI effect in its projections, this analysis is conservative in setting a threshold for pavement impacts. As a result, the threshold used for widespread impacts on pavement in the City is a 7-day consecutive heat wave with a maximum daily temperature of 108°F. The analysis in roadways using this threshold is included below in Section 2.4.2.

### **Rail Buckling**

During periods of extreme heat, rail lines can expand and result in "buckling" in which tracks come out of alignment, resulting in serious safety issue. However, the risk of buckling is managed by designing the rail neutral temperature at 95-110°F (35-45°C), with tracks designed and fit into infrastructure that assumes operations at those temperatures could occur (OFCM 2002, Transportation Research Board and National Research Council 2008). For this analysis, the threshold for increased risk from rail buckling is days in which the maximum daily temperature is 111°F or above.

### **Public Transportation Operations and Bridges**

Research has found that when daily maximum temperatures reach 100°F, air conditioning units in buses are placed under increased stress and risk of failure (Cambridge Systematics 2015). For this analysis, the threshold for public transportation is days per year with maximum temperatures above 100°F.

Additionally, research indicates that bridges are at increased risk from thermal expansion during periods above 100°F. While bridges are designed to expand during periods of extreme heat, projected increases in extreme heat events could go beyond design criteria, resulting in cracking and crushing of the roadway deck, as well as increased maintenance costs (Transportation Research Board and National Research Council 2008). The number of days above 100°F is also used as a threshold to determine impacts on bridges (Zimmerman 1996).

### **Heat Sensitive Populations**

Certain vulnerable populations in urban areas are particularly vulnerable to extreme heat and related hazards. Vulnerable populations include persons over the age of 65, infants and children, individuals with chronic health conditions (e.g., cardiovascular disease, asthma), low-income populations, athletes, and outdoor workers (CDC 2019). Increased temperatures have been reported to cause heat stroke, heat exhaustion, heat syncope, and heat cramps, with certain vulnerable populations at increased probability of experiencing these effects (Kovats and Hajat 2008). Extreme heat can also worsen air quality, quickening the production of ozone in areas with increased concentrations of ozone precursors (i.e., oxides of nitrogen [NO<sub>x</sub>] and reactive organic gases [ROG]) (Knowlton et al. 2004). This is of particular concern to the City because the Sacramento Valley Air Basin has high concentrations of ROG and NO<sub>x</sub> emissions and is currently in nonattainment status for California ambient air quality standards for ozone (SMAQMD 2017).

Alongside populations with health sensitivities, residents with specific sociodemographic characteristics are at increased sensitivity to extreme heat events (CDC 2019). Research has found that low-income residents spend a larger proportion of their income on utilities, including electricity use for cooling, with these residents being disproportionately affected during extreme heat events (Voelkel et al. 2018). Additionally, research has found that low-income neighborhoods can often have less tree coverage and park space, further contributing to the disproportionate impact on low-income residents (Zhu and Zhang 2008). Unhoused individuals are also at increased risk from extreme heat events with, generally, less access to places to cool off and healthcare resources during these

events. Additionally, decreased access to transportation services can further increase exposure and health risks from extreme heat events for the unhoused community (Ramin and Svoboda 2009).

Unlike thresholds for transportation assets, heat-related thresholds for populations in an urban area vary widely and depend on a number of factors, including the sensitivity of specific populations to heat (e.g., elderly, children). For this analysis, the California Heat Assessment Tool (CHAT) was used to identify how Heat Health Events (HHE) would increase in the future. An HHE, for the purposes of the tool, is defined as any event that results in negative public health impacts, regardless of the absolute temperature. The tool includes unique HHE threshold for locations throughout the state, specific to the climate and the historical sensitivity of people in that area to past extreme heat events. For this analysis, the CHAT tool and the projected increase in HHEs in the City is used as the threshold for this sensitivity. The heat wave event threshold, defined as a 4-day consecutive period with daily maximum temperatures above 103.1°F, is also used to identify various impacts from heat wave events.

### Buildings and Energy Use

Changes in annual average temperature and extreme heat events are likely to effect buildings primarily through changes in energy use as well as disproportionate impacts on individuals residing in units that do not have air conditioning. Cal-Adapt provides data on the shifts in Cooling Degree Days and Heating Degree Days, which are measurements used to assess the energy demand needed for cooling and heating buildings in different climate zones throughout California. A degree day does not equate to a single day of the year but rather compares the mean (the average of the high and low) outdoor temperatures recorded for a location to a standard temperature (i.e., 65°F). For example, if the average temperature for a day is 80°F, the day has 15 Cooling Degree Days (80 – 65 = 15). Degree days are used in the State’s Title 24 Building Energy Efficiency Standards to help design the energy demand needed for heating and cooling in the various climate zones throughout the state. To illustrate how climate change is likely to affect energy demand for heating and cooling in the future, Table 7 includes the relative shift in Cooling Degree Days and Heating Degree Days in the City through 2099.

**Table 7 Summary of Potential Heat Impacts by Impact Area through 2099**

Impact Area	Impact Type	Threshold Criterion	Historic (1961–1990)	Near Term (2021–2050)	Midterm (2040–2070)	Medium Emissions Long Term (2070–2099)	High Emissions Long Term (2070–2099)	Threshold Source
Built Environment impacts	Roadways and pavement	7 consecutive days above 108°F	0	0	0.1	0.1	0.5	DOT 2014
	Rail buckling	Days per year with maximum temperature of 111°F	0	2	3	3	9	OFCM 2002
	Bridges and bus operations	Days above 100°F	15	35	44	24	67	Zimmerman 1996, Cambridge Systematics 2015
	Building Energy Use	Percent increase in Cooling Degree Days	n/a	49%	48%	46%	74%	CEC 2021b
Percent increase in Heating Degree Days		n/a	-25%	-44%	-50%	-81%	CEC 2021b	
Vulnerable Population impacts	Heat wave events	4-day period above 103.6°F	0.2	1.4	2.5	2.6	5.4	CEC 2021b
	Heat wave duration	Consecutive days above 103.6°F	2.5	6.3	6.9	8.5	14.2	CEC 2021b
	Heat Health Events (HHE)	Range of potential HHEs per year	n/a	2.9	3.9	4.2	4.8	CEC 2018a

Note: NA = not available.

Source: See sources in “Threshold Source” column of table.



### **Near Term (2021-2050)**

As shown in Table 7, during the near-term period, extended periods (7 consecutive days) of temperatures reaching above 108° would be unlikely; therefore, there would not be widespread impacts from pavement deterioration in the City. The City has experienced buckling of sidewalks due to extreme heat conditions, prompting repairs to avoid tripping hazards. As extreme heat continues to increase in severity and frequency in the future, this impact is likely to increase as well. Increased risk to rail from extreme heat days will increase slightly, with only 3 days over 111°F. However, there will be continued increases in risk from thermal expansion of bridges, with increases in days above 100°F from 15 historically to 44 during this period. An increase in the number of days above 100°F will also place increased stress on buses and their air conditioning systems, as well as result in potential declines in bus ridership because of the discomfort. During this period, the number of Cooling Degree Days will increase approximately 49 percent increase over historic levels, placing more demand on the electricity grid during heat wave events and increase electricity bills for residents. Conversely, the number of Heating Degree Days will decrease by approximately 25 percent and reduce energy demand for heating, resulting in cost savings for residents and businesses cooler months during those months. City staff have noted that extreme heat events have already begun to affect the homeless population in the City, prompting the need for cooling center to house the City's homeless population and other vulnerable populations. As extreme heat events continue to increase in frequency and severity, these impacts are likely to become more pronounced and demand for cooling centers as well as emergency services will increase.

During the near-term period, the City will also experience approximately 2.9 HHEs per year, with increased risk to populations particularly vulnerable to extreme heat, as discussed above. The frequency of extreme heat events will increase to 1.4 on average per year with the maximum duration of events increasing to 6.3 days during this period. These events will increase the risk of public health impacts on vulnerable populations and could result in increased burden on low-income residents because of the increased energy demand for cooling (Calkins et al. 2016).

### **Midterm (2040-2070)**

During the midterm period, there would likely not be any extended periods (7 consecutive days) above 108°F during this period; therefore, there would not be widespread impacts from pavement deterioration in the City. Increased risk to rail from extreme heat days will be relatively minor, with only 2 days over 111°F. However, there will be noticeable increases in risk from thermal expansion of bridges, with increases in days above 100°F from 15 historically to 35 during this period. An increase in the number of days above 100°F will also place increased stress on buses and their air conditioning systems, as well as result in potential declines in bus ridership because of the discomfort. During this period, the number of Cooling Degree Days will increase approximately 49 percent increase over historic levels, placing more demand on the electricity grid during heat wave events and increase electricity bills for residents. Conversely, the number of Heating Degree Days will decrease by approximately 44 percent over historic levels and reduce energy demand for heating, resulting in cost savings for residents and businesses cooler months during those months.

During the near-term period, the City will also experience approximately 3.9 HHEs per year, with increased risk to populations particularly vulnerable to extreme heat. The frequency of extreme heat events will continue to increase to 2.5 on average per year with the maximum duration of events increasing to 6.9 days. These events will increase the risk of public health impacts on vulnerable populations and continue to disproportionately burden low-income residents because of the increased energy demand for cooling (Calkins et al. 2016).

### **Long Term (2070-2099)**

During the long-term period, increases in the duration and frequency of heat wave events will place increased stress on transportation assets and could result in subsequent impacts on community functions. By this period, under the High Emissions scenario, there would be an average of 0.5 events per year with extended periods (7 consecutive days) above 108°F. There would be only 0.1 events per year under the Low Emissions scenario for this period. As discussed in Section 2.4.1, these events will result in much larger impacts on the performance of pavements in the City. Extensive rutting could occur, particularly on high-volume roadways, including Folsom Boulevard, Sunrise Boulevard, and International Drive, as well as on Caltrans facilities (i.e., SR-50).

During this period, there would be significant risk to rail infrastructure from extreme heat days, with approximately 9 days over 111°F per year under the High Emissions scenario, likely affecting Regional Transit light rail service when these events do occur. Risk of impacts on bridges from thermal expansion will also increase considerably, with the number of days above 100°F per year increasing from 12 historically to 24 under the Low Emissions scenario and 67 days under the High Emissions scenario. During the long-term period, the City will experience between 4.2 and 4.8 HHEs depending on future emissions, with increased risk to vulnerable populations. The increased frequency of HHEs will likely place increased demand on emergency services and emergency care facilities and could result in economic consequences from impacts on public health and work productivity (Paterson et al. 2014). The frequency and duration of heat wave events will increase considerably during this period, with the maximum duration of events increasing to 14.2 days under the high emissions scenario. These events will increase public health impacts on vulnerable populations, with increased levels of risk for elderly and youth populations, as well as individuals with chronic health conditions (Voelkel et al. 2018). By the end of the century, the number of Cooling Degree days will increase approximately 74 percent, under the high emissions scenario, resulting in more than 3 months of the year requiring increased energy demand for cooling. By this period, the number of Heating Degree Days will decrease by approximately 81 percent under the High Emissions scenario by 2099. Increases in energy demand for cooling during this period will also have larger impacts on the electricity grid, with increased stress on and risks to electricity generation facilities and transmission lines (DOE 2016).

#### Potential Impact Score

Based on this analysis, the potential impact score for Temperature and Extreme Heat is **High**.

## 2.3 PRECIPITATION AND FLOODING ANALYSIS

### Existing and Future Flooding Conditions

Scientists, engineers, and planners all use a specific system to measure and plan for certain sizes of storm events and flood impacts associated with these events. These events are measured by the probability that they are likely to occur in a given year. The phrase “100-year storm,” for example, refers to a storm event with a 1-in-100 or one percent chance of occurring in any given year. The size and other aspects of these storms are identified to characterize the nature of the events based on historic data. The metrics are then used to plan and design stormwater management systems that can cope with storm events of these sizes. The Federal Emergency Management Agency (FEMA) uses certain larger storm events (i.e., 100-, 500-year storms) to identify flood hazard areas in the United States. FEMA administers flood insurance based on location and extent of impacts from these storm events, which influences land use patterns and development in cities. The following metrics are used in this analysis to discuss storm events and are included in projections from the Cal-Adapt tool:

- ▶ **Intensity**—The amount of rainfall that occurs over a certain period (e.g., 1 hour, 24 hours, 5 days) during storm events of different sizes (e.g., 100-year storm event, 2-year storm event)
- ▶ **Duration**—The longest stretch of consecutive days during a water year (October through September) with rainfall above a certain threshold
- ▶ **Count**—The number of days during a water year (October through September) with rainfall over a certain period (e.g., 1 hour, 24 hours, 5 days) above a certain threshold
- ▶ **Timing**—The timing during the year in which rainfall events exceeding a certain threshold occur

The City's *Local Hazard Mitigation Plan (LHMP)*, which was developed as an annex to the *Sacramento County Local Hazard Mitigation Plan* which is currently being updated with the public draft of the document available, includes summary of the existing natural and manmade hazards affecting the City have been analyzed to assess current risks levels for each hazard (Sacramento County 2021). The LHMP provides details on the planning process, risk assessment, and mitigation strategies for the City to address specific hazards including large flooding events and flood related hazards.

Historically, flooding from large storm events is a significant problem in the County and the City. Historically, the City has been at risk to flooding primarily during the winter and spring months when river systems in the County swell with heavy rainfall and snowmelt runoff. The City also experiences flooding challenges in the Morrison Creek watershed as well as obstructions to peak storm flow management with the Folsom South Canal which runs north-south through the City.

Storm floodwaters are typically managed by the City’s stormwater management system, which is able to collect and divert stormwater runoff from smaller storm events. However, extended heavy rains result in floodwaters that exceed normal high-water boundaries and cause damage. Major surface waters in the vicinity of the City include the American River, Folsom Reservoir, and Lake Natomas to the north. Other surface waters within the City include the Folsom South Canal, Cordova Creek, Deer Creek, and the Morrison Creek Stream Group (Morrison, Laguna, Elder, Gerber, Unionhouse, Florin, Buffalo, and Frye Creek, as well as Rebel Hill Ditch) which generally flow in a southwesterly direction southeast of the City. The topography within the City includes gently rolling terrain, such as that found in the eastern Great Central Valley interrupted by numerous seasonal creeks and streams. These creeks and streams are largely ephemeral and intermittent, which is typical of areas that experience dry summers and cool, wet winters, as in this part of the Central Valley.

The County and City have a large number of large-scale flooding events resulting in Federal and State disaster declarations. Table 8 includes a list of state and federal disaster declarations for the County since 1950.

**Table 8 Changes in Average Annual Precipitation and 5-Year Storm Event in Sacramento County**

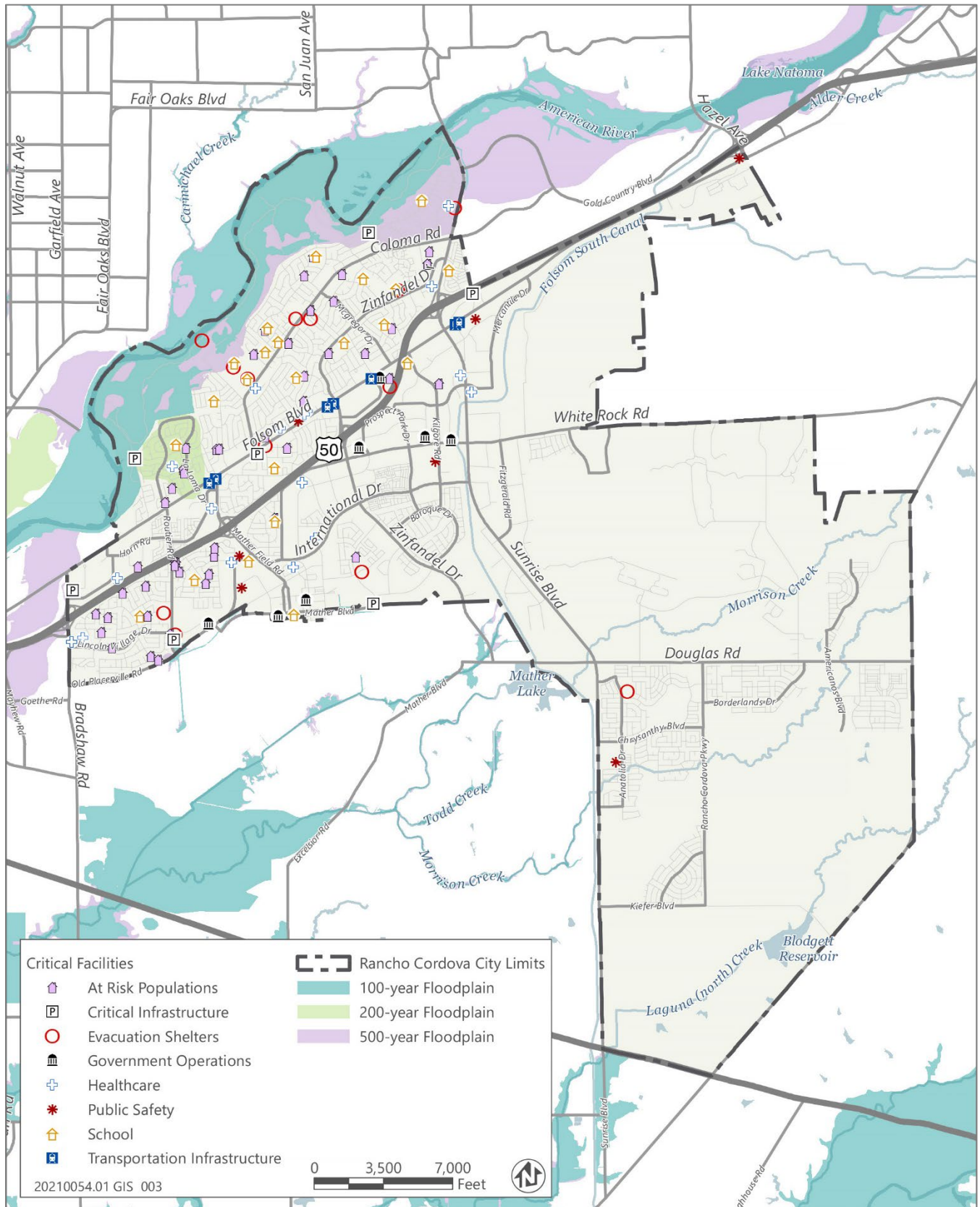
Type of Hazard Event	Federal Declarations		State Declarations	
	Count	Years	Count	Years
Flood (including heavy rains and storms)	19	1950, 1955, 1958 (twice), 1963, 1969, 1982 (twice), 1983, 1986, 1995 (twice), 1996, 1997, 1998, 2008, 2017 (three times)	14	1955, 1958, 1964, 1969, 1983, 1986, 1995 (twice), 1997, 1998, 2006, 2017 (three times)

Source: Sacramento County 2021.

As shown in Figure 6, small portions of the City are located within the FEMA floodplains for the 100- and 500-year storm events. Figure 6 also includes areas within the 200-year flood zone which were mapped as part of the City’s GP updated process and used to comply with the requirements of Senate Bill (SB) 5, which requires cities in the Sacramento-San Joaquin Valley area to assess risk-levels and provide increased flood protection for properties in the 200-year floodplain. As shown in Figure 6, the northern boundary of the City is located along the American River, with this area of the City at the highest risk from flooding.

Based on information in the City’s LHMP, there are 58 properties located in the 100-year flood zone valued at a total of \$21.6 million. As part SB 5, jurisdictions in the Sacramento-San Joaquin Valley are required to identify properties located in the the 100- and 200-year floodplains and implement development standards that prohibit new development in the 200-year floodplain unless the property achieves an Urban Level of Flood Protection (ULOP), defined in SB 5. To satisfy the requirements of ULOP, the City has developed a 200-yr floodplain map based on the proposed Folsom Dam improvements by the US Army Corps of Engineers. These improvements include the Joint Federal Project to improve the dam spillway and the future dam raise to increase flood storage. In conjunction with the new 200-yr map, the City has made changes to its General Plan and zoning code that will guide development within the 200-yr ULOP.

As illustrated in Figure 6, the 500-year floodplain also impacts the northern portions of the City along the American River with 118 residential parcels located within this zone. The City has one critical facility located in the 100-year flood zone, six critical facilities in the 200-year flood zone, and 5 critical facilities in the 500-year flood zone. While portions of the City are within the 100- and 500-year flood zones, there have been no historical insurance claims for flood losses in the City (Sacramento County 2021).



Source: Sacramento County 2021 and data provided by City of Rancho Cordova staff.

Figure 6 Flood Zones and Critical Facilities in the City of Rancho Cordova

As shown in Table 9, there are several areas in the City with various land uses in the 100- and 500-year flood zone. As discussed above, the presence of the Laguna West Levee System near the Laguna West neighborhood is protecting 2,073 parcels from the 100-year flood event. Parcels located in the 100-year flood zone are located in flood zone areas surrounding Laguna Creek and Deer Creek. Alongside an analysis of land uses at risk of flooding, the City’s LHMP also analyzed the number of essential service facilities, and at-risk populations that are located within the 100- and 500-year flood zones. Table 9 summarizes the number and type of critical facilities located within the 100- and 500-year flood zones.

**Table 9 City of Rancho Cordova Properties by Land Use in FEMA Flood Zones**

Land Use	100-Year Flood Zone	500-Year Flood Zone
Residential	19	1,118
Retail/Commercial	0	3
Office	0	2
Industrial	0	0
Care/Health	0	0
Church/Welfare	0	2
Recreational	1	0
Miscellaneous	35	11
Public/Utilities	0	2
Vacant	3	2
<b>Total</b>	<b>58</b>	<b>1,145</b>

Note: FEMA = Federal Emergency Management Agency.

Source: Sacramento County 2021.

### Future Changes in Precipitation Patterns and Flooding

As discussed in the *Fourth Climate Change Assessment Sacramento Valley Report*, changes in precipitation patterns in northern California are anticipated to affect the Sacramento Valley region as well as adjacent regional watersheds which affect the Sacramento Valley (OPR et al. 2018). Projected shifts include increases in the intensity of large storms events, which could compromise the performance of the Sacramento Valley and Central Valley flood management systems (Pierce et al. 2018). Based on California’s location next to the Pacific Ocean, the state is exposed to the atmospheric river phenomenon, a narrow corridor of concentrated moisture in the atmosphere. California is subject to precipitation from an atmospheric river that transports water vapor from as far south as Hawaii to the state. The presence of the atmospheric river contributes to the frequency of “wet years” in the state, when there is an above-average number of atmospheric river storms and above-average annual precipitation. While research indicates that the frequency of large storms events does increase in these wet years, the most severe flooding from atmospheric rivers may not be in wet years (Swain et al. 2018). The largest flooding impacts are caused by persistent storm sequences on sub-seasonal timescales (i.e., short time periods, typically 2 weeks to 3 months), which bring a significant fraction of annual average precipitation over a brief period. These are storms events similar to the Great Flood events of 1861–1862 which caused widespread damage throughout northern California (Swain et al. 2016). Based on current climate modeling, the frequency of these large storm sequences over short timeframes is projected to increase noticeably under the High Emissions scenario. It is estimated that a storm similar in magnitude to the Great Flood events is more likely than not to occur at least once between 2018 and 2060 (Swain et al. 2018). A storm of this size would likely compromise large portions of the flood control systems in the Sacramento and the Central Valleys (Swain et al. 2018).

Regional changes in precipitation over the century will subsequently result in local changes in both annual precipitation and changes in the characteristics of storm events in the City and the County more broadly. Table 10 includes the projected precipitation changes in the County through 2099. The precipitation changes included in Table 10 are illustrated in Figure 7.



**Table 10 Sacramento County Precipitation Change (Historic to 2099)**

Geographic Area	Historic (1961–1990)	Change in Annual Mean Precipitation (Inches)			
		Near Term (2021–2050)	Midterm (2040–2070)	Late-Century	
				Medium Emissions (2070–2099)	High Emissions ( 2070–2099)
Sacramento County	18.3	20.1	20.2	20.3	22.1
Percent Change from Historic Period	NA	10%	10%	11%	21%

Note: NA = not available.

Source: CEC 2021a.

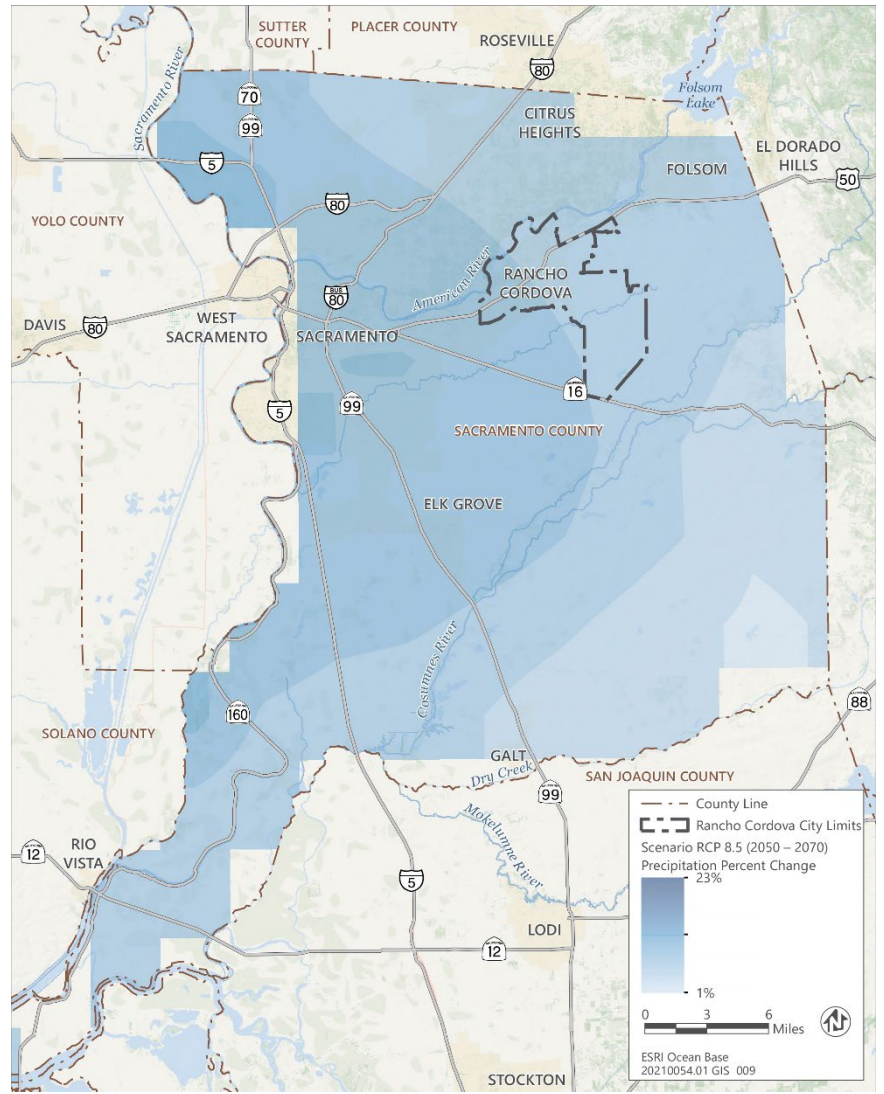
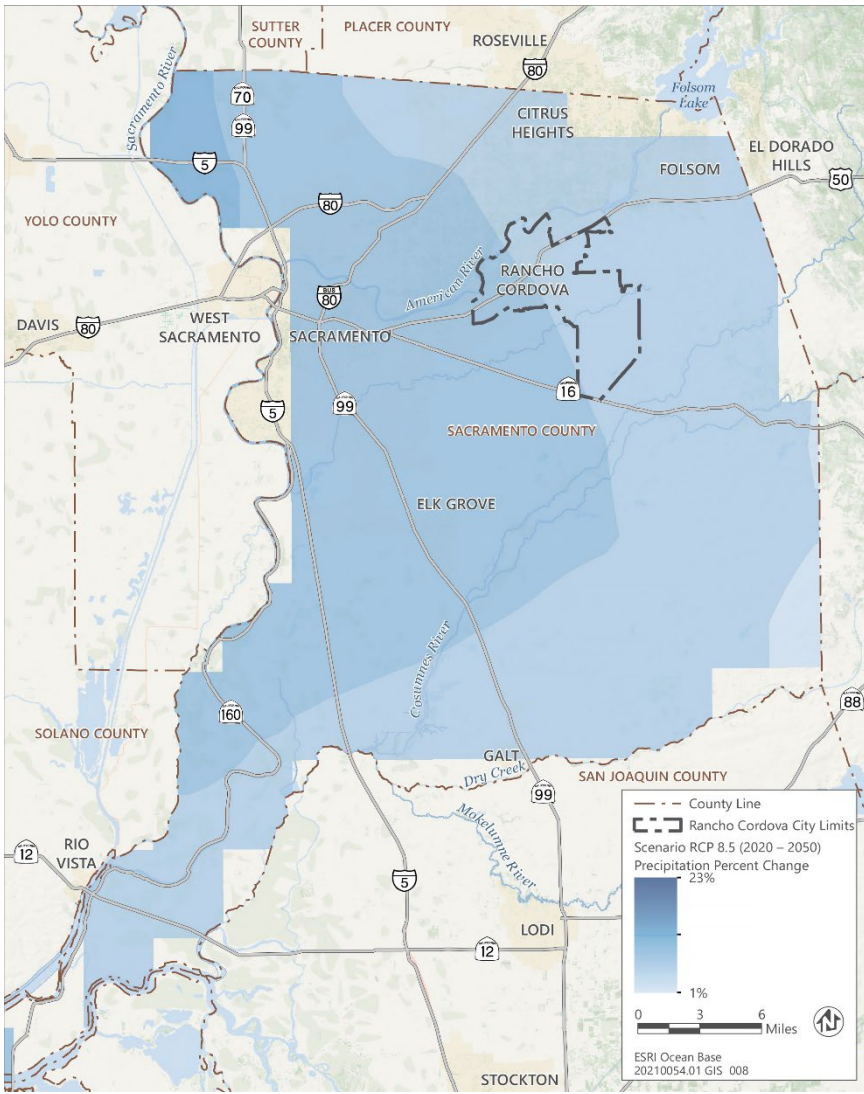
As shown in Table 10, annual precipitation in the County is estimated to increase between 11 and 21 percent by 2099 under the medium and high emissions scenarios, respectively. As noted in the *Fourth Climate Change Assessment Sacramento Valley Report*, although annual precipitation is anticipated to increase in the region, California’s climate oscillates between extremely dry and extremely wet periods with annual precipitation varying widely from year to year. Climate change is anticipated to exacerbate these seasonal extremes with dry periods becoming dryer and wet periods becoming wetter (OPR et al. 2018). As a result, the frequency and severity of large storm events are anticipated to increase as well. These oscillations between extremely dry and extremely wet periods, which have occurred historically in the state, are anticipated to become more severe with rapid shifts from dry to wet periods known as “whiplash events” (Swain et al. 2016). As Swain et al. note in their research, the recent 2012–2016 drought followed by the 2016–2017 flood events throughout the state serve as a good example of the type of whiplash events that will occur more frequently over the next century. These types of events are estimated to increase by approximately 25 percent in northern California, with increases in frequency occurring largely after 2050 (Swain et al. 2016).

Although annual precipitation is anticipated to increase in the City over the coming decades, the majority of the increase in precipitation is likely to occur during extreme precipitation events (Swain et al. 2018). As a result, it is important to understand how these shifts in extreme precipitation events will affect the City and regional watersheds which affect the stormwater management system and larger waterways within the City, though they begin outside the City boundaries. The Cal-Adapt Extreme Precipitation Event tool provides information on how the characteristics of extreme precipitation events will change over the century, including the ability to analyze changes at the watershed level.



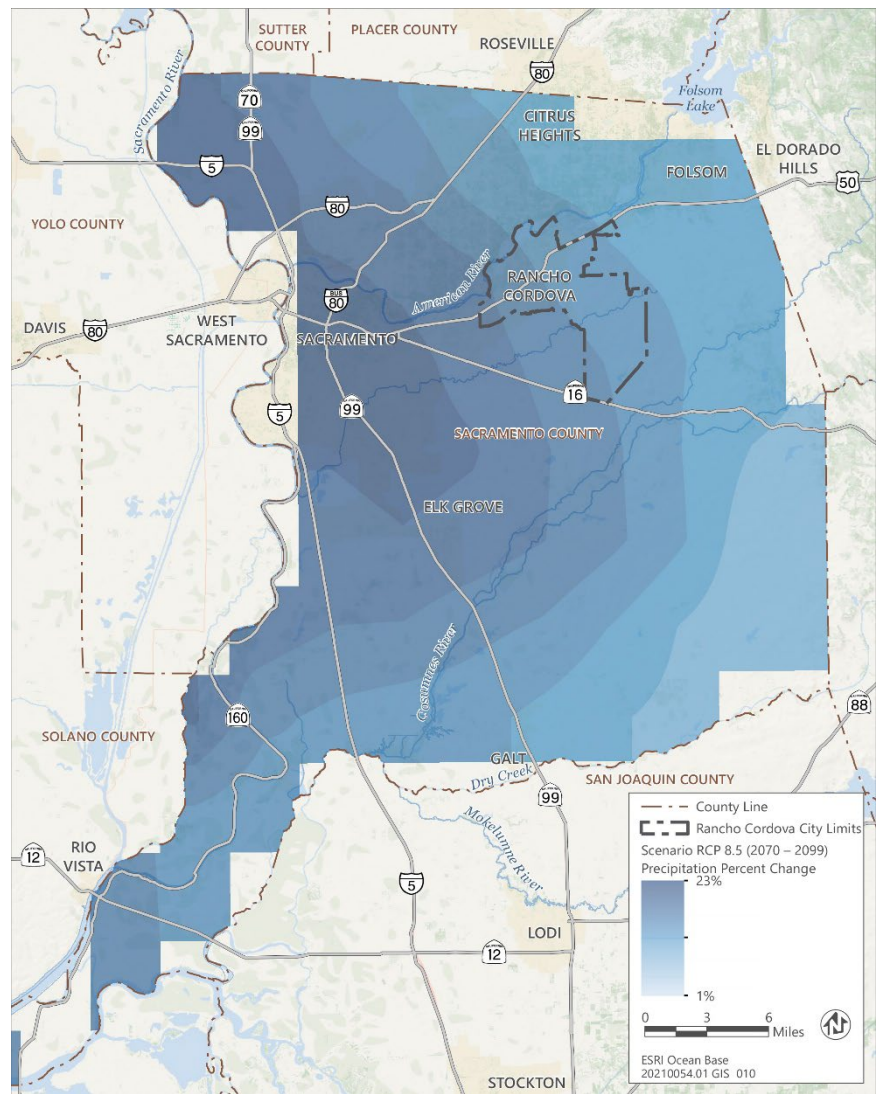
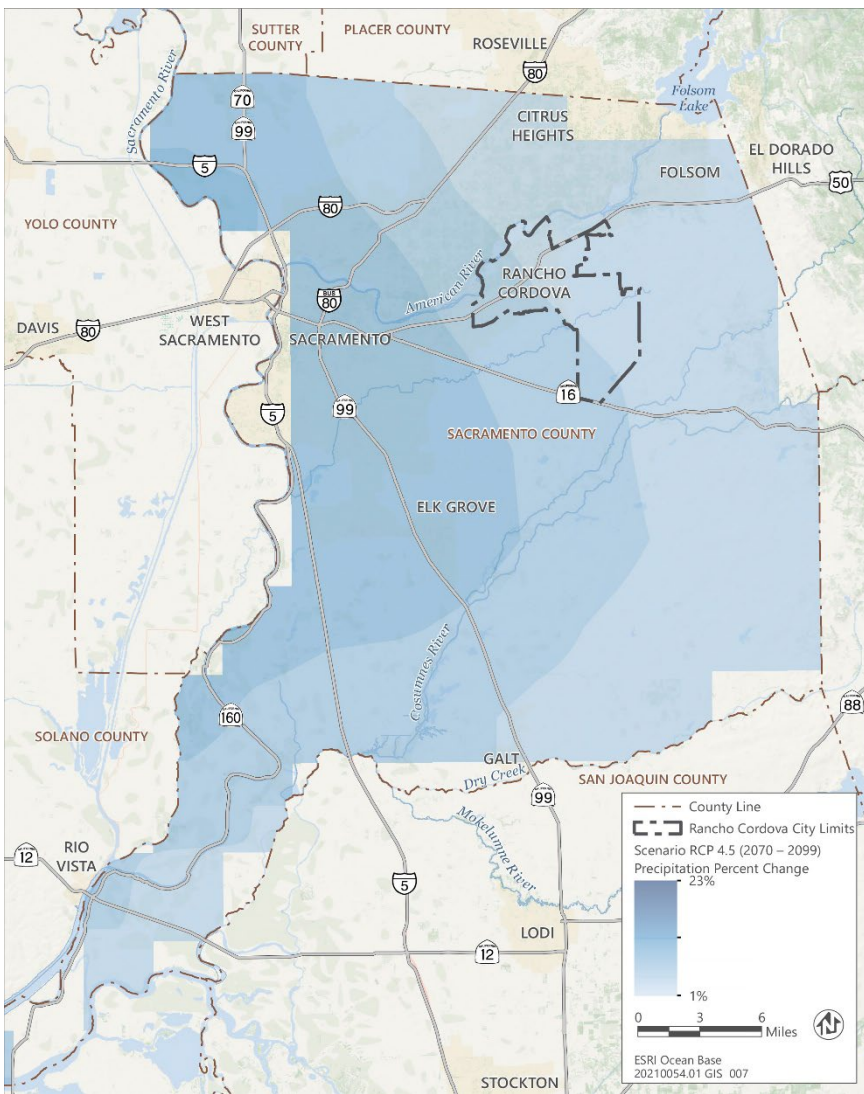
Near-Term (2021 – 2050)

Midterm (2040 – 2070)



Medium Emissions - Long Term (2070 – 2099)

High Emissions - Long Term (2070 – 2099)



Source: Data downloaded from CEC and DWR in 2021.

Figure 7 Sacramento County Annual Average Precipitation through 2099

The characteristics of extreme precipitation events are what are most commonly used to model and design urban stormwater management systems to ensure the system can withstand the rainfall and stormwater runoff that occurs during these events. For the purpose of this analysis, the specific storm events chosen are consistent with three size storm events used to design the City’s stormwater management system and are included in the *Sacramento County Drainage Manual*. These include the 2-, 10-, and 100-year storm events for rainfall over a 24-hour period. Table 11 summarize the changes in amount of rainfall projected to occur in American River watershed, the main watershed affecting the City for the 2-, 10-, and 100-year storm events through 2099 under the high emissions scenario.

**Table 11 Changes in Rainfall During Extreme Precipitation Events**

Watershed	Storm Event Size	Historic (1961–1990)	Change in 24-Hour Rainfall Period (Inches) for 100-Year Storm Event			
			Midterm (2035–2064)	Percent Change (Historic to 2064)	Long-term (2070–2099)	Percent Change (Historic to 2099)
American River Watershed	100	7.1	4.8	-32%	6.3	-11%
	10	3.5	2.9	-17%	3.5	0%
	2	2.1	2.0	4%	2.3	9%

Notes: This table shows estimated intensity (Return Level) of Extreme Precipitation events, which are exceeded on average once every 2, 10, and 100 years (Return Period). Extreme Precipitation events, defined here, are days during a water year (October through September) with 1-day rainfall totals above an extreme threshold set for each of the watersheds, which is based on the lowest annual maximum storm intensity in historic records.

Source: CEC 2021a.

As shown in Table 11, by midcentury, the American River watershed is projected to experience decreases in rainfall during the 100- and 10-year storm event and a slight increase in the 2-year storm event. By late century, the watershed will experience an 11 percent decrease in the intensity of the 100-year storm event, no change in the 10-year storm event, and a more nine percent increase in the 2-year storm events. Climate change is also projected to increase frequency and maximum duration of larger precipitation events. For the American River watershed, there is projected to be slight increase in number of larger precipitation events from five events historically by the late-century period. The maximum durations of these events will also increase from two days historically to 2.3 days by the late-century period.

## Future Flood Impacts

### Stormwater Drainage System

In current practice, the stormwater management systems in urban areas are modeled to manage large storm events based on characteristics of rainfall specific to the region from observed historical data. These characteristics in the intensity, duration, and frequency (IDF) of extreme precipitation events. These characteristics are described using IDF curves which are used to design various components of urban drainage systems including pipes, culverts, waterway channels, and detention ponds. Because climate change is anticipated to shift precipitation patterns during storm events, these changes could impact the performance of urban stormwater management systems (CEC 2018b). Increases or changes in the IDF curve can impact the integrity of stormwater infrastructure, particularly natural and engineered slopes such as levees (CEC 2018b). Based on current design standards, the City’s drainage system has been designed based on the 2-, 10-, and 100-year storm events. Consistent with these standards, the primary sensitivity threshold for this precipitation and flooding impacts is the exceedance of the historic intensities of the 2-, 10-, and 100-year storm event for the 24-hour period. This threshold is developed from the understanding that the City’s current stormwater management and flood protection system is designed based on historic observations for the size of flood events. If these historic storm intensities are exceeded, this would likely begin to disrupt, deteriorate, damage, or generally affect the performance of the City’s stormwater management and flood protection systems (CEC 2018b). The analysis also considers the magnitude of the increase above the historic storm levels in the severity of the impacts that may occur.

Based on projections included in the Table 11 above, the City is not projected to experience larger increase in the size of these storm events and, therefore, not likely experience widespread flooding impacts from frequent but smaller storm events in the future. The small increases in the frequency and maximum duration of storm events are also not likely to have an impact on the City's stormwater management system.

### Large Storm Events and Flood Protection

For this analysis the FEMA floodplain for the 100-year storm event is used as the sensitivity threshold for large storm events. Specifically, for future scenarios in which the intensity of the 100-year storm events is exceeded, parcels and roadways within these floodplains are seen to be at increased risk from large storm events. Based on information in Table 11, the City is not projected to experience increases in the intensity of the 100-year storm event and, therefore would likely not experience widespread flooding impacts from less frequent but larger storm events based on the Cal-Adapt data. However, as discussed above, California does experiment Atmospheric River events The presence of that contribute to the frequency of "wet years" in the state. While research indicates that the frequency of large storms events does increase in these wet years, the largest flooding impacts are caused by persistent storm sequences on sub-seasonal timescales (i.e., short time periods, typically 2 weeks to 3 months), which bring a significant fraction of annual average precipitation over a brief period (Swain et al. 2018). As noted in the *Fourth Climate Change Assessment Sacramento Valley Report*, climate change is projected to increase the intensity of "wet years" when they do occur and would likely have significant impacts on the County as well as the City.

### Levee System Impacts

Increases in precipitation and particularly in the intensity and frequency of extreme precipitations due to climate change will have impacts on the integrity of levee systems (Jasim et al. 2017). Shifts in the IDF curve, particularly during multi-day events, can increase the risk of levee failure. A study which modeled the impacts of projected changes in IDF curves on the Elkhorn Levee in the County found that the probability of levee failure could increase between 3 and 12 percent during projected extreme precipitation events under the high emissions scenario when compared to the baseline scenario. Levee systems, particularly systems not maintained through the Federally protected levee system, are subject to other factors which can comprise their structural integrity including land subsidence and climatic conditions, which will be exacerbated by climate change (Jasim et al. 2017). The combination of land subsidence and specific climatic conditions including drought and severe flooding can further threaten the structural integrity of these aging levees (Robinson and Vahedifard 2016). There are currently two levees in the City which protect residential neighborhoods: Cordova Meadows Levee and Sunriver Levee. Based on the research referenced above, these levee systems will be at increased risk of failure due to increasingly intense storm events as well as increases in the frequency of these events.

#### Potential Impact Score

Based on this analysis, the potential impact score for Precipitation and Flooding is **High**.

## 2.4 DROUGHT AND WATER SUPPLY ANALYSIS

### Existing and Future Drought Conditions

Long-term drought can have environmental, agricultural, health, economic, and social consequences. The County, along with larger areas of California, experiences periods of long-term drought that stress the ecosystem and water supplies; and subsequently, impact agriculture, public health, and the economy. The City relies on regional water supplies with the three primary water purveyors providing services within the City's planning area: Sacramento County Water Agency; Golden State Water Company; and California-American Water Company. The City's water supply is currently provided by a combination of ground and surface water resources. As discussed in the Natural Resources Chapter of the City's General Plan, future water supplies will be provided from a variety of sources, including: water from the Central Valley Project; appropriate water supplies; water transfer supplies; groundwater;



recycled water; surface water from the American River; SMUD transfer water; and Aerojet replacement water due to contamination of the portion of the City's groundwater resources (City of Rancho Cordova 2006).

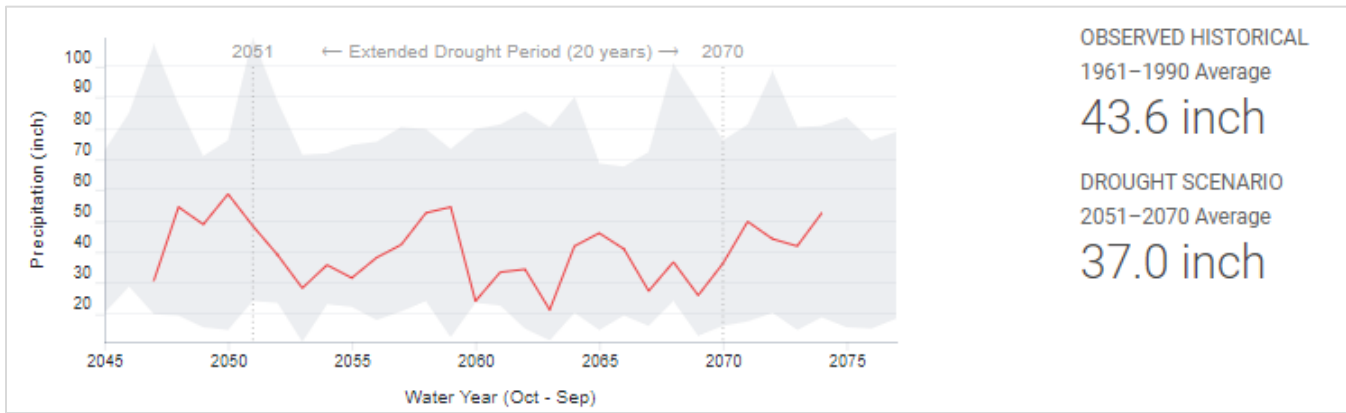
As noted in Appendix C – Water Supply Evaluation of the City's General Plan (City of Rancho Cordova 2006), it is likely that adequate water supplies would be available to meet the City's water demands associated with buildout of its current corporate limits. However, based on total known future supplies there would be a supply shortfall of approximately 51,089 acre feet per year to meet the City's total planning area demands. This shortfall would occur if development exceeded the total amount associated with buildout of the City's corporate boundaries. If water supplies are not available to meet buildout water demands, the City would either need to stop approving new growth within its jurisdiction, or collaborate with regional water purveyors to investigate potential future water supply options within the context of the regional water supply planning environment (City of Rancho Cordova 2006). Additionally, the Water Supply Evaluation conducted as part of the City's General Plan does not consider future changes in water supply due to climate change. This analysis does not include a comprehensive assessment of the City's water demand and available supply but rather focuses on how future changes in precipitation, temperature, and drought conditions in the County are likely to affect the City overall.

### **Future Changes in Precipitation Patterns and Flooding**

The City and larger Sacramento region are expected to experience slight overall increases in average annual precipitation in the long-term. However, projections show the Sacramento region will experience increased variability and volatility in precipitation events, such as droughts. California has a highly variable climate that is susceptible to prolonged periods of drought, and recent research suggests that extended drought occurrence (a "mega-drought") could become more pervasive in future decades (CEC 2021c). As discussed above in Section 2.3, precipitation patterns in California oscillate between extremely dry and wet periods. Climate change is anticipated to exacerbate these seasonal extremes with dry periods becoming dryer and wet periods becoming wetter (OPR et al. 2018). With the increased severity of oscillation between wet and dry periods and precipitation occurring over more intense but shorter periods in the year, this will reduce opportunities for groundwater recharge which ideally occurs during prolonged wet periods allowing for soil infiltration, deeper percolation, and the resulting groundwater recharge. While a unique long-term drought scenario would likely affect the City's overall water supply management practices, there is the potential for there still to be above average wet years within a long-term drought, as shown in Figure 8. These above average wet years have the potential to replenish water supplies in the City's reservoirs and help mitigate the impacts of long-term drought.

A substantial portion of the water resources supplied to the Sacramento region originates as rainfall and runoff from snowpack in the northern Sierra Nevada mountains and the surrounding foothills. Cal-Adapt uses data to model an extended drought scenario for all of California from 2051 to 2070. For this analysis, the extended drought scenario for El Dorado County rather than just the boundaries of the City, with tributaries in El Dorado County (i.e., the north fork and south fork of the American River) providing key water resources (e.g., Folsom Lake) to the Sacramento region. Due to increases in climate variability and rising temperatures, the state has already seen signs of decreased snowmelt in Northern California. Annual snowpack in the Sierra Nevada is expected to decline by as much as 33 percent by mid-century and 66 percent by the end of the century, relative to historic baseline snowpack (OPR et al. 2018). Further, rising temperatures have caused snowpack to melt faster and earlier in the year. These changes in snowmelt timing and streamflow availability will challenge local and regional water supply availability (OPR et al. 2018). Inadequate rainfall and reduced snowpack will result in decreased runoff to the reservoirs that supply water to the City, which will lead to less available water and more frequent water shortages.

As shown in Figure 8, El Dorado County's observed historical (1961-1990) average annual precipitation accumulation (i.e., rainfall and snowpack runoff) is 43.6 inches. Under the anticipated drought scenario between 2051 and 2070, the County's average annual rainfall accumulation would decrease to 37 inches (CEC 2021c), resulting in an approximately 15 percent decrease in annual average rainfall over a 20-year period.



**Figure 8 El Dorado County Long-Term Drought Scenario (2051-2070)**  
Source: CEC 2021c.

## Drought Impacts

In the event of a severe and sustained drought lasting multiple years, water supplies provided to the City could be severely affected and result in the need for increased water conservation efforts to be implemented by jurisdictions in the Sacramento region. City residents may be encouraged to reduce household water demand, which may limit certain activities such as landscape irrigation. Each water purveyor that provides water resources to the City has an Urban Water Management Plan (UWMP), which includes a Drought Contingency Plan with specific actions to reduce overall water use by customers. The California Public Utilities Commission sets the rates and service terms for water utilities every three years after an exhaustive review, as required by state law. As a result, a long-term drought scenario would likely not result in rapid or unforeseen increases water costs for residents and businesses.

Droughts create cascading effects on community functions that may worsen in the future. The associated risks include adverse impacts on timber harvesting, reduction in native habitat and overall ecological function, increased forest fuels for wildfire, and economic consequences associated with decreases in tourism and recreation. More intense future droughts affecting the region could result in decreasing recreation opportunities on and surrounding Folsom Lake. Decreased recreation could have a direct impact on City business revenue from pass through visitors. Increased episodes of drought and increased water demand could result in water shortages for the region, endangering residents and ecological systems (e.g., flood control or sensitive habitat, recreational areas). Drought, as slow-moving disaster, can affect mental health if occurring over many years (Vins et al. 2015). While increasingly frequent and prolonged droughts directly affect residents, the built environment will not experience substantial direct impacts associated with this climate-related hazard.

A lack of soil moisture during long-term droughts can increase dust particle concentration, which can include harmful fungal spores and viruses, including Valley Fever (coccidioidomycosis) (OPR et al. 2018). The California Department of Public Health has highlighted the Sacramento Valley as a high-risk area for valley fever (OPR et al. 2018). Valley fever is found in disturbed, dry soil particles that must be inhaled. Symptoms of Valley Fever include chest pain, exhaustion, fever, coughing, joint and muscle pain, and difficulty breathing. Certain populations including pregnant women, the elderly, African, and Filipino Americans are particularly vulnerable to the severe cases of the disease (Brown et al. 2013).

### Potential Impact Score

Based on this analysis, the potential impact score for Drought and Water Supply is **Medium**.

## 2.5 WILDFIRE ANALYSIS

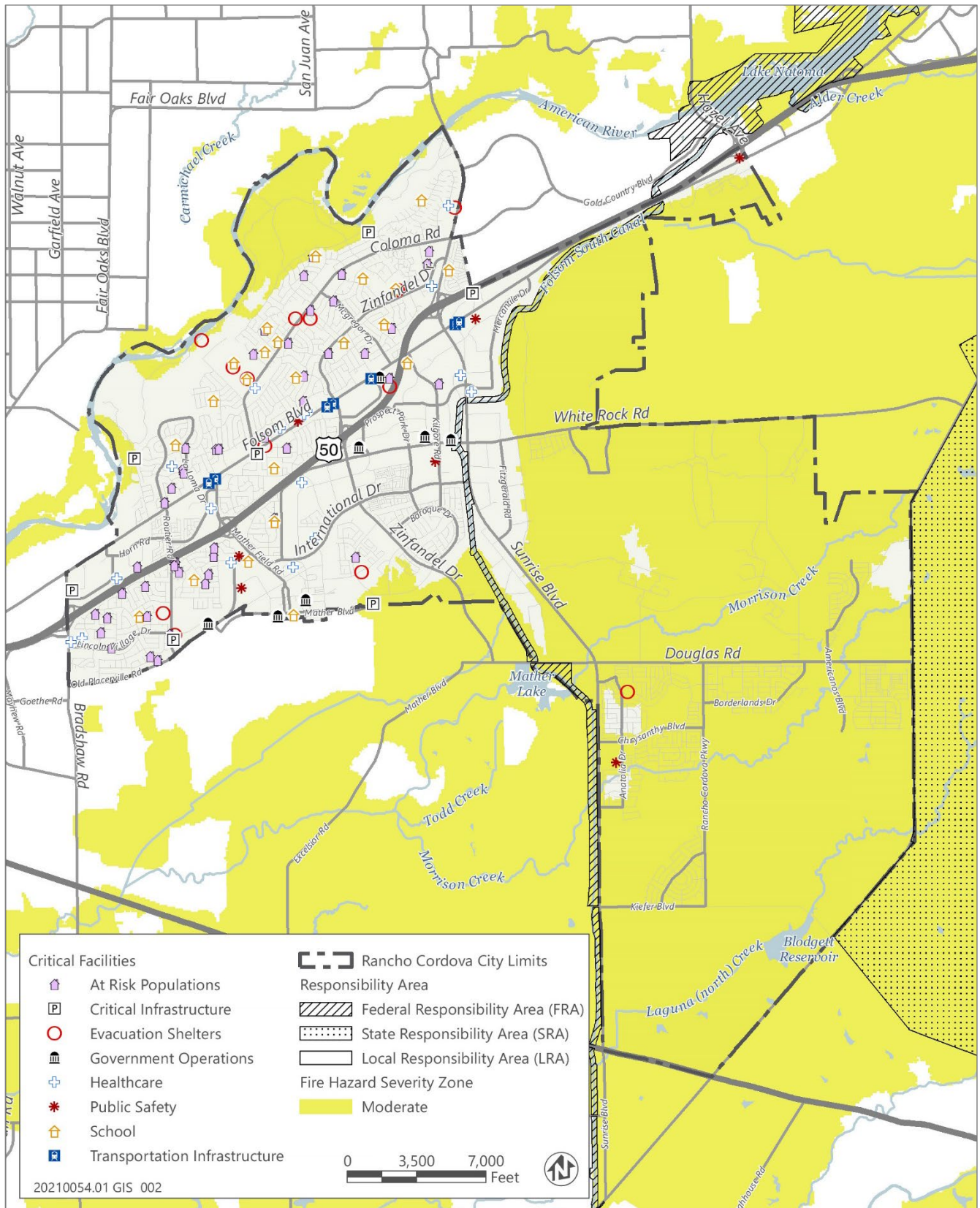
### Existing and Future Wildfire Conditions

Wildfire behavior is dependent on several factors that, when identified and assessed, can help determine future wildfire characteristics. The three factors listed below contribute significantly to wildfire behavior and can be used to identify wildfire hazard areas:

- ▶ **Topography:** An area's terrain and land slopes affect its susceptibility to wildfire spread. Both fire intensity and rate of spread increase as slope increases because heat from a fire tends to rise through convection. The arrangement of vegetation throughout a hillside can also contribute to increased fire activity on slopes.
- ▶ **Fuel:** Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is generally classified by type and by volume. Fuel sources are diverse and can include dead tree leaves, twigs, and branches of dead, standing trees; live trees; brush; and cured grasses. Buildings and other structures, such as homes and other associated combustibles, are also considered a fuel source.
- ▶ **Weather:** Components such as temperature, relative humidity, wind, and occurrence of lightning affect the potential for wildfire. High temperatures and low relative humidity dry out fuels that feed wildfires, creating a situation where fuel will ignite more readily and burn more intensely. Thus, during periods of drought, the threat of wildfire increases. Wind is one of the most significant weather factors in the spread of wildfires. The greater a wind, the faster a fire will spread and the more intense it will be.

The California Department of Forestry and Fire Protection (CAL FIRE) maps areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. These zones, referred to as Fire Hazard Severity Zones (FHSZ), are represented as Very High, High, or Moderate. The classification of a zone as a Moderate, High, or Very High FHSZ is based on a combination of how a fire would behave and the probability that flames and embers would threaten buildings. Wildfire risk is also determined by several factors, such as wind speeds, drought conditions, available wildfire fuel (i.e., dry vegetation), past wildfire suppression activity, and expanding wildland-urban interface (WUI) (i.e., places in and around forests, grasslands, shrub lands, and other natural areas) (Westerling 2018). Impacts from grass and brushfires in the City could result in evacuations of portions of the City as well as loss of property and impacts to critical facilities.

Based on data included in the City's LHMP Annex shown in Figure 9, large portions of the eastern and southern portions of the City are located in areas designated as Moderate FHSZ. Given the City's location and urban setting, there is relatively low risk of impacts from wildfires relative to areas northeast of the City in El Dorado and Amador County; however, the City is at increased threat of grass and brushfires. Although the majority of the City's developed areas are at lower fire risk, the City does include a few key areas with increased fire risk in undeveloped recreation areas along the American River. As a recreation area, there are limited roadways within these areas, making fire equipment access difficult. While threatened by fire risk along the American River, residents are also at risk from health impacts from poor air quality associated with wildfire smoke. Poor air quality can be generated in the City from wildfires occurring throughout northern California as has been experienced in recent years.



Source: Sacramento County 2021 and data provided by City staff.

Figure 9 Fire Hazard Severity Zones and Critical Facilities in the City of Rancho Cordova

## Future Wildfire Risk

### Increased Wildfire Risk in the Sacramento Valley

Climate change effects, including increased temperatures and changes to precipitation patterns, will exacerbate many of the factors that contribute to wildfire risk. Increased variability in precipitation may lead to wetter winters and increased vegetative growth in the spring, and longer and hotter summer periods will lead to the drying of vegetative growth and ultimately result in a greater amount of fuel for fires. This has already been seen across the state in recent years, with the area burned by wildfires increasing in parallel with rising air temperatures (OEHHA 2018). These factors, combined with intense wind conditions, cause fires to spread rapidly and irregularly, making it difficult to predict fires' paths and effectively deploy fire suppression forces.

Relative humidity is also an important fire-related weather factor; as humidity levels drop, the dry air causes vegetation moisture levels to decrease, which consequently increases the likelihood that plant material will ignite and burn. With an increase in hotter and drier landscapes, humidity levels may continue to drop and result in higher fuel levels, increasing the risk of wildfire (Schwartz et al., 2015).

Cal-Adapt provides projections for future annual mean hectares burned within the Sacramento Valley region, as defined in the California Fourth Assessment Report, when wildfires do occur. Because the City is not directly threatened by large-scale wildfires but is likely to be impacted by regional effects such as wildfire smoke, this analysis focuses on the Sacramento Valley region. As shown in Table 12, the total area burned annually by wildfire within the Sacramento Valley region is expected increase from the historic (1961-1990) annual average of 20,956 hectares to 23,942 hectares in the near-term and increase further in the midterm to 28,759 hectares. In the long-term, average annual area burned in the region is projected to increase to 31,670 hectares and to 41,784 hectares under the low and high emissions scenarios, respectively (CEC 2021e).

**Table 12 Changes in Annual Average Area Burned in the Sacramento Valley Region**

Average Annual Area Burned	Historic Modeled (1961-1990)	Near-Term (2021-2050)	Midterm (2035-2064)	Long-Term (2070-2099)	
				Low Emissions	High Emissions
<b>Average Annual Area Burned (hectares)</b>	20,956	23,942	28,759	31,670	41,784

Notes: Observed historical average annual area burned data was not available from Cal-Adapt; the modeled historical average annual area burned data under the low emissions scenario was available and used as proxy data.

Source: CEC 2021e.

## Wildfire Impact Analysis

Increased temperatures and changes in precipitation patterns associated with climate change will lead to reduced moisture content in vegetation and soils during dry years. These conditions are expected to increase the amount of area burned by wildfires that will occur predominantly outside of the City boundaries but may have secondary impacts on the City from wildfire smoke, disruptions to transportation behavior, or the increased prevalence of Public Safety Power Shutoffs (PSPS).

Regional wildfires threaten energy generation and transmission infrastructure and have the capacity to damage facilities, create maintenance costs, and reduce transmission line efficiency (CAL FIRE 2020). Grid-supplied as well as locally generated electricity, which is the primary source of power for residences in the City, is provided by the Sacramento Municipal Utilities District (SMUD). Regional communications infrastructure can also be affected by wildfires, which is often located in remote locations, such as mountaintops, resulting in significant threat from wildfire. Regional wildfires may also generate impacts on transportation behavior in the City during emergency evacuation events. This could include potential route diversion and increases in traffic congestion due to road closures from wildfire impacts or post-wildfire runoff or landslide affected roadways. While fire causes relatively insignificant direct impact on roads and highways, cracking and degradation of pavement is not uncommon.



Although the City is not at a high risk from the direct impacts of wildfires, the City's location within the Sacramento Valley makes it susceptible to impacts of smoke from wildfires in the Sierra Nevada mountains and the coastal mountain ranges of northern California. Community public health factors that can increase the impacts of wildfire smoke include the prevalence of asthma in children and adults; chronic obstructive pulmonary disease; hypertension; diabetes; obesity; and percent of population 65 years of age and older. Additionally, socioeconomic characteristics such as poverty rates, educational achievement, and unemployment rates have all been linked to the increased prevalence of underlying health conditions including depression, obesity, hypertension, and diabetes, making populations in the City with these characteristics more vulnerable to wildfire smoke impacts (Kivimäki et al. 2020). Exposure to wildfire smoke, particularly exposure by vulnerable populations, can result in worsening of respiratory symptoms, increased rates of cardiorespiratory emergency visits, hospitalizations, and even death (Rappold et al. 2017). Increased annual average temperatures and the subsequent increase in the frequency and severity of wildfires in northern California are anticipated to result in impacts from wildfire smoke on the City's population and vulnerable populations in particular (OPR et al. 2018).

Specific populations including linguistically isolated households, senior citizens, and individuals with disabilities or those experiencing homelessness are particularly vulnerable during evacuation events, if wildfire evacuations were to occur in the City. Impacts affecting these populations include inability to access or receive and/or understand warning messages and evacuation notices, limited ability to evacuate due to lack of mobility, limited situational understanding from cognitive conditions, and reliance on medication or treatment devices. Wildfires in the larger Sacramento region can also result in secondary impacts affecting populations. A major consequence of wildfires is post-fire flooding and debris flow. The risk of floods and debris flows after fires increases due to vegetation loss and soil exposure. These flows are a risk to life because they can occur with little warning and can exert great force on objects in their path.

### **Public Safety Power Shutoffs**

Due to a number of recent large-scale wildfires in Northern California caused by electricity infrastructure exposed to extreme heat and high-winds, utilities have begun to implement PSPS to avoid wildfire risk. PSPS events can result in communities experiencing no electricity for multiple days and prevent individuals from using prescribed medications and treatments that rely on electricity or refrigeration. PSPS events can also result in impacts to commerce and economic losses, particularly for businesses that rely on refrigeration such as grocery stores. Hazards such as landslides, wildfires, and flooding can also affect underground natural gas pipelines, exposing and/or damaging these pipelines. The damage resulting from climate change-related hazards on electricity and natural gas infrastructure can have a greater impact on disadvantaged populations, particularly communities that are low-income or individuals who have limited mobility or lack the financial means to make repairs to their property.

Major wildfires often result in the damage to transportation infrastructure and/or closure of roadways. Combined with reduced visibility from wildfire smoke, this leads to a disruption in normal transportation networks and accessibility. Congestion that starts during a mass evacuation can lead to additional traffic management problems, which can result in delays to emergency response, evacuation, and logistical support.

### **Potential Impact Score**

Based on this analysis, the potential impact score for Wildfire is **Medium**.

## **2.6 ADAPTIVE CAPACITY**

This section analyzes the City's current capacity to address and adapt projected increase in severity and frequency of climate-related hazards. The City and regional agencies have established plans, policies, and programs that address climate change impacts. These efforts, however, do not comprehensively identify strategies that will be taken by local and regional governments to address the full scope and magnitude of potential climate impacts. Climate change will increase the frequency and severity of climate-related hazards in the future, requiring updates to emergency response, land use planning, and strategic partnerships. A summary of the regional and local planning efforts to adapt to climate change and climate-related hazards are presented below.

## Existing State and Regional Planning Efforts

### California Department of Transportation

The Climate Change Branch in the California Department of Transportation (Caltrans) Division of Transportation Planning is responsible for overseeing the development, coordination, and implementation of climate change policies in all aspects of the Department's decision making. In 2013, Caltrans completed its first report intended to help reduce GHG emissions and adapt the State's transportation system to prepare for the impacts of climate change (Caltrans 2013), which includes a series of strategies to reduce the risk from various climate change impacts, including increasingly intense precipitation events.

Strategies outlined in the report include using vegetation to prevent erosion along roadways, assessing and resizing culverts to accommodate increased precipitation, coordinating with local jurisdictions regarding route closures as well as pursuing individual projects included in the Caltrans District Vulnerability Assessments. In 2019, Caltrans completed the District 3 Vulnerability Assessment which provides an overview of potential climate impacts to the district's portion of the State Highway System. The District 3 Vulnerability Assessment is part of a larger adaptation process undertaken by Caltrans to assess risk to Caltrans assets in the district and prioritize adaptation strategies from various climate impacts. The District 3 Vulnerability Assessment includes projected climate change exposure from precipitation change, flooding, temperature change, wildfire, storm surge, and sea level rise.

### Sacramento Area Council of Governments

The Sacramento Area Council of Governments (SACOG) is the Metropolitan Planning Organization for the six-county Sacramento region including the 22 cities within El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba Counties. SACOG develops the region's long-range transportation plan which guides transportation and land use planning in the region. In 2015, SACOG adopted the Sacramento Region Transportation Climate Adaptation Plan to address how potential climate change impacts affect the region's transportation infrastructure. The plan highlights key impacts from climate change that could occur on the Sacramento region's transportation system in the future as well as a guiding action plan for future adaptation planning and implementation.

### Sacramento County

The County completed a vulnerability assessment in 2015 that assessed the projected changes associated with climate change in the County (including the City of Rancho Cordova), including impacts from changes in precipitation patterns and increased flooding. The assessment highlighted the unique vulnerabilities of the County to climate change including projected increases in the frequency, intensity, and duration of extreme storm events as well as projected regional temperature increases leading to earlier and more rapid melting of the Sierra Nevada snowpack and subsequent increases in flow rate of surface waters in the County (Sacramento County 2021).

The County is currently working to conduct a study looking at current and future precipitation trends in the County under the influence of climate change. This work will inform an update to the County's Drainage Manual better prepare for future changes in precipitation. The County Drainage Manual is used by incorporated cities in the County to design and build drainage and stormwater infrastructure and inform development standards.

### Sacramento Public Department of Health Services

As a division of the Sacramento County Department of Health Services, Sacramento County Public Health works to promote, protect, and ensure conditions for optimal health and public safety for residents and communities in the County. As part of its work in helping prevent health impacts from extreme heat, Sacramento County Public Health conducts community education related to public health and emergency preparedness. It also has developed plans with the Sacramento Office of Emergency Services on wildfire smoke and response plans. Sacramento County Public Health has also begun to research the impacts of climate change using available tools specific to extreme heat and public health.

## **Sacramento Office of Emergency Services**

The Sacramento County Office of Emergency Services (Sacramento OES) provides support and resources for emergency preparedness through its Sacramento Ready Program and operates the county's Emergency Alerts Notification System. Sacramento, Yolo, and Placer County residents can use the Citizen Opt-In portal to receive critical and time-sensitive alerts regarding flooding, levee failures, severe weather, disaster events, unexpected road closures, missing persons, and evacuations of buildings or neighborhoods in specific geographic locations. Sacramento OES coordinates with police and fire departments in the incorporated cities in the county for emergency planning and responses purposes. In regard to heat-related events, Sacramento OES focuses on the immediate effects of events; near-term risks from these events, particularly fires, droughts, and air pollution. Sacramento OES also maintains the County's Emergency Operation Plan, which includes protocols for emergency operations during extreme heat events. Sacramento OES also develops and updates planning documents, including the County's *Evacuation Plan*, *Emergency Operations Plan*, *Mass Care and Shelter Plan*, and the County's LHMP and Annexes including the City. The City's Annex in the LHMP includes climate change as a hazard and discusses how climate change will impact other hazards in the City, rating the likelihood of occurrence high and vulnerability to climate change as high.

## **Sacramento Metropolitan Fire District**

The Sacramento Metropolitan Fire District (SMFD) provides fire protection services, fire suppression, inspection, plan checking, emergency transportation and medical services, public education, advanced life support, and rescue services to the City as well as the unincorporated portions of the Planning Area and southern the County. SMFD encompasses approximately 417 square miles in the southern portion of the County and includes both urban and rural areas. SMFD is the largest district in the County and the seventh largest local fire agency in the State of California. SMFD has 42 fire stations with approximately 673 paid personnel on its staff. The District includes 39 engine companies, 5 truck companies, 12 medic transportation units, 8 historical fire apparatus, 5 crash/rescue units, and various watercraft response units. In the City's General Plan Planning Area, SMFD currently has seven fire stations.

## **Sacramento Metropolitan Air Quality Management District**

The Sacramento Metropolitan Air Quality Management District (SMAQMD) is the agency responsible for monitoring air pollution in the Sacramento Valley Air Basin and for developing and administering programs to reduce air pollution levels below the health-based standards established by the State and Federal governments. SMAQMD is working to develop a UHI model to help identify sensitivities in the district to extreme heat and climate change, as well as develop and model the effects of mitigation strategies (e.g., green roofs, cool pavements). SMAQMD is also working to develop an update to the California Emissions Estimator Model and hopes to include an element to the tool that provides quantification of the benefits of climate adaptation strategies. The agency also works to provide funding from Assembly Bill 617 for the Clean Cars for All program, which provides increased access to electric vehicles for low-income residents. As part of the Plan development process, representatives from SMAQMD participated in the Heat Working Group and provided input on the development of this white paper.

## **Sacramento Municipal Utility District**

SMUD is a publicly owned utility that provides electricity to the County and small portions of Placer County. In regard to climate change, SMUD has developed a sustainable communities program focusing on disadvantaged communities, as well as its Climate Readiness Assessment and Action Plan (SMUD 2016), which is intended to help the utility to adapt to and address climate change through community engagement, enterprise programs, capital projects, and operational initiatives. SMUD also works with the Sacramento Tree Foundation to operate the Sacramento Shade Program, which provides landscape assessments and free shade trees to SMUD customers. SMUD also operates Living Future Project Accelerator, which emphasizes sustainable commercial and residential building practices, and is beginning to work toward a land-based carbon storage program.

## Sacramento Tree Foundation

The Sacramento Tree Foundation is a nonprofit organization that empowers people to plant, protect, and learn about trees in the Sacramento region. The organization has several programs that support its mission and provide services to cities and residents in the Sacramento region:

- ▶ **Sacramento Shade Program** – This program, in partnership with SMUD, provides free landscape assessments and up to 10 free shade trees that provide a host of benefits to the residents and the surrounding neighborhoods. The organization’s work with SMUD emphasizes planting locations and tree varieties that reflect SMUD’s goals for carbon sequestration.
- ▶ **NeighborWoods Program** – This program provides support to communities throughout the Sacramento region by offering expertise, training, tools, and advice to plant and protect trees in their neighborhoods.
- ▶ **Urban Wood Rescue Program** - This program works to preserve useful life of the trees by providing logging and milling services for trees which have reached the end of their life. This lumber is then sold, providing a second life for the trees while capturing carbon sequestered during their lifetime.

The organization also conducts community outreach campaigns, utilizing door to door canvassing and community meetings to promote the benefits of the urban forest.

## Existing Local Planning Efforts

### City of Rancho Cordova

In 2006, the City adopted its first General Plan. The General Plan includes a Safety Element which includes goals, policies, and actions to address a set of safety issues in the City including traffic hazards, airport safety, neighborhood policing, and flooding. The following list of Goals and corresponding policies in the Safety Element help address and mitigate impacts from climate-related hazards.

**GOAL S.2:** Reduce the possibility of a flooding or drainage issue causing loss of life or damage to property.

- ▶ **Policy S.2.1:** Support and encourage efforts to limit and reduce the potential for community flooding from the Cosumnes or American Rivers.
- ▶ **Policy S.2.2:** Manage the risk of flooding by discouraging new development located in an area that is likely to flood.
- ▶ **Policy S.2.3:** Discourage the creation of new parcels when the presence of easements, floodplain, marsh, or riparian habitat, and/or other features would leave insufficient land to build and operate structures. This policy shall not apply to open space lots specifically created for dedication to the City or another appropriate party for habitat protection, flood control, drainage, or wetland maintenance.
- ▶ **Policy S.2.4:** Ensure that adequate drainage exists for both existing and new development.

**GOAL S.9:** Reduce the probability of fire damage to all the City’s structures.

- ▶ **Policy S.9.1:** Cooperate with the Sacramento Metropolitan Fire District (SMFD) to reduce fire hazards, assist in fire suppression, and ensure efficient emergency medical response.
- ▶ **Policy S.9.2:** Provide infill development with adequate off-site improvements to meet onsite fire flow requirements.
- ▶ **Policy S.9.3:** Consider establishing mitigation fees to fund adequate fire protection and emergency medical response facilities, if such fees are critical and necessary to meet the facility funding needs of SMFD and existing methods of financing are inadequate.

The City also has regulations within the Municipal Code, specifically, Chapter 23.716 “Landscaping,” that provides guidance for landscaping and tree planting requirements for new development in the City. Title 19, “Trees,” of the Municipal Code provides regulations regarding the preservation of public trees of local importance and mitigation of tree loss.

The City adopted their Emergency Operations Plan (EOP) in 2018. The EOP describes how the jurisdiction will manage and coordinate resources and personnel responding to emergency situations. It detailed information covering Emergency Operations Center procedures, documentation and reference and support information and includes response protocols for a comprehensive set of emergency situations including climate-related hazard events including flooding, wildland fire, and extreme heat. The document is continually evolving as the City grows with recommendations for improvement solicited and carefully considered for future revisions.

**City of Rancho Cordova Public Works Department**

The City’s Public Works Department supports important activities and functions within the City, which have an impact on UHI, including designing, constructing, operating, and maintaining the City’s road network and drainage systems. The Public Works Department is also responsible for the maintenance of roadways in the City as well as the the City’s Capital Improvements Program, which includes developing, upgrading and implementing the City’s *Capital Improvements Program 5-Year Plan* – a list of improvement projects for various components of City operations.

**City of Rancho Cordova Police Department**

The Rancho Cordova Police Department is contracted through the Sacramento County Sheriff’s Department to provide patrol, traffic enforcement, investigations, and administrative services to the City. Portions of the General Plan Planning Area outside the current City limits are within the Sacramento County Sheriff Department’s jurisdictional boundaries.

## Summary of Adaptive Capacity

Table 13 evaluates the specific climate change effects covered under each of the plans and reports discussed above. As shown in Table 13, multiple planning efforts have been made to address the climate change-related impacts that are expected to impact the City. Mitigation and adaptation measures for hazards including flooding, storms and extreme weather events, and wildfires and severe wind have been relatively well documented in assessments prepared previously. Other climate change hazards including impacts on human health, drought and available water supply, extreme heat and heat waves, landslides, and sea-level rise are noted in various regional planning efforts. However, these efforts do not analyze regional climate change effects consistently while developing adaptation strategies. Most of the policies provided in existing plans are broad-based strategies to reduce risk from climate change. Thus, it is important to note that specific and targeted policies should be developed to address the resilience of the most vulnerable populations and assets in the City.

**Table 13 Adaptive Capacity in Existing Plans and Reports**

Plan or Report	Climate Change Hazard			
	Extreme Heat Events	Extreme Precipitation and Flooding	Drought and Water Supply	Wildfires
Sacramento County LHMP Annex	✓	✓	✓	✓
City’s General Plan		✓	✓	✓
California’s Fourth Climate Change Assessment Sacramento Valley Regional Report	✓	✓	✓	✓
Caltrans Climate Change Vulnerability Assessment District 3	✓	✓		✓
City Water Purveyor’s Urban Water Management Plans		✓		
City’s Emergency Operations Plan		✓	✓	✓

Source: Data compiled by Ascent Environmental in 2021.



## **Adaptive Capacity Scoring by Hazard**

Based on a combination of the adaptation initiatives outlined in these documents and additional adaptive efforts that have been pursued, the City's adaptive capacity for each climate change effect can be rated Low, Medium, or High. High adaptive capacity indicates that sufficient measures are already in place to address the points of sensitivity and impacts associated with climate change, while a low rating indicates a community is unprepared and requires major changes to address hazards (CalOES 2020).

### **Increased Temperatures and Extreme Heat**

**Adaptive Capacity Rating:** Low

The City does not generate its own electricity and may not be in a position to protect vulnerable populations from the impacts that will be caused by rising temperatures and a drastic increase in the number of extreme heat events. As rising temperatures and extreme heat lead to more frequent electricity outages, the lack of backup power sources for residents and business will expose more residents to risk of health impacts associated with extreme heat. While the LHMP does include extreme heat as a hazard, relevant information is limited. Impacts associated with increases in temperatures and extreme heat events are the largest potential impact for the City. This means that although the City may be adequately prepared to address extreme heat events currently, the vulnerabilities faced by the City including impacts to youth, seniors, and homeless populations as well as impacts on energy demand and services are likely to exceed to City's current capacity.

For these reasons, the adaptive capacity ranking for increased temperatures and extreme heat is Low.

### **Increased Wildfire Risk**

**Adaptive Capacity Rating:** High

The County, State and regional agencies, and other partners are implementing a diverse array of policies and programs that address the design of structures, fire safety, community preparedness, and emergency response, decreasing the City's overall vulnerability to the threat of wildfire. However, as the threat of wildfire increases both locally and regionally, the City, in coordination with federal, state, and local agencies, will need to continue to adapt to projected impacts from wildfire. While the City is at relatively low risk from direct wildfire impacts, the affects from regional wildfires on the City through secondary impacts such as wildfire smoke and regional transportation route disruptions will continue to affect the City. Because these impacts have been increasing in intensity and severity in recent years and are somewhat novel, the City will need to make moderate changes to expand its capacity to address these types of impacts.

For these reasons, the adaptive capacity associated with wildfire is high.

### **Increased Extreme Precipitation and Flooding**

**Adaptive Capacity Rating:** Medium

The City has adequately assessed its flood risk through the LHMP and other planning documents. The City and stakeholders have developed, adopted, and enforced several policies and programs that will serve to mitigate impacts from increasingly frequent floods in the future. While the City's populations and assets are not severely threatened by floods as identified in the LHMP, the City, the County and other regional and local agencies can continue to implement policies and programs that reduce the risks associated with significant flooding events. As noted in Section 2.3, the risk of a large-scale storm event similar to the Great Flood events of 1861–1862 is more likely than not occur at least once by 2060. This means that although the City is adequately prepared to address flooding events currently, an event such as this would result in widescale impacts on the City and potentially affect Folsom Dam.

Therefore, the adaptive capacity associated with increased extreme precipitation and flooding is medium.

## Drought and Water Supply

**Adaptive Capacity Rating:** Medium

The City understands that a reliable water supply is essential. Each water purveyors that provide water resource so the City have UWMPs and Drought Contingency Plans, which will assist in building resilience to future drought conditions. The City is still somewhat vulnerable to these climate-related hazards, particularly in terms of the economic and related impacts (irrigation of recreation fields, constraints on future housing development) of generally dryer conditions, interannual precipitation variability, and reduced snowpack. These climate change effects will pose risks to tourism-related businesses that rely on pass-by visitors to Folsom Lake and the surrounding recreation areas when long-term droughts do occur.

Based on the reasons stated above, the adaptive capacity ranking for drought, water supply, and reduced snowpack is medium.

## 2.7 VULNERABILITY SCORING

The City’s vulnerability to each identified climate change impact is assessed based on the magnitude of risk posed to populations and assets, and any existing measures in place to mitigate these impacts. Potential impacts and adaptive capacity are rated on a qualitative scale from Low to High based on guidance from the APG. A description of each qualitative rating for both factors is provided in Table 14.

**Table 14 Potential Impact and Adaptive Capacity Scoring**

Score	Potential Impact	Adaptive Capacity
Low	Impact is unlikely based on projected exposure; would result in minor consequences to public health, safety, and/or other metrics of concern.	The population or asset lacks capability to manage climate impact; major changes would be required.
Medium	Impact is somewhat likely based on projected exposure; would result in some consequences to public health, safety, and/or other metrics of concern.	The population or asset has some capacity to manage climate impact; some changes would be required.
High	Impact is highly likely based on projected exposure; would result in substantial consequences to public health, safety, and/or other metrics of concern.	The population or asset has high capacity to manage climate impact; minimal to no changes are required.

Source: CalOES 2020

After rating potential impacts and adaptive capacity, an overall vulnerability score is determined for each climate change impact. This scoring can help the City understand which effects pose the greatest threats and should be prioritized in future planning efforts. Table 15 presents the rubric used to determine the overall vulnerability scores based on the ratings for potential impacts and adaptive capacity.

**Table 15 Vulnerability Scoring**

		Vulnerability Score		
Potential Impacts	High	3	4	5
	Medium	2	3	4
	Low	1	2	3
		High	Medium	Low
		Adaptive Capacity		

Source: CalOES 2020.

Vulnerability scoring for each climate change effect identified and evaluated in Sections 2.2 through 2.6 is included in Table 16 below. The table shows that increased temperatures and extreme heat is assigned a vulnerability rating of 5 and therefore should be a high priority for the City. Impacts from increased precipitation and flooding was scored as a 4 while drought and water supply risks was assigned a vulnerability score of 3. These climate change effects are likely to have significant impacts on the City’s populations, built environment, and community functions in the near-term, and although a variety of adaptive efforts related to both climate change effects are in place and underway, the magnitude of the risks posed by these hazards contributes to high vulnerability in the City. Increased wildfire risk is characterized as having a vulnerability rating of 2. This climate change effect will likely have lower priority impacts on the City and is currently being addressed adequately based on existing conditions, but additional adaptation and resilience planning will be required in the future to mitigate impacts and protect the City.

**Table 16 Vulnerability Scoring Summary**

Climate Change Effect	Vulnerability Score		
	Vulnerability Score		
	Adaptive Capacity	Potential Impact	Vulnerability
Temperature and Extreme Heat	Low	High	5
Precipitation and Flooding	Medium	High	4
Drought and Water Supply	Medium	Medium	3
Wildfire	High	Medium	2

Source: CalOES 2020; adapted by Ascent Environmental in 2021.

### 3 REFERENCES

- Brown, C. J., Saunders, M. I., Possingham, H. P., and Richardson, A. J. 2013. Managing for interactions between local and global stressors of ecosystems. *PLoS one*, 8(6), e65765.
- California Environmental Protection Agency. 2019. Urban Heat Island Interactive Maps, Sacramento County.
- CAL FIRE. See California Department of Forestry and Fire Protection.
- California Department of Forestry and Fire Protection. 2020. 2020 Strategic Fire Plan. Accessed February 21, 2021.
- California Department of Transportation. 2013 (February). Addressing Climate Change Adaptation in Regional Transportation Plans: A Guide for California MPOs and RTPAs.
- California Energy Commission. 2018a. California Heat Assessment Tool. Available: <https://www.cal-heat.org/explore>. Accessed October 18, 2019.
- . 2018b. Projected Changes in California’s Precipitation Intensity-Duration-Frequency Curves.
- . 2021a. Cal-Adapt Annual Averages Tool. Available: <https://cal-adapt.org/tools/annual-averages/> Accessed December 28, 2020.
- . 2021b. Cal-Adapt Extreme Heat Tool. Available: <https://cal-adapt.org/tools/extreme-heat/> Accessed December 28, 2020.
- . 2021c. Cal-Adapt Extended Drought Scenario Tool. Available: <https://cal-adapt.org/tools/extended-drought/> Accessed December 28, 2020.
- . 2021d. Cal-Adapt Snowpack Tool. Available: <https://cal-adapt.org/tools/snowpack/#climatevar=swe&scenario=rcp45&lat=38.90625&lng=-120.03125&boundary=locagrid&units=inch> Accessed December 28, 2020.
- . 2021e. Cal-Adapt Wildfire Tool. Available: <https://cal-adapt.org/tools/wildfire/> Accessed December 28, 2020.
- Cal OES. See California Governor’s Office of Emergency Services.
- California Governor’s Office of Emergency Services. 2020. California Adaptation Planning Guide. Available: <https://www.caloes.ca.gov/HazardMitigationSite/Documents/APG2-FINAL-PR-DRAFTAccessible.pdf>. Accessed February 12, 2021.
- California Governor’s Office of Planning and Research, California Energy Commission, and California Natural Resources Agency. 2018. *California’s Fourth Climate Change Assessment Report: Sacramento Valley Region Report*. Available: [https://www.energy.ca.gov/sites/default/files/2019-11/Reg\\_Report-SUM-CCCA4-2018-002\\_SacramentoValley\\_ADA.pdf](https://www.energy.ca.gov/sites/default/files/2019-11/Reg_Report-SUM-CCCA4-2018-002_SacramentoValley_ADA.pdf). Accessed January 29, 2021.
- California Office of Environmental Health Hazard Assessment. 2018. Indicators of Climate Change in California.
- Cambridge Systematics. 2015. Central Texas Extreme Weather and Climate Change Vulnerability Assessment of Regional Transportation Infrastructure. Available: [https://austintexas.gov/sites/default/files/files/CAMPO\\_Extreme\\_Weather\\_Vulnerability\\_Assessment\\_FINAL.pdf](https://austintexas.gov/sites/default/files/files/CAMPO_Extreme_Weather_Vulnerability_Assessment_FINAL.pdf). Accessed February 11, 2021.
- Calkins, M. M., T. B. Isaksen, B. A. Stubbs, M. G. Yost, and R. A. Fenske. 2016. Impacts of Extreme Heat on Emergency Medical Service Calls in King County, Washington, 2007–2012: Relative Risk and Time Series Analyses of Basic and Advanced Life Support. *Environmental Health*.
- Caltrans. See California Department of Transportation.
- CDPH. See California Department of Public Health.

- CDC. See Centers for Disease Control and Prevention.
- CEC. See California Energy Commission.
- CEC and CNRA. See California Energy Commission and California Natural Resources Agency.
- Centers for Disease Control and Prevention. 2019. Protecting Vulnerable Groups from Extreme Heat [website]. Available: <https://www.cdc.gov/disasters/extremeheat/specificgroups.html>. Accessed December 2, 2019.
- City of Rancho Cordova. 2006. City of Rancho Cordova General Plan.
- CNRA. See California Natural Resources Agency.
- DWR. See California Department of Water Resources.
- Federal Highway Administration. 2015 (August). *Climate Change Adaptation for Pavements*
- . 2017. *Vulnerability Assessment and Adaptation Framework*. Third edition.
- FHWA. See Federal Highway Administration.
- Goosse, H., P. Y. Barri t, M. F. Loutre, and V. Zunz. 2010. Introduction to Climate Dynamics and Climate Modeling. Centre de Recherche sur la Terre et le Climat Georges Lema tre-UCLouvain.
- Harvey, J., A. Chong, and J. Roesler. 2000. Climate Regions for Mechanistic-Empirical Pavement Design in California and Expected Effects on Performance. University of California, Berkeley. Prepared for California Department of Transportation.
- Intergovernmental Panel on Climate Change. 2014. Climate Change 2014 Synthesis Report. Available: [https://www.ipcc.ch/site/assets/uploads/2018/02/SYR\\_AR5\\_FINAL\\_full.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf). Accessed February 11, 2021.
- . 2018. Global Warming of 1.5 Degrees Celsius: An IPCC Special Report. Available: [https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15\\_Full\\_Report\\_High\\_Res.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_High_Res.pdf). Accessed February 12, 2021.
- . 2021. Climate Change Six Assessment: Summary Report for Policy Makers. Available: [https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC\\_AR6\\_WGI\\_SPM.pdf](https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf). Accessed September 5, 2021.
- IPCC. See Intergovernmental Panel on Climate Change.
- Jasim, F. H., F. Vehedifard, E. Ragno., A. AghaKouchak, and G. Ellithy. 2017. Effects of Climate Change on Fragility Curves of Earthen Levees Subjected to Extreme Precipitations. Geo-Risk 2017 Conference Paper.
- Kivim ki, M., Batty, G. D., Pentti, J., Shipley, M. J., Sipil , P. N., Nyberg, S. T., & Vahtera, J. 2020. Association between socioeconomic status and the development of mental and physical health conditions in adulthood: a multi-cohort study. *The Lancet Public Health*, 5(3), e140-e149.
- Knowlton, K., J. E. Rosenthal, C. Hogrefe, B. Lynn, S. Gaffin, R. Goldberg, C. Rosenzweig, K. Civerolo, J.-Y. Ku, and P. L. Kinney. 2004. Assessing Ozone-Related Health Impacts under a Changing Climate. *Environmental Health Perspectives* 112(15):1557–1563.
- Kovats, R. S., and S. Hajat. 2008. Heat Stress and Public Health: A Critical Review. *Annual Review of Public Health* 29:41–55.
- Li, Q., L. Mills, and S. McNeil. 2011 (September 25). The Implications of Climate Change on Pavement Performance and Design. Submitted to the University of Delaware University Transportation Center.
- National Oceanic and Atmospheric Administration. 2018. *What's the Difference Between Weather and Climate?* Available: <https://www.ncei.noaa.gov/news/weather-vs-climate>. Accessed February 8, 2020.
- NOAA. See National Oceanic and Atmospheric Administration.



- Office of the Federal Coordinator for Meteorological Services and Supporting Research. 2002. *Weather Information for Surface Transportation: National Needs Assessment Report*. FCM-R18-2002.
- OPR, CEC, and CNRA. See California Governor's Office of Planning and Research, California Energy Commission, and California Natural Resources Agency.
- OPR. See California Governor's Office of Planning and Research.
- Paterson, J., P. Berry, K. Ebi, and L. Varangu. 2014. Health Care Facilities Resilient to Climate Change Impacts. *International Journal of Environmental Research and Public Health* 11(12):13097–13116.
- Pierce, D., J. F. Kalansky, and D. R. Cayan. 2018. Climate, Drought, and Sea Level Rise Scenarios for California's Fourth Climate Change Assessment.
- Ramin, B., and Svoboda, T. 2009. Health of the homeless and climate change. *Journal of Urban Health*, 86(4), 654-664.
- Rappold, A. G., J. Reyes, G. Pouliot, W. E. Cascio, and D. Diaz-Sanchez. 2017. Community Vulnerability to Health Impacts of Wildland Fire Smoke Exposure. *Environmental Science & Technology* 51(12):6674-6682.
- Rinner, C., and M. Hussain. 2011. Toronto's Urban Heat Island—Exploring the Relationship between Land Use and Surface Temperature. *Remote Sensing* 3(6):1251–1265.
- Robinson, J. D., and F. Vahedifard. 2016. Weakening Mechanisms Imposed on California's Levees under Multiyear Extreme Drought. *Climatic Change* 137(1–2):1–14.
- Sacramento County. 2016. Standard Construction Specifications. Available: <https://saccountyspecs.saccounty.net/Documents/PDF%20Documents%202016/2016CompleteSpec.pdf> Accessed September 14, 2021.
- . 2021. Draft Local Hazard Mitigation Plan. Available: <https://waterresources.saccounty.net/Pages/Drainage--Draft-Local-Hazard-Mitigation-Plan-Report.aspx>. Accessed September 14, 2021.
- Sacramento Metropolitan Air Quality Management District. 2017. *Air Quality Pollutants and Standards – Ozone*. Available: <http://www.airquality.org/air-quality-health/air-quality-pollutants-and-standards>. Accessed November 6, 2019.
- Sacramento Municipal Utility District. 2016 (November). Climate Readiness Assessment and Action Plan.
- Sailor, D. J. 2011. A Review of Methods for Estimating Anthropogenic Heat and Moisture Emissions in the Urban Environment. *International Journal of Climatology* 31:189–199.
- SMAQMD. See Sacramento Metropolitan Air Quality Management District.
- SMUD. See Sacramento Municipal Utility District.
- Schwartz, M. W., N. Butt, C. R. Dolanc, A. Holguin, M. A. Moritz, M. P. North, H. D. Safford, N. L. Stephenson, J. H. Thorne, and P. J. van Mantgem. 2015. Increasing elevation of fire in the Sierra Nevada and implications for forest change. Available: <https://esajournals.onlinelibrary.wiley.com/doi/pdf/10.1890/ES15-00003.1>. Accessed February 5, 2021.
- Solecki, W. D., C. Rosenzweig, L. Parshall, G. Pope, M. Clark, J. Cox, and M. Wiencke. 2005. Mitigation of the Heat Island Effect in Urban New Jersey. *Global Environmental Change Part B: Environmental Hazards* 6(1):39–49.
- Stone, B., Jr., and M. O. Rodgers. 2001. Urban Form and Thermal Efficiency: How the Design of Cities Influences the Urban Heat Island Effect. *Journal of the American Planning Association* 67(2):186–198.
- Swain, D. L., D. E. Horton, D. Singh, and N. S. Diffenbaugh. 2016. Trends in Atmospheric Patterns Conducive to Seasonal Precipitation and Temperature Extremes in California. *Science Advances* 2(4): e1501344.

Swain, D. L., B. Langenbrunner, J. D. Neelin, and A. Hall. 2018. Increasing Precipitation Volatility in Twenty-First-Century California. *Nature Climate Change* 8:427–433.

Transportation Research Board and National Research Council. 2008. Potential Impacts of Climate Change on U.S. Transportation. Special Report 290. Washington, DC: The National Academies Press.

U.S. Census. 2021. Quickfacts: Rancho Cordova City, California. Available: <https://www.census.gov/quickfacts/ranchocordovacitycalifornia>. Accessed September 11, 2021.

*Planning.*

U.S. Department of Energy. 2016. Climate Change and the Electricity Sector: Guide for Climate Change Resilience Planning.

U.S. Department of Transportation. 2014. *Transportation Climate Change Sensitivity Matrix*.

U.S. Environmental Protection Agency. 2008. Reducing Urban Heat Islands: Compendium of Strategies

Vins, H., Bell, J., Saha, S., and Hess, J. J. 2015. The mental health outcomes of drought: a systematic review and causal process diagram. *International journal of environmental research and public health*, 12(10), 13251-13275.

Voelkel, J., D. Hellman, R. Sakuma, and V. Shandas. 2018. Assessing Vulnerability to Urban Heat: A Study of Disproportionate Heat Exposure and Access to Refuge by Socio-Demographic Status in Portland, Oregon. *International Journal of Environmental Research and Public Health* 15(4):10.3390/ijerph15040640.

Westerling, A. L. 2018. Wildfire Simulations for the Fourth California Climate Assessment: Projecting Changes in Extreme Wildfire Events with a Warming Climate. University of California, Merced, California's Fourth Climate Change Assessment, California Energy Commission. Available: [https://climateassessment.ca.gov/events/docs/20181210-Slides\\_Westerling.pdf](https://climateassessment.ca.gov/events/docs/20181210-Slides_Westerling.pdf). Accessed February 11, 2021.

Zhu, R., M. S. Wong, É. Guilbert, and P. W. Chan. 2017. Understanding Heat Patterns Produced by Vehicular Flows in Urban Areas. *Scientific Reports* 7:article number 16309.

Zhu, P., and Y. Zhang. 2008. Demand for Urban Forests in United States Cities. *Landscape and Urban Planning* 84(3–4):293–300.

Zimmerman, R. 1996. Global Warming, Infrastructure, and Land Use in the Metropolitan New York Area: Prevention and Response. *Annals of the New York Academy of Sciences* 790(1):57–83.

# Appendix G

---

List of Potential Funding Options



**List of Potential Funding Options for CAAP Implementation**

Funding Option	Description	Potential CAAP Implementation
<p><b>Sacramento Municipal Utility District (SMUD) Residential Rebates</b></p>	<p>SMUD provides residential rebates and special promotions for energy efficient appliances and products including induction cooktops/ranges, heat pump water heater upgrades, ENERGY STAR® clothes washers and refrigerators, smart thermostats, heating, ventilation, and air conditioning (HVAC) replacement with a heat pump, smart lighting starter kits, energy savings kits, power strips, LED bulbs, faucet aerators, showerheads, water conservation kits, smart sprinkler controllers, and drip irrigation retrofit kits. SMUD also offers residents a discounted electric rate to support EV charging, funding for home EV charging equipment and installation, and a managed EV charging program to support vehicle charging when demand is low.</p>	<p>Building Energy Sector; Water Sector; On-Road Transportation Sector</p>
<p><b>Sacramento Municipal Utility District (SMUD) Business Rebates</b></p>	<p>SMUD provides business rebates for lighting, refrigeration, and heating or cooling (HVAC) systems through several different rebate programs, including a program specific to multifamily residential properties. It also provides electric vehicle (EV) programs for commercial vehicles and EV charging, an electric forklift incentive pilot program, and SMUD eFuel<sup>SM</sup> Services to assess, design, construct and maintain electric vehicle chargers for commercial customers interested in business/fleet electric vehicles and charging, workplace employee charging or multi-family tenant charging.</p>	<p>Building Energy Sector; On-Road Transportation Sector; Off Road Vehicles and Equipment Sector</p>
<p><b>DOE Energy Efficiency and Conservation Block Grant (EECBG) Program</b></p>	<p>Part of the DOE’s State and Community Energy Program (SCEP), the EECBG program provides formula grants to local governments to implement strategies to reduce fossil fuel emissions, decrease total energy use, and improve energy efficiency. The funds will consist a two-year budget period for local governments. Rancho Cordova’s allocation is \$138,900.</p>	<p>Building Energy Sector</p>
<p><b>California Energy Commission 1 Percent Interest Rate Loans</b></p>	<p>The California Energy Commission offers 1 percent loans for local jurisdictions to conduct projects with proven energy savings at municipal facilities.</p>	<p>Building Energy Sector</p>
<p><b>California Lending for Energy and Environmental Needs (CLEEN)</b></p>	<p>This funding source, as a program of California Infrastructure and Economic Development Bank, provides direct public financing to municipalities, universities, schools, and hospitals to help meet the state’s goals for GHG reductions, water conservation, and environmental preservation.</p>	<p>Building Energy Sector</p>
<p><b>California Energy Commission Electric Program Investment Charge Program (EPIC)</b></p>	<p>The EPIC program provides more than \$130 million annually in grants to both public agencies and private entities for the development and deployment of renewable energy, clean electric building and transportation, energy resilience, and advanced grid technologies in to accelerate the transformation of the electricity sector.</p>	<p>Building Energy Sector</p>
<p><b>GRID Alternatives</b></p>	<p>GRID Alternatives is a nonprofit organization that provides no-cost solar installations to low-income residents and provides assistance for communities in developing multifamily and community-scale solar installations. The organization also provides hands-on job training for volunteers interested in employment in the solar industry.</p>	<p>Building Energy Sector</p>



**List of Potential Funding Options for CAAP Implementation**

Funding Option	Description	Potential CAAP Implementation
<b>California Department of Community Services and Development, Low-Income Weatherization Program</b>	Administered by the California Department of Community Services and Development, the Low-Income Weatherization Program provides low-income households with solar photovoltaic (PV) systems and energy efficiency upgrades at no cost to residents. The program is designed with the primary goal of reducing GHG emissions by saving energy and generating clean renewable energy while reducing energy costs for low-income single-family households and multi-family affordable housing.	Building Energy Sector
<b>Building Initiative for Low-Emissions Development (BUILD) Program</b>	The CA Energy Commission’s Building Initiative for Low-Emissions Development (BUILD) Program is designed to provide technical assistance and incentives for new all-electric low-income residential buildings that reduce GHG emissions.	Building Energy Sector
<b>Federal Inflation Reduction Act (IRA) of 2022</b>	The IRA invests nearly \$400 billion in Energy Security and Climate Change programs over the next ten years. This includes rebates and tax credits for energy efficiency, renewable energy, and clean vehicle purchases, as well as funding for clean power infrastructure and climate resiliency.	Building Energy Sector
<b>HUD Community Development Block Grant (CDBG) Program</b>	The HUD CDBG Program supports community development activities to build stronger and more resilient communities. Activities may address needs such as infrastructure, economic development projects, public facilities installation, community centers, housing rehabilitation, public services, clearance/acquisition, microenterprise assistance, code enforcement, and homeowner assistance.	Building Energy Sector
<b>Federal Infrastructure Investment and Jobs Act, aka Bipartisan Infrastructure Law (BIL) or “Building a Better America”</b>	The U.S. Department of Transportation announced the availability of nearly \$3 billion in competitive grant funding for surface transportation projects that were included in the infrastructure law. The grants can fund projects too large or complex for traditional funding programs like multijurisdictional and multimodal projects. The BIL also invests in clean energy by modernizing the power grid, weatherize and upgrade homes, schools, and businesses to make them cleaner and more affordable, and in the creation of new programs to support the development of clean energy technology. It will also invest in broadband infrastructure development to provide access to reliable high-speed internet.	On-road Transportation Sector; Building Energy Sector
<b>Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grants</b>	The U.S. Department of Transportation is offering \$1.5 billion in grant funding through the RAISE discretionary grant program. The program uses a merit-based process to select projects that will build and repair critical pieces of freight and passenger transportation networks.	On-road Transportation Sector
<b>Caltrans Active Transportation Planning Program</b>	This program provides competitive planning grants for jurisdictions working on planning projects to increase the proportion of trips accomplished by biking and walking and reduce community-wide vehicle miles traveled.	On-road Transportation Sector

**List of Potential Funding Options for CAAP Implementation**

Funding Option	Description	Potential CAAP Implementation
<b>Caltrans Transportation Planning Grant Program</b>	The Transportation Planning Grant Program provides competitive planning grants to help local jurisdictions in a variety of transportation planning efforts including development and implementation of regional transportation plans. The program also helps address multimodal transportation deficiencies with a focus on transit and support planning actions that advance climate adaptation efforts for local transportation systems.	On-road Transportation Sector
<b>Caltrans Clean California Local Grant Program</b>	The Clean California Local Grant Program provides competitive grants to projects that beautify and improve local roads, parks, pathways, and transit centers. Cycle 2 of grants includes up to \$100 million in funding.	On-road Transportation Sector; Natural and Urban landscapes
<b>California Clean Vehicle Rebate Project (CVRP)</b>	This California Air Resources Board program provides rebates for the purchase or lease of a new, eligible zero-emission or plug-in hybrid vehicle. As of February 28, 2023, increased rebate amounts have been updated to \$7,500 for battery electric and fuel cell electric vehicles and \$6,500 for plug-in hybrid vehicles.	On-road Transportation Sector
<b>Strategic Growth Council Affordable Housing and Sustainable Communities Program</b>	This program, administered by the California Department of Housing and Community Development, funds land use, housing, transportation, and land preservation projects that support infill and compact development and reduce GHG emissions. Funds are available in the form of loans and/or grants in two kinds of project areas: Transit-Oriented Development Project Areas and Integrated Connectivity Project Areas.	On-road Transportation Sector
<b>SB 2 Planning Grant Program</b>	This planning grant program provides financial and technical assistance to local governments to update planning documents and zoning ordinances, including general plans, community plans, specific plans, sustainable communities strategies, and local coastal programs, to streamline housing production. The program does not use a competitive process to award funds. All localities that meet the eligibility requirements outlined in the grant application receive funding.	On-road Transportation Sector
<b>Volkswagen (VW) Environmental Mitigation Trust</b>	The VW Environmental Mitigation Trust provides about \$423 million for California to mitigate the excess nitrogen oxide emissions by funding specified eligible actions focused mostly on “scrap and replace” projects for the heavy-duty sector, including on-road freight trucks, transit and shuttle buses, school buses, forklifts and port cargo handling equipment, commercial marine vessels, and freight switcher locomotives.	On-road Transportation Sector; Off-Road Vehicles and Equipment Sector
<b>California Air Resources Board Carl Moyer Memorial Air Quality Standards Attainment Program</b>	The Carl Moyer Program provides grant funds towards the replacement of old, high-polluting vehicles, engines, and equipment, with new technologies that are cleaner than required or earlier than required by rules and regulations. The Sacramento Metropolitan Air Quality Management District implements this program in the Sacramento region.	On-road Transportation Sector; Off-Road Vehicles and Equipment Sector

**List of Potential Funding Options for CAAP Implementation**

Funding Option	Description	Potential CAAP Implementation
<b>CalRecycle Food Waste Prevention and Rescue Grant Program</b>	The purpose of this competitive grant program is to reduce overall GHG emissions by establishing new or expanding existing food waste prevention projects (source reduction or food rescue for people) in California to reduce the amount of food being disposed of in landfills.	Solid Waste Sector
<b>CalRecycle Local Enforcement Agency Grant Program</b>	CalRecycle administers a non-competitive grant program to assist local enforcement agencies with their solid waste facilities permit and inspection program.	Solid Waste Sector
<b>California Department of Water Resources Water Grant and Loans</b>	The California Department of Water Resources provides a number of grant and loan programs that support integrated watershed management. These funds can be used to address issues such as groundwater sustainability, drought, and water supply reliability. Programs include the Small Communities Drought Relief Program, the Riverine Stewardship Program, Delta Levees Special Flood Control Projects Program, and the LandFlex Program.	Water Sector
<b>CivicSpark Program</b>	The CivicSpark Program supports sustainability-focused research, planning, and implementation projects throughout California by providing public agencies and other organizations with high-quality capacity-building support. This 11-month AmeriCorps program employs highly motivated emerging sustainability professionals.	Green Economy; Public Participation & Engagement
<b>Regional Early Action Planning (REAP)</b>	REAP allows councils of governments and other regional entities to collaborate on projects that have a broader regional impact on housing. The grant funding helps regional entities and governments facilitate local housing production that will assist local governments in meeting their Regional Housing Need Allocation.	On-road Transportation Sector
<b>Sustainable Transportation Equity Project (STEP)</b>	STEP is a new transportation equity pilot that aims to address community residents’ transportation needs, increase access to key destinations, and reduce greenhouse gas emissions by funding planning, clean transportation, and supporting projects.  STEP’s overarching purpose is to increase transportation equity in disadvantaged and low-income communities throughout California via two types of grants: Planning and Capacity Building Grants and Implementation Grants. Within these two grant types, CARB currently has up to \$22 million available.	On-road Transportation Sector
<b>Infrastructure State Revolving Fund (ISRF)</b>	The California Infrastructure and Economic Development Bank provides loans to local governments for infrastructure and economic development. ISRF has financed projects that are vital to communities throughout the state such as city and county street highway improvements, wastewater treatment plant construction and upgrades, and educational and cultural facilities.	On-road Transportation Sector; Buildings and Energy sector; Water and Wastewater Sector; Solid Waste Sector

List of Potential Funding Options for CAAP Implementation

Funding Option	Description	Potential CAAP Implementation
<p><b>CAL FIRE’s Grant Programs</b></p>	<p>CAL FIRE provides a number of grant programs such as the wildfire prevention grant program, the business and workforce development through wood products and bioenergy program, the California forest improvement program, the forest health program, the forest health research program, forest legacy program, and the urban and community forestry program. Funding and application dates can be found on their website <a href="https://www.fire.ca.gov/grants/">https://www.fire.ca.gov/grants/</a>.</p>	<p>Adaptation</p>
<p><b>OPR Regional Resilience Planning and Implementation Grant Program (RRGP)</b></p>	<p>The ICARP Regional Resilience Planning and Implementation Grant Program (Regional Resilience Grant Program, or RRGP) will fund local public entities, California Native American Tribes, and Community-Based Organizations that are planning and implementing projects that advance climate resilience and respond to the greatest climate risks in their regions. Over multiple funding rounds, the RRGP will invest \$125 million into regions advancing resilience and responding to their regions’ greatest climate risks through three major activities: capacity building, planning (including identifying climate resilience priorities), and project implementation.</p> <p>The first grant cycle will invest \$21.3 million. At least \$12.5 million of that total will be for regions planning for climate adaptation and developing action plans that prioritize projects or actions addressing the greatest climate risks facing a region, particularly in the most vulnerable communities. Grants will be made available both competitively and on a formula basis. Application period begins in Spring 2023.</p>	<p>Adaptation</p>
<p><b>SGC Transformative Climate Communities (TCC)</b></p>	<p>The Transformative Climate Communities (TCC) Program funds development and infrastructure projects that achieve major environmental, health, and economic benefits in California’s most disadvantaged communities. More info here: <b>Transformative Climate Communities: Community-led transformation for a sustainable California</b></p>	<p>All sectors</p>
<p><b>SGC Community Assistance for Climate Equity (CACE)</b></p>	<p>The SGC’s CACE Program provides technical assistance and capacity building services to help under-resourced communities foster successful climate projects. Within CACE, the Boost Program supports under-resourced local governments in building capacity, optimizing existing resources, strengthening community partnerships, and transforming their approach to address and fund climate activities.</p>	<p>All sectors</p>
<p><b>SGC Community Resilience Centers (CRC) Grants Program</b></p>	<p>SGC’s CRC program will fund new construction and upgrades of neighborhood-level resilience centers to provide shelter and resources during climate and other emergencies. The program will also fund year-round services and ongoing programming that build overall community resilience. More info here: <b>Community Resilience Centers Program: Strengthening community resilience in neighborhoods across California</b></p>	<p>Adaptation</p>

**List of Potential Funding Options for CAAP Implementation**

Funding Option	Description	Potential CAAP Implementation
<p><b>Climate Resilience Districts Act (Senate Bill 852)</b></p>	<p>Senate Bill 852 (Dodd, 2022) established the “Climate Resilience District”. This is a new public financing tool available to cities, counties, and special districts to undertake projects and programs to address climate change including wildfire, sea level rise, extreme heat and cold, drought, flooding, and related issues. The districts can be formed by one or public agencies and, once created, can raise revenue through tax increment funding, voter-approved supplemental property taxes, property benefit assessments, or fees.</p>	<p>Adaptation</p>
<p><b>CA Climate &amp; Energy Collaborative (CCEC) Funding Resources</b></p>	<p>The CCEC provides several helpful resources to support funding for implementation of local climate and energy initiatives. These include a “How to Guide: Ways to Get Funded” resource that outlines both internal and external funding best practices (see Ways to get Funded – California Climate and Energy Collaborative (eecoordinator.info), as well as a regularly-updated list of current and upcoming funding opportunities with links (see Funding Resources – California Climate and Energy Collaborative (eecoordinator.info).</p>	
<p><b>California Grants Portal</b></p>	<p>The California Grants Portal (a project by the California State Library) is a one-stop destination to find all grants and loans offered on a competitive or first-come basis by California state agencies. See: Home - California Grants Portal</p>	