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Petition to Amend:  
Palomar Hydrogen Project

Palomar Energy Center  
(01-AFC-24C)

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## List of Acronyms and Abbreviations

AAQS	Ambient Air Quality Standard
AB	Assembly Bill
acf	Actual Cubic Foot
AFC	Application for Certification
AQMD	[South Coast] Air Quality Management District
ARB	[California] Air Resources Board
ATC	Authority to Construct
BMP	Best Management Practice
Btu	British Thermal Unit
CalARP	California Accidental Release Prevention [Program]
CalEEMod	California Emissions Estimator Model <sup>®</sup>
CalOES	California Office of Emergency Services
Cal/OSHA	California Division of Occupational Safety and Health
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH <sub>4</sub>	Methane
City	City of Escondido
CNEL	Community Noise Exposure Level
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent
COC	Condition of Certification
County	County of San Diego
CPM	Compliance Project Manager
CTG	Combustion Turbine Generator
dBA	A-Weighted Decibel
DC	Direct Current
District	San Diego County Air Pollution Control District
DPM	Diesel Particulate Matter
dscf	Dry Standard Cubic Foot
DW	Demineralized Water
EPA	[United States] Environmental Protection Agency
ERTC	Escondido Research and Technology Center
°F	Degrees Fahrenheit
FCEV	Fuel-Cell Electric Vehicle
FCS	Fuel Cell Store

ft	Foot
FSA	Final Staff Assessment
GHG	Greenhouse Gas
GPM	Gallons per Minute
GWP	Global Warming Potential
H <sub>2</sub>	Hydrogen
HARRF	Hale Avenue Resource Recovery Facility
HHV	Higher Heating Value
HMBP	Hazardous Materials Business Plan
hr	Hour
HRA	Health Risk Assessment
HRSG	Heat Recovery Steam Generator
in	Inch
IPCC	Intergovernmental Panel on Climate Change
kW	Kilowatt
kWh	Kilowatt Hour
L	Liter
lb(s)	Pound(s)
LHV	Lower Heating Value
LORS	Laws, Ordinances, Regulations, and Standards
LTS	Less Than Significant
MGD	Million Gallons per Day
MT	Metric Ton
MW	Megawatt
MWh	Megawatt-Hour
N <sub>2</sub> O	Nitrous Oxide
NO <sub>x</sub>	Oxides of Nitrogen
Nm <sup>3</sup>	Normal cubic meter
OEHHA	[California] Office of Environmental Health Hazard Assessment
OEM	Original Equipment Manufacturer
PEC	Palomar Energy Center
PEM	Polymer Electrolyte Membrane
PM <sub>10</sub>	Respirable Particulate Matter
PM <sub>2.5</sub>	Fine Particulate Matter
psia	Pound per Square Inch Absolute
psig	Pound per Square Inch Gauge
PTA	Petition to Amend
PTO	Permit to Operate
PUC	[California] Public Utilities Commission
PV	Photovoltaic
RMP	Risk Management Plan

S&W	Soil and Water
SANDAG	San Diego Association of Governments
SB	Senate Bill
SCADA	Supervisory Control and Data Acquisition
scf	Standard Cubic Foot
SDAPCD	San Diego County Air Pollution Control District
SDG&E	San Diego Gas & Electric
SME	Subject Matter Expert
SO <sub>x</sub>	Oxides of Sulfur
SR	State Route
STG	Steam Turbine Generator
SWPPP	Stormwater Pollution Prevention Plan
TAC	Toxic Air Contaminant
tpy	Tons per Year
TQ	Threshold Quantity
VOC	Volatile Organic Compound
yr	Year

# Palomar Energy Center (01-AFC-24C) Petition to Amend: Palomar Hydrogen Project

## 1.0 INTRODUCTION

San Diego Gas & Electric (SDG&E or the Applicant) is submitting this Petition for a Post-Certification Amendment of its Palomar Energy Center (PEC), Docket 01-AFC-24C. SDG&E is proposing to implement a hydrogen generation and energy storage project at the PEC. This Petition to Amend (PTA) is filed to make the changes necessary to the project design as approved by the California Energy Commission (CEC) in accordance with California Code of Regulations (CCR) Title 20 Section 1769(a)(1).

### 1.1 Palomar Hydrogen Project Overview

SDG&E is planning to implement one of its initial clean energy projects at the PEC. Currently, the PEC is a combined-cycle power plant generating approximately 588-megawatt (MW)<sup>1</sup> in Escondido, California. The PEC includes operation of two natural gas-fired, combustion turbine generators (CTGs) and a steam turbine generator (STG). The Palomar Hydrogen Project is proposed to meet SDG&E's objective to move toward a 100% renewable and net zero carbon-free future (SDG&E 2021).

Pursuant to 20 CCR Section 1769(a)(1), as revised in September 2019, SDG&E, the Project Owner, is filing this PTA to include installation of the following new equipment and facilities at the PEC:

1. Hydrogen generation and storage with the use of an electrolyzer and hydrogen storage vessels;
2. 300 kilowatts (kW) of photovoltaic (PV) solar panels on canopies over existing parking areas; and
3. A hydrogen fueling station for SDG&E on-site maintenance vehicles and off-site fleet vehicles (cars and trucks).

These facilities will be used to produce hydrogen, which will be injected into the natural gas stream used in the CTGs and used for fueling hydrogen fuel-cell electric vehicles (FCEVs). The hydrogen generated on-site will also be used for generator cooling, which is currently provided by purchasing hydrogen in compressed gas cylinders, which are stored on-site. Other than adding these components to the project description, only two Conditions of Certification (COCs) require modification to allow for implementation of this project. The proposed modifications to the COCs are a revision to AQ-2 to allow for the use of blended natural gas and hydrogen fuel in the CTGs, and a revision to HAZ-1 (Appendix C to the COC) related to the increased amount of hydrogen storage allowed on-site.

Since hydrogen is not a regulated pollutant or toxic air contaminant (TAC), SDG&E does not expect to need a revision of the San Diego County Air Pollution Control District (SDAPCD)

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<sup>1</sup> PEC was initially approved by the Energy Commission as an approximately 560 MW power plant in 2003. An Advanced Gas Path Turbine Upgrade was approved by the SDAPCD and Energy Commission in 2017 (Order No. 17-1213-1d), which increased the power output of the CTGs and duct burners to approximately 588 MW.

Permit to Operate (PTO) for the PEC associated with the Palomar Hydrogen Project. No other environmental permits related to water supply, biological resources, waste management, etc. are expected to be needed.

The proposed new Palomar Hydrogen Project components comply with all laws, ordinances, regulations, and standards (LORS) and do not have a significant environmental impact, as further described in this PTA. The proposed revisions to the COCs will not have significant impact on property owners, the public, or any other parties.

## **1.2 Change in Reheat Bowl Temperature Used for Startup Definition**

In addition to the Palomar Hydrogen Project changes, SDG&E is working with the SDAPCD to revise the reheat bowl temperature that is used to determine whether a startup of the CTGs is considered to be a regular or an extended startup. This refers to COC AQ-28 to change the startup pivot temperature in the COC from 500°F to 750°F. This change is consistent with all LORS and does not lead to an increase in emissions. SDG&E understands based on communications with the SDAPCD that the permit modification has been approved and a revised PTO will be issued soon. The Compliance Project Manager (CPM) will be notified via the quarterly compliance report when the change is finalized.

## **1.3 Information Requirements for Post-Certification Amendments**

This Petition contains the information required under the CEC's Siting Regulations for post-certification project modifications [20 CCR Section 1769(a)(1)], including the following:

- A. A complete description of the proposed change, including new language for any conditions of certification that will be affected;
- B. A discussion of the necessity for the proposed change and an explanation of why the change should be permitted;
- C. A description of any new information or change in circumstances that necessitated the change;
- D. An analysis of the effects that the proposed change to the project may have on the environment and proposed measures to mitigate any significant environmental effects;
- E. An analysis of how the proposed change would affect the Project's compliance with applicable laws, ordinances, regulations, and standards;
- F. A discussion of how the proposed change would affect the public;
- G. A list of current assessor's parcel numbers and owners' names and addresses for all parcels within 500 feet of any affected project linears and 1,000 feet of the project site;
- H. A discussion of the potential effect of the proposed change on nearby property owners, residents, and the public; and
- I. A discussion of any exemptions from the California Environmental Quality Act (CEQA), of the Public Resources Code, that the project owner believes may apply to approval of the proposed change.

Each of these requirements is addressed in Section 2.

## **2.0 REQUIRED INFORMATION FOR POST-CERTIFICATION AMENDMENTS**

### **A. Complete description of the proposed change, including new language for any conditions of certification that will be affected.**

#### ***A.1 Facility Permitting Background***

The PEC, a combined-cycle, natural gas-fired power plant, was certified by the CEC with a Final Decision on August 6, 2003 and began commercial operation on April 1, 2006. The facility is located in the City of Escondido in San Diego County, California. An aerial view of the facility and its environs is shown in Figure 2-1. Some of the subsequent amendments made to the COCs in the Final Decision are described below.

In June 2005, SDG&E obtained approval to revise the amounts of hazardous chemicals stored on-site (as listed in Appendix C of COC HAZ-1), including hydrogen. Due to an issue with temporary loss of its reclaimed water supply, SDG&E requested and received approval of a revision to COC SOIL&WATER-5 in April 2006.

On February 22, 2013, the SDG&E filed a petition (TN 69634) with the CEC requesting to modify the Final Decision for the PEC. That PTA requested the CEC to: (1) modify certain air quality COCs to be consistent with the most recent SDAPCD PTO; and (2) upgrade the advanced gas path technology for two existing General Electric Frame 7-FA combined-cycle gas turbines. The changes to the SDAPCD PTO were made due to changes to the PEC's Title V Permit issued by the U.S. Environmental Protection Agency (EPA).

As docketed on September 20, 2013, SDG&E requested to split the PTA into two separate amendments (TN 200539). On March 5, 2015, CEC staff published an analysis of SDG&E's request to update certain air quality conditions of certification (TN 203772). On April 14, 2015, during the 30-day public review period, SDG&E submitted a response to the staff's analysis (TN 204166). In this response, SDG&E requested additional clarification regarding removal of obsolete conditions to ensure consistency with reporting requirements between the CEC and the SDAPCD and to make administrative changes. No other comments were received on the staff analysis.

On December 1, 2015, SDG&E submitted a second addendum (TN 206895) to their amendment request to delete COC **AQ-38**, which limits the annual combined fuel input into the duct burners.

As docketed on February 25, 2016, SDG&E filed a request to the CEC (TN 210531) to recombine the PTAs to (1) Upgrade the Advanced Gas Path Technology of the combustion turbine; and (2) Conform air quality conditions with the SDAPCD's PTO. On June 20, 2016, the SDAPCD granted the SDG&E PEC's Authority to Construct (ATC) (TNs 211984 and 211985) pursuant to Rule 20 of the Air Pollution Control District Rules and Regulations.

CEC staff reviewed these prior petitions, the requested changes, and the response to the staff's initial analysis and assessed the impacts of this proposal on environmental quality and public health and safety. It was the staff's opinion that, with the implementation of new and/or revised air quality COCs, the facility would remain in compliance with all applicable LORS and the proposed changes would not result in any significant, adverse, direct, indirect, or cumulative impacts to the environment. Based on the staff's recommendation, SDG&E's petition was approved at the Business Meeting of the California CEC on December 13, 2017.



**Figure 2-1: Aerial View of the Palomar Energy Center and Surrounding Area**





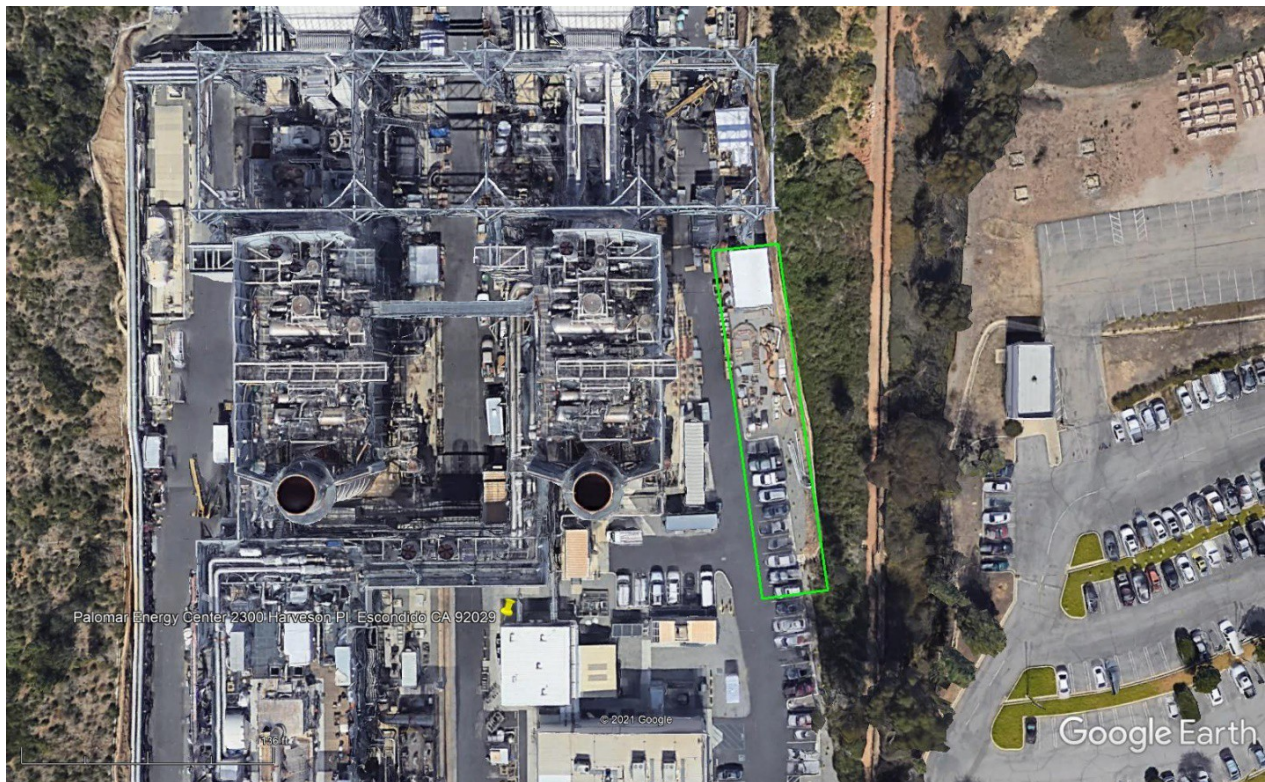
## ***A.2 Proposed Project Description***

The proposed Project includes the following primary components:

- Hydrogen production system, including an electrolyzer system with integral hydrogen cooling and drying, a hydrogen compressor, and pressurized storage vessels, along with ancillary equipment;
- A hydrogen fueling station for vehicles, which will include one dispenser and necessary pressure regulators, compressors, and ancillary equipment;
- Elevated solar PV panels to provide supplemental electricity; and
- Electrical equipment that will tie-in with the hydrogen production system, including a transformer, utility interconnection, outgoing feeders, switchgears, motor control centers, and ancillary equipment.

These components are proposed to be installed on the eastern portion of the PEC site, within the existing facility footprint, in an area currently used as a storage and parking area. An enlargement of the aerial photograph showing the proposed area for the new facilities is provided in Figure 2-2, and a detailed facility plot plan is provided in Appendix A.

**Figure 2-2: Aerial View Showing the Existing Use of the Proposed Hydrogen Project Components Location**





### ***A.2.1 Combined-Cycle Power Plant Hydrogen Consumption***

PEC is a 588-MW combined-cycle power plant with two generating units and a steam turbine. Hydrogen uses in the combined-cycle power plant are as follows:

- Hydrogen for generator cooling will be supplied to the Unit 1 and Unit 2 CTGs at 75 pounds per square inch gauge (psig) and regulated to 30 psig downstream of the existing pressure regulating valves. Hydrogen will be supplied to the STG at 125 psig and regulated to 45 psig downstream of the existing pressure regulating valves. The total hydrogen demand for CTG and STG cooling is 30 standard cubic feet (scf) per hour.
- Hydrogen blending in the fuel gas feed to the Units 1 and/or 2 CTGs is planned. A maximum blending of hydrogen of up to 2% of the fuel is currently anticipated, although the storage system has been sized based on an expected initial use of a 1% blend in one of the CTGs. The fuel gas supply is heated by the fuel gas heaters to 365°F at 500 psig. A fuel blending system will be provided to achieve uniform blending of hydrogen and natural gas.
- The hydrogen consumption for fuel gas blending is determined using the highest heat consumption case of 1,655 million British thermal units (MMBtu) per hour per CTG taken from the plant heat balances. As a basis for the natural gas supply to PEC, an annual average higher heating value (HHV) of 1,027 Btu per scf is calculated from SDG&E natural gas quality reports published for PEC's corresponding gas zone.

Based on the expected rate of 1% by volume blend of hydrogen in the fuel gas and using the typical lower heating values (LHV), it is estimated that a total of approximately 80,148 pounds per hour (lbs/hr) of blended gas is required to provide 1,655 MMBtu per hour to one CTG. This rate is equivalent to a demand of approximately 96 lbs/hr hydrogen from the storage cylinders.

### ***A.2.2 Hydrogen Production and Integration***

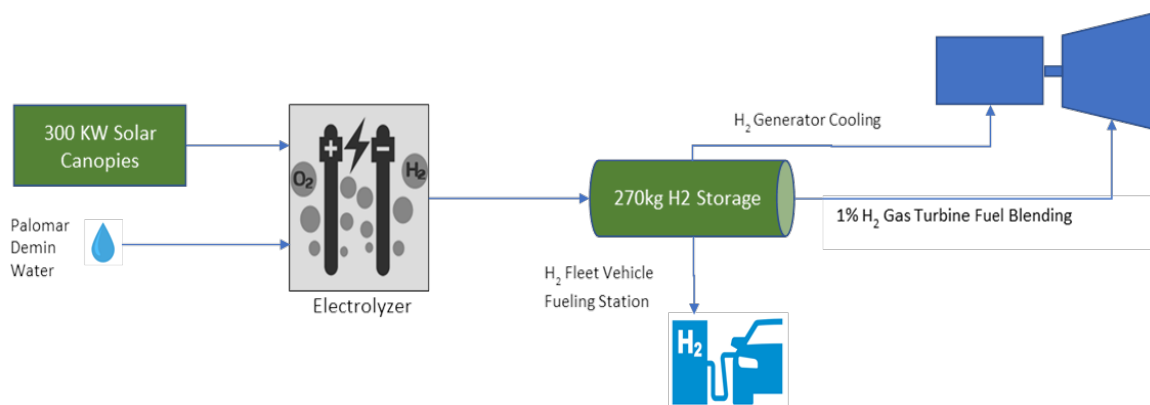
The proposed Project includes the integration of hydrogen into the fuel stream for on-site equipment and into the hydrogen fueling station through the electrolysis process. The electrolysis of water occurs through an electrochemical reaction that does not require external components or moving parts. It is very reliable and can produce ultra-pure hydrogen in a manner which does not produce greenhouse gas (GHG) emissions when the electrical source is renewable energy (FCS 2017). In times of excess electricity production from renewable sources, instead of curtailing the electricity as is commonly done, it is possible to use this excess electricity to produce hydrogen through electrolysis (USDOE 2020a). A Process Flow Diagram for the proposed Project is shown in Figure 2-3.

#### **Electrolyzer**

Electrolyzers can range in size from small, appliance-size equipment that is well-suited for small-scale distributed hydrogen production to large-scale, central production facilities. An electrolyzer consists of an anode and a cathode separated by an electrolyte. Different electrolyzers function in slightly different ways, mainly due to the different type of electrolyte material involved (USDOE 2020a). There are three primary types of

electrolyzers: proton exchange membrane (PEM); alkaline electrolyzers, and solid oxide electrolyzers. PEM electrolyzers typically use two membranes to achieve good efficiency.

**Figure 2-3: Palomar Hydrogen Project Components Process Flow Diagram**



One electrolyzer will be used at PEC to create the hydrogen for the facility's use. Hydrogen will be produced by a polymer electrolyte membrane (PEM) electrolyzer system. The electrolyzer specifications used as the basis of the conceptual design are included in Table 2-1.

**Table 1-2: Electrolyzer Specification**

<b>Electrolyzer Type</b>	PEM	<b>Rated Hydrogen Production</b>	98 lbs/hr [2343 lbs/day] (4.4 kilowatt-hours [kWh])/normal cubic meter [Nm <sup>3</sup> ] H <sub>2</sub> )
<b>Rated Power</b>	2.5 MW	<b>Rated Demineralized Water Requirement</b>	0.9 Liters (L)/Nm <sup>3</sup> H <sub>2</sub> [0.00673 gallons/scf H <sub>2</sub> = 1.287 gallons/lb H <sub>2</sub> ]
<b>Output Hydrogen Pressure</b>	435 psig (30 barg)	<b>Output Hydrogen Purity</b>	99.9995%

### Hydrogen Compressors

Two intermediate-pressure compressors (A/B) are planned for the proposed Project. Each compressor will be an oil-free, motor-driven reciprocating or diaphragm compressor with a discharge pressure of 2,500 psig and discharge temperature suitable for storage and the downstream hydrogen users. The compressors will be designed to API 618 reciprocating compressor design criteria and either air cooling or closed circulating water systems will be used. Hydrogen compression requirements are provided in Table 2-2.

**Table 3-4: Hydrogen Compressor Design Criteria**

<b>Flow Rate</b>	<b>Suction Pressure/Temperature</b>	<b>Discharge Pressure</b>
49 lbs/hr	435 psig (30 barg)/105°F	2,500 psig

### Air Compressor

A single utility air compressor package located near the equipment requiring air will be supplied to meet the requirements of all new equipment. The compressor package will be

modularized and packaged into skids that facilitate efficient shipping, installation, and maintenance.

### **Nitrogen Package**

The nitrogen package will provide gas to purge hydrogen from the electrolyzer, compressors, and other equipment requiring purge gas during continuous operation, shutdown, and maintenance. Nitrogen purge is not required for continuous operation, but it is recommended that a minimum of three standard 235-scf nitrogen gas cylinders be kept on-site for use during maintenance and complete shutdown. It is expected that nitrogen purge requirements can be met with a nitrogen gas cylinder storage system.

### **Blending Skid**

Hydrogen will pass through piping into the blending skid, which would combine hydrogen produced in the electrolyzer with natural gas. Given current pipeline operating conditions, a maximum blend ratio of 98% natural gas to 2% hydrogen could occur.

### **Storage Pressure Vessels**

Hydrogen that is not immediately needed to support the electrical generation equipment on-site or the hydrogen fueling station would be stored on-site in cylindrical storage pressure vessels.

Hydrogen storage will be nominally sized to maintain a minimum of 6 hours of hydrogen for the typical 1% by volume blending in the fuel gas into one CTG, which is equal to approximately 600 pounds or 114,759 scf.

Black & Veatch conducted a preliminary process optimization of the storage pressure, number of storage tanks, and sizing of the hydrogen compressors. The pressure for hydrogen storage was determined by balancing the required storage mass of hydrogen with the available footprint for storage and standard hydrogen storage offerings.

Given the available footprint at PEC and using 24-inch diameter, 40-foot-long cylindrical hydrogen storage vessels, it is estimated that the required mass of hydrogen could be stored in a rack arrangement 4 vessels high by 3 vessels wide (up to 12 total), in an approximately 11-foot by 40-foot footprint (440 square feet). This configuration would require the hydrogen to be compressed to 2,500 psig (2,515 psia) for storage. The hydrogen storage requirements are provided in Table 2-3.

**Table 5-6: Hydrogen Storage Design Criteria**

<b>Storage Weight</b>	<b>Storage Volume</b>	<b>Storage Vessels</b>
600 lbs	114,759 scf (68°F, 14.7 psia)	9 to 12 cylinders (24 in. diameter x 40 ft. length each)

### **Water Treatment and Cooling System**

PEC is required to use reclaimed water for all non-potable uses. Reclaimed water for PEC is obtained from the Hale Avenue Resource Recovery Facility (HARRF).

Reclaimed water to be used in the hydrogen process is demineralized and will be put into the existing demineralized water (DW) system at 85°F and 60 psig. The DW system at

PEC consists of a 200,000-gallon Demin water storage tank and two Demin water pumps rated for 500 gallons per minute (GPM) at 90 feet total dynamic head. It is expected that the existing demineralized water storage and transfer capabilities are sufficient in capacity and quality to meet the demands of the new hydrogen production system.

Hydrogen is needed for CTG cooling, CTG fuel blending, and the hydrogen fueling station. As shown in Table 2-1, in continuous operation, the electrolyzer could produce 1,176 pounds per day of hydrogen. Based on the water usage rate of 0.9 L/Nm<sup>3</sup> for the electrolyzer given in Table 2-1, it is estimated that the proposed Project will require on the order of 63 gallons per hour or 1,513 gallons per day [0.0015 million gallons per day (MGD)] of demineralized water to produce hydrogen at a rate of 49 lbs/hr in the electrolyzer.

Condensate from the compressor knockout drums and intermittent wastewater discharged from the electrolyzer will be gravity-drained to an underground sump and transferred to the existing heat recovery steam generator (HRSG) blowdown sump. While this wastewater is not suitable for reuse within the electrolyzer, it is expected to be high-quality, oil-free wastewater that is suitable for discharge to the cooling tower via the HRSG blowdown sump.

#### ***A.2.3 Hydrogen Fueling Station***

The hydrogen fueling station requirements and specifications used as a basis for conceptual design are included in Table 2-4. It is expected the hydrogen fueling station will include integral compressors and a cooling system to achieve the required discharge pressure and temperature for fueling. Hydrogen for FCEV fueling will be stored at an intermediate pressure of 6,526 psig (450 barg) in a tank sized to support fueling five vehicles per day. The fueling station will take hydrogen from the lower ground storage pressure and compress the hydrogen to an intermediate pressure of 6,526 psig. The storage tank for vehicle fueling will be located with the other storage tanks. During FCEV fueling, the fueling station will take hydrogen from the 6,526-psig vehicle fueling storage tank and compress the hydrogen to 10,152 psig (700 barg). The compressed hydrogen will be cooled by the fueling station and delivered to the vehicle through the vehicle fueling dispenser. Vehicles will be refueled periodically on an as-needed basis, so the consumption will be intermittent.

**Table 7-8: Hydrogen Fueling Station Requirements**

<b>Hydrogen Consumption per Vehicle</b>	9-22 lbs (4-10 kilograms)	<b>Hydrogen Discharge Pressure</b>	10,152 psig (700 barg)
<b>Max Fueling Rate</b>	8 lbs/minute (60 gallons/second)	<b>Hydrogen Storage Pressure</b>	6,526 psig (450 barg)

#### ***A.2.4 Solar Photovoltaic System***

Solar PV systems convert sunlight into electrical energy. When the sun shines onto a solar panel, photons from the sunlight are absorbed by the cells in the panel, which creates an electric field across the layers and causes electricity to flow (USDOE 2020c). The proposed Project includes the placement of solar PV modules on canopies over the parking areas (see Appendix A). Up to 300 kW of total solar PV output that will provide power to the facility is being contemplated for the proposed Project.

### ***A.2.5 Other Ancillary Site Improvements***

The project includes the installation of other ancillary piping and equipment to support the operation of the compressor system and solar PV components. These components would be located within the fenced facility footprint.

In addition, a 20-foot-high fire wall will be installed on the northern and eastern sides of the hydrogen storage area (see plot plan in Appendix A). No changes to the existing security fencing or lighting are proposed.

### ***A.2.6 Project Construction Schedule***

SDG&E's currently planned construction schedule for the proposed Palomar Hydrogen Project includes completing the design, engineering, and procurement in 2021. The actual construction process would begin in late 2021. First, the solar PV arrays would be installed on canopies (see Appendix A). The civil/structural, electrical/instrumental, and mechanical components would be completed and hydrogen equipment installed. These construction activities are expected to take approximately six months. Once installed, the equipment will be tested prior to acceptance.

## ***A.3 Proposed Changes to the Conditions of Certification***

The following specific revisions to the COCs in the CEC's Final Commission Decision (or as subsequently revised as discussed in Section A.1) are proposed using **underline bold** for inserted text and **~~strikethrough bold~~** for deleted text. Only the COCs proposed for revision are included. In addition to the two COCs proposed for revision for the Palomar Hydrogen Project, AQ-28 is included for the change in the reheat bowl temperature used to define a regular or an extended startup (See Section 1.2).

**AQ-2** The unit shall be fired on Public Utility Commission (PUC) quality natural gas **blended with up to 2% hydrogen** only. The project owner shall maintain quarterly records of sulfur content (grains/100 dscf) and higher and lower heating values (Btu/dscf) of the natural gas **and amount of hydrogen blended** and provide such records to the District personnel upon request.

**Verification:** The project owner shall certify compliance with this condition as part of the Quarterly Operational Report (AQ-SC7) and shall make the site and data available for inspection by representatives of the District, ARB or Energy Commission.

*Note: The change to AQ-28 is not related to the hydrogen project but is related to ongoing operations.*

**AQ-28** A startup period is the period of time that begins when fuel flows to the combustion turbine following a nonoperational period. For purposes of determining compliance with the emission limits of this permit, the duration of a startup period shall not exceed 120 consecutive minutes if the steam turbine reheat bowl temperature is above **750500°** F when the startup period begins and shall not exceed 360 consecutive minutes if the steam turbine reheat bowl temperature is less than or equal to **750500°** F when the startup period begins.

**Verification:** The project owner shall certify compliance with this condition as part of the Quarterly Operational Report (AQ-SC7) and shall make the site and data available for inspection by representatives of the District, ARB or Energy Commission.

**HAZ-1** The project owner shall not use any hazardous materials not listed in Appendix C, appended to the end of these Conditions, below, or in greater quantities than those identified by chemical name in Appendix C, below, unless approved in advance by the CPM.

**Verification:** The project owner shall provide to the Compliance Project Manager (CPM), in the Annual Compliance Report, a list of hazardous materials contained at the facility in reportable quantities.

*Note: No changes are proposed to HAZ-1, only to the line for hydrogen in Appendix C.*

## APPENDIX C

### Anticipated Hazardous Materials Use at the Palomar Energy Center

Material	CAS No. or Chemical Makeup)	Location/ Application	Hazardous Characteristics <sup>42</sup>	Maximum Quantity On Site	Regulatory Thresholds (lb)			
					CalARP	Federal RQ <sup>43</sup>	Federal TPQ <sup>44</sup>	Federal TQ <sup>45</sup>
Hydrogen	1333-74-0	Generator Cooling, <u>Fuel Blending, and FCEV Fueling</u>	<i>Health: toxic Physical: fire</i>	<del>80,000 scf</del>  <u>600 lbs or 114,759 scf (68°F, 14.7 psia)</u>	--	--	--	10,000

*Note: the amount of hydrogen and other materials were modified from the Final Decision on June 10, 2005.*

**B. A discussion of the necessity for the proposed change and an explanation of why the change should be permitted.**

Senate Bill (SB) 100 calls for the decarbonization of California's electric grid by 2045. The Palomar Hydrogen Project is one of SDG&E's initial efforts toward meeting that goal. The Project should be permitted as it will allow SDG&E to introduce up to 2% hydrogen blending with natural gas as a step in determining its feasibility. Installing a hydrogen fueling station also meets California goals of reducing GHG emissions from the transportation sector.

**C. A description of any new information or change in circumstances that necessitated the change.**

As part of efforts to support California's GHG emissions reduction goals and its mission to become one of the cleanest, safest, and most innovative energy companies in America, SDG&E is focused on improving air quality in communities and decarbonizing its energy supply. SDG&E has established a pathway forward to reduce operational GHG emissions by introducing hydrogen to key electrical generation facilities as a first step in a long-term strategy to achieve these goals.

**D. An analysis of the effects that the proposed change to the project may have on the environment and proposed measures to mitigate any significant environmental effects.**

A summary of the expected impacts on each of the environmental resource areas is provided in Table 2-5 below. Additional analyses of the potential impacts on air quality and public health, GHG emissions and energy use, and noise and vibration are provided in Appendix B.



**Table 9-10: Environmental Impact Summary**

Resource Area	Significant Impact?		Analysis
	Yes	No	
Air Quality		X	An air quality impact analysis is provided in Appendix B. As shown in this appendix, less than significant impacts to air quality are expected from construction or operation of the proposed Project. Construction emissions are expected to be minimal and temporary (approximately six months). Since hydrogen is not a regulated pollutant, no direct criteria pollutant emissions increases are expected from operation of the proposed new hydrogen generation system, due to fuel blending, or the hydrogen fueling station.
Biological Resources		X	The proposed Project components will be added within the existing facility footprint on an area currently used as a parking lot. The addition of these facilities in this previously disturbed area would not impact biological resources.
Cultural Resources		X	The proposed Project components will be added within the existing facility footprint on an area currently used as a parking lot. Although there will be some minor excavation needed related to the addition of new piping and electrical lines within the facility footprint, we note that the entire PEC site including this area underwent substantial grading and site preparation/leveling prior to the installation of the power plant, and hence the addition of the facilities including minor excavation would not impact cultural resources.
Efficiency and Reliability		X	Allowing for use of an up to 2% blended hydrogen with the natural gas would not have an impact on efficiency and reliability of PEC.
Geology, and Paleontology		X	The area where the proposed Project components will be installed is already level and disturbed and hence no substantial changes to the Project footprint are proposed. Therefore, there would be no impact to geologic or paleontological resources. All new structures will be built to meet current codes related to potential seismic activity at the site.
GHG Emissions and Energy Use		X	Analyses of the GHG emissions and energy usage for the Project are provided in Appendix B. Less than significant impacts related to these topics are expected from construction and operation of the proposed Project. GHG emissions from construction are very minor, and the GHG emissions associated with indirect electrical power generation needed for the electrolyzer would be less than significant. The proposed Project would be consistent with several strategies in the Escondido Climate Action Plan, including encouraging use of zero-emissions and alternative fueled vehicles, reduced use of fossil fuels, and increase in renewable and zero-carbon energy. The Project also meets California's goals with the use of decarbonizing fuels to reduce GHG emissions.
Hazardous Materials		X	Hydrogen is already stored on-site, and the amount stored will increase (from approximately 418 lbs to 600 lbs) but will remain well below the Threshold Quantity (TQ) level of 10,000 pounds listed in the California Accidental Release Prevention (CalARP) Program.

Resource Area	Significant Impact?		Analysis
	Yes	No	
Land Use		X	The use of hydrogen for generator cooling is already allowed at PEC and the proposed changes will comply with requirements of the City of Escondido General Plan and Escondido Research and Technology Center (ERTC) Specific Plan, so no zoning changes will be needed. Therefore, impacts related to land use are not expected.
Noises and Vibration		X	An analysis of construction and operational noise and vibration is provided in Appendix B. Less than significant impacts are expected.
Public Health		X	Combustion or use of hydrogen will reduce the amount of fine and respirable particulate matter and GHG emissions from the CTGs. Therefore, the proposed Project will have a beneficial impact on public health in the nearby communities.
Socioeconomic Resources		X	The construction of the proposed Project will be temporary, and the proposed Project does not require any changes in operations workforce; hence, there will be no socioeconomic impact.
Soil and Water Resources		X	<p>Impacts to Soils are not expected. The proposed Project will be constructed on a previously disturbed site and construction will occur on a previously graded and leveled area. If needed, the site's Stormwater Pollution Prevention Plan (SWPPP) will be updated to ensure impacts to soils are minimized.</p> <p>Water use by the electrolyzers will have a less than significant impact on water resources/water quality. The project will utilize reclaimed water from the HARRF, and no potable water will be used. The reclaimed water will be processed in PEC's DW system which currently has sufficient capacity for the proposed Project. Likewise, any process or wastewater discharge will be put into PEC's existing system which has sufficient capacity to handle these flows.</p> <p>Soil and Water (S&amp;W) Resources Appendix A in the Final Staff Assessment (FSA) for PEC (CEC 2003) indicated that the HARRF would be able to produce up to 9 MGD of reclaimed water after planned improvements were made to add tertiary treatment to the HARRF. Of that amount, it was estimated in the FSA that PEC might use up to 3.6 MGD of reclaimed water. None of the S&amp;W COCs for PEC limit the amount of reclaimed water that can be used from the HARRF, and PEC was seen as substantial financial benefactor for the HARRF improvements by virtue of being a year-round user of the reclaimed water. Based on the requirement of 0.9 L/Nm<sup>3</sup> of water for the production rate of 49 lbs/hr of hydrogen produced (See Table 2-1), it is estimated that the proposed Project could require approximately 0.0015 MGD of DW. Actual usage of reclaimed water by PEC in 2020 was an average of approximately 1.6 MGD. Therefore, the small usage of DW for the proposed Project would be well below that analyzed in the FSA for PEC and hence would have a less than significant impact on water supply.</p>



Resource Area	Significant Impact?		Analysis
	Yes	No	
Traffic and Transportation		X	The construction workforce will be minimal and construction worker parking and laydown areas can be accommodated on-site. The proposed Project does not require any changes in PEC workforce for plant operation; hence, there will be no traffic or transportation impact due to worker commute. The proposed changes will reduce the quantity of hazardous materials delivered to the Facility since hydrogen will now be produced on-site. The hydrogen fueling station may have up to 5 FCEVs per day travel to the site, but this amount of traffic would be minimal. Therefore, the proposed Project is expected to have a less than significant impact related to traffic and transportation.
Transmission Line Safety & Nuisance and System Engineering		X	The solar PV system will require interconnection on-site but no substantial changes to the offsite transmission system are anticipated due to the proposed Project. Therefore, impacts related to the transmission system are expected to be less than significant.
Visual Resources		X	An earthen berm currently runs along the eastern PEC property boundary to provide visual screening of the power plant from the adjacent properties, including the education center offices across from the proposed Project components. The tallest structures related to the proposed Project are the electrolyzer equipment at 20 feet and the solar PV canopies at 15 feet. The height of the berm near where the electrolyzer will be located is 25 feet, and hence provides sufficient screening of the view.
Waste Management		X	Construction waste will be minimized and recycled to the extent practicable. The proposed Project will not affect the level of solid waste production from the PEC; hence, there will be less than significant impact.
Worker Safety and Fire Protection		X	All required plans such as the Hazardous Materials Business Plan (HMBP) will be updated if needed related to the production, increased storage, and use of hydrogen on-site. The incremental increase in hydrogen storage on-site is well below the TQ for hydrogen. As a result of the safety procedures in place and updated as needed, the proposed Project will have a less than significant impact on worker safety and fire protection.

**E. An analysis of how the proposed change would affect the project's compliance with applicable laws, ordinances, regulations, and standards.**

The Palomar Hydrogen Project is expected to continue compliance with all applicable LORS. The proposed Project only requires minor changes to COCs AQ-2 and HAZ-1, which do not change the facility's compliance with any additional LORS or cause any compliance constraints. The proposed Project involves adding hydrogen facilities to an existing power generation site, including an increase in the amount of hydrogen stored on-site, such that the power plant can continue to meet requirements with regulations and existing permits. For instance, the proposed Project will continue to comply with LORS as follows:

- Hydrogen is not a regulated air pollutant, so the proposed facilities do not require air permitting. Blending of up to 2% hydrogen in the natural gas fuel will not require any changes to the current SDAPCD PTO related to emissions limits.
- All hydrogen generation, storage, and fuel-related facilities will be built in compliance with applicable Building, Energy Efficiency, and Fire Codes.
- Hydrogen is already stored on-site, but the Hazardous Materials Business Plan (HMBP) and CalARP Risk Management Plan (RMP) will be reviewed and updated if needed.
- All architectural design and painting and landscaping will comply with the Escondido Research and Technology Center (ERTC) Specific Plan requirements.
- The main facility components will be constructed in a disturbed area currently used for storage and a parking lot. This area underwent substantial grading and ground disturbance during initial power plant construction, hence impacts related to biological, cultural, paleontological, geologic, soils, etc. are not expected. Should issues arise, SDG&E has biological and cultural subject matter experts (SMEs) who will be readily available to assist.
- As discussed in Appendix B, the proposed Project will comply with Escondido's General Plan and City Municipal Code related to noise and vibration impacts.
- The site's SWPPP will be updated if needed for construction of the new Project components.
- The project will utilize reclaimed water from the HARRF and no potable water will be used. The reclaimed water will be processed in PEC's DW system which currently has sufficient capacity for the project. Likewise, any process or wastewater discharge will be put into PEC's existing system which has sufficient capacity to handle these flows.

**F. A discussion of how the proposed change would affect the public.**

The proposed changes would have a positive effect on the public by allowing PEC to move toward implementation of SB 100 and California's goals of a carbon free energy future. The proposed Project would not have a substantial environmental impact on the public. The small increase in temporary criteria pollutant emissions related to construction would not cause or contribute to an exceedance of an ambient air quality standard (AAQS). The small increase in short-term TAC emissions during construction would not cause health risk impacts exceeding significance thresholds. The increase in risk from the increase in storage of hydrogen, which is a flammable hazardous material, from approximately 418 lbs to 600 lbs hydrogen storage on-site would be minimized by meeting applicable Building and Fire Codes, as well as updating the HMBP and

RMP if needed. The noise from the new air and hydrogen compressors would not be substantially different than the background noise from the power plant and would be within the requirements of the local ordinances and municipal codes. PEC uses reclaimed water from the HARRF and the small amount of reclaimed water used for the electrolyzer would not impact potable water supplies. Up to five FCEVs per day using the new hydrogen fueling station would not substantially increase traffic, and with the production of hydrogen on-site, there will no longer be a need to have deliveries of hydrogen cylinders. An existing earthen berm along the eastern property boundary would screen the new hydrogen facilities so that there would be no impact to the public's views.

**G. A list of current assessor's parcel numbers and owners' names and addresses for all parcels within 500 feet of any affected project linears and 1,000 feet of the project site.**

Nearby property owners, the public, and Parties to the Application Proceeding will not be affected by the proposed modification, since the proposed Project will be consistent with the current operation of the power plant, will have less than significant environmental effects, and will be in compliance with applicable LORS. Because there are no potentially affected property owners, a list of property owners is not included in this PTA. A list of property owners within 1,000 feet of the plant site has previously been provided to the CEC CPM for previous Post-Certification Amendments.

**H. A discussion of the potential effect of the proposed change on nearby property owners, residents, and the public.**

As seen in Figure 2-2, there is a large parking lot immediately east of the area where the proposed Project will be located, with the education center office building located more than 440 feet east of the closest Project components. There are light industrial buildings more than 460 feet to the northeast and a bakery more than 550 feet to the southeast. There is a hospital approximately 1,400 feet to the northwest and the closest residences to the proposed Project are more than 1,900 feet to the west (See Figure 2-1).

As discussed in Section F, significant effects are not expected on these nearby property owners or the public. The temporary (approximately 6 months) short-term emissions of criteria pollutants and diesel particulate matter during construction would have a negligible effect on nearby property owners, residents, and the public. Compliance with applicable California Building and Fire Codes and HMBP/RMP requirements will ensure that risks related to hazardous material (hydrogen) handling will be minimal. Noise from the hydrogen and air compressors and other equipment will meet the relevant NOISE COCs (e.g., NOISE-6 which limits noise in the residential areas west of the power plant site), as well as all Municipal Codes related to noise. The proposed Project will not use potable water and will not substantially increase use of reclaimed water by the power plant. The existing berm will block views of the proposed Project components from the adjacent parking lot and nearby buildings.

**I. A discussion of any exemptions from the California Environmental Quality Act, of the Public Resources Code, that the project owner believes may apply to approval of the proposed change.**

Exemptions to CEQA have not been identified.

### 3.0 SUMMARY AND CONCLUSIONS

The Palomar Hydrogen Project is proposed to support California's and SDG&E's goals to reduce GHG emissions and move toward a carbon free future.

Construction of the proposed new facilities are expected to take approximately a year, with the first six months for final engineering and design and equipment procurement, and approximately six months for the solar PV installation and construction and testing of the hydrogen components. The proposed Project will be constructed within the existing power plant footprint in an area currently used for storage and a parking lot. The area was extensively graded and disturbed during initial power plant construction, and no impacts to soils or to below ground level cultural or paleontological resources are expected. Minor air quality impacts during construction would be less than significant.

Operation of the proposed Project will entail hydrogen production using an electrolyzer and an increase in hydrogen storage in compressed gas cylinders from a maximum of 418 lbs to 600 lbs of hydrogen, which is still well below the TQ of 10,000 lbs where additional risk measures would need to be taken. Having an option to use a blended fuel will not affect power plant reliability or efficiency. No new off-site transmission system improvements or changes are needed. The proposed Project will include the installation of 300 kW PV solar which will reduce the amount of electricity needed from the grid for operation of the electrolyzer. Since the grid power is not yet 100% green, this energy use will cause indirect GHG emissions of approximately 2,724 metric tons (MT)/year related to the production of electricity, which is well below the San Diego County significance threshold of 10,000 MT per year.

Use of the blended fuel is not expected to impact SDG&E's ability to maintain compliance with the current SDAPCD PTO. No potable water will be used for hydrogen production and the additional reclaimed water used is small compared to other uses at PEC and well within the capacity of the HARRE. No changes to zoning or land use designation are needed, building design and painting as well as landscaping will remain consistent the ERTC Specific Plan, so there will be no land use impacts. There will be no change to the operational workforce needed and the up to five vehicles per day that would use the new hydrogen fueling station would not be a significant impact to traffic. The existing berm along the property boundary will sufficiently screen the new Project components from public view.

Implementation of the proposed Project does not introduce any new LORS for operation of the PEC since hydrogen is already used and stored on-site. Minor revisions to only two of the COCs are proposed related to the proposed Project (AQ-2 and Appendix C of HAZ-1) and only one other COC (AQ-28) is proposed to reflect a change that the SDAPCD is making to the PEC PTO. Hydrogen is not a pollutant or TAC and no new or revised environmental permits are needed. The nearby property owners, residents, or the public should not be significantly impacted by the project. Therefore, the proposed Project should be approved.

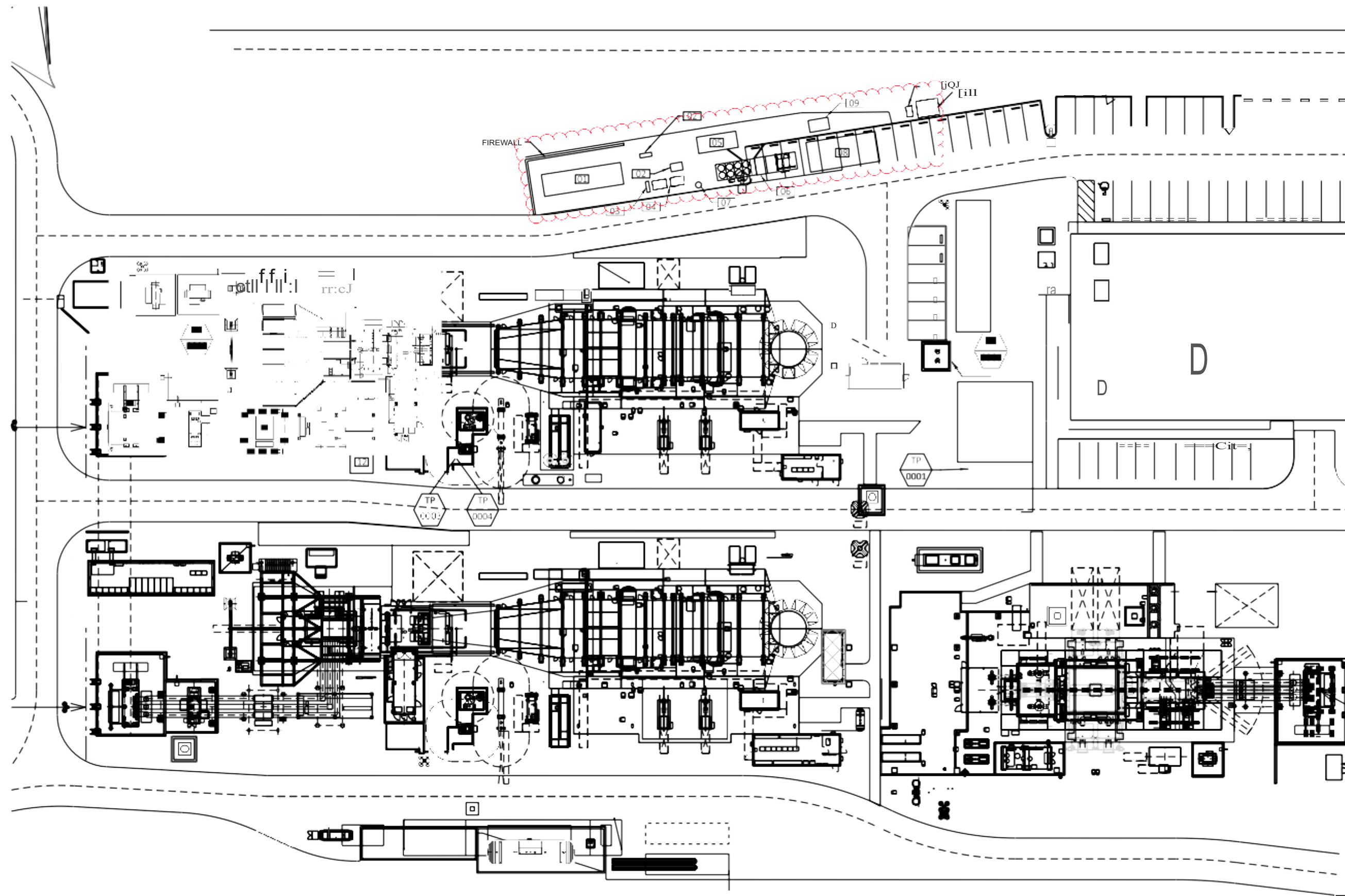
## 4.0 REFERENCES

- Baronas, Jean, Gerhard Achtelik, et al. 2020. Joint Agency Staff Report on Assembly Bill 8: 2020 Annual Assessment of Time and Cost Needed to Attain 100 Hydrogen Refueling Stations in California. California Energy Commission and California Air Resources Board. Publication Number: CEC-600-2020-008. Accessed online June 22, 2021: <https://www.energy.ca.gov/sites/default/files/2021-05/CEC-600-2020-008.pdf>
- California Air Pollution Control Officers Association (CAPCOA). 2008. CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act, January 2008. Accessed online June 24, 2021: (<http://www.capcoa.org/wp-content/uploads/downloads/2010/05/CAPCOA-White-Paper.pdf>).
- California Air Resources Board (ARB). 2017. California's 2017 Climate Change Scoping Plan. Website (<https://ww3.arb.ca.gov/cc/scopingplan/scopingplan.htm>) accessed May 21, 2021.
- California Emissions Estimation Model® (CalEEMod). 2020. Version 2020.4. Website (<http://www.caleemod.com/>) accessed June 24, 2021.
- California Energy Commission. 2019. Building Energy Efficiency Program. Website (<https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards>) accessed May 21, 2021.
- California Energy Commission. 2003. Final Staff Assessment Palomar Power Project. Application for Certification (01-AFC-24). January.
- California Governor's Office of Emergency Services (CalOES). 2020. "California Accidental Release Prevention (CalARP) Program Guidance." Website (<https://www.caloes.ca.gov/FireRescueSite/Documents/CalARP%20Guidance.pdf#search=hydrogen%20threshold%20quantity>) accessed June 22, 2021:
- California Independent System Operator (ISO). 2016. "Fast Facts: What the duck curve tells us about managing a green grid." Accessed online June 22, 2021: [http://www.caiso.com/Documents/Flexibleresourceshelprenewables\\_FastFacts.pdf](http://www.caiso.com/Documents/Flexibleresourceshelprenewables_FastFacts.pdf)
- City of Escondido, Escondido Research and Technology Center (ER&TC) Specific Plan. Accessed online June 22, 2021: <https://www.escondido.org/Data/Sites/1/media/pdfs/Planning/ERTCSpecificPlan.pdf>
- County of San Diego (County). 2007. Guidelines for Determining Significance, Air Quality, March 2007. Accessed online June 24, 2021 (<https://www.sandiegocounty.gov/content/dam/sdc/pds/ProjectPlanning/docs/AQ-Guidelines.pdf>).
- County of San Diego (County). 2018. Guidelines for Determining Significance, Climate Change, February 2018. Accessed online June 24, 2021 (<https://www.sandiegocounty.gov/content/dam/sdc/pds/ProjectPlanning/docs/Final%20Climate%20Change%20Significance%20Guidelines%20Clean.pdf>).
- Fuel Cell Store (FCS). 2017. Introduction to Electrolyzers. Website ([www.fuelcellstore.com/blog-section/introduction-to-electrolyzers](http://www.fuelcellstore.com/blog-section/introduction-to-electrolyzers)) accessed June 24, 2021.

- GO-Biz (California Governor's Office of Business and Economic Development). 2020. Hydrogen Station Permitting Guidebook. September. Accessed online June 22, 2021: [https://cdn.businessportal.ca.gov/wp-content/uploads/2020/09/GO-Biz\\_Hydrogen-Station-Permitting-Guidebook\\_Sept-2020.pdf](https://cdn.businessportal.ca.gov/wp-content/uploads/2020/09/GO-Biz_Hydrogen-Station-Permitting-Guidebook_Sept-2020.pdf)
- H2-international. 2017. Electrolyzer Manufacturers Stake Their Claims. Accessed online on June 22, 2021: <https://www.h2-international.com/2017/06/06/electrolyzer-manufacturers-stake-their-claims/>
- The Intergovernmental Panel on Climate Change (IPCC). 2014. *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp. Website (<https://www.ipcc.ch/reports/>) accessed June 24, 2021.
- Keating, Cecilia. 2020. "Green hydrogen could curb one-third of fossil fuel and industry emissions by 2050." GreenBiz. April 7.
- Larson, Aaron. 2021. Power Podcasts: Hydrogen and the Energy Transition. Power Magazine. February 25. Accessed online June 22, 2021: <https://www.powermag.com/hydrogen-and-the-energy-transition/>
- San Diego Gas & Electric (SDG&E). 2021. Sustainability Strategy – Paving the Way to a Net Zero Future. Fact Sheet. Accessed online on June 22, 2021: <https://www.sdge.com/sites/default/files/5-6-21cleanenergyfactsheet.pdf>
- South Coast AQMD (South Coast Air Quality Management District). 2021. South Coast AQMD Advisor. January/February 2021. Volume 28. Issue 1. Accessed online June 22, 2021: <https://www.aqmd.gov/home/research/publications/jan-feb-2021/cec-hydrogen-fueling-stations>
- The Climate Registry (TCR). 2020. Default Emission Factors Document. Website (<https://www.theclimateregistry.org/wp-content/uploads/2020/04/The-Climate-Registry-2020-Default-Emission-Factor-Document.pdf>) accessed May 21, 2021.
- USDOE (US Department of Energy). 2017. Confronting the Duck Curve: How to Address Over-Generation of Solar Energy. October 12. Accessed online June 22, 2021: <https://www.energy.gov/eere/articles/confronting-duck-curve-how-address-over-generation-solar-energy>
- USDOE. 2020a. Hydrogen Production: Electrolysis. Department of Energy, Office of Energy Efficiency and Renewable Energy. Accessed online on June 22, 2021: <https://www.energy.gov/eere/fuelcells/hydrogen-production-electrolysis>
- USDOE. 2020b. Fuel Cells. Accessed Online January 27, 2020: Department of Energy, Office of Energy Efficiency and Renewable Energy: <https://www.energy.gov/eere/fuelcells/fuel-cells>
- USDOE. 2020c. Homeowner's Guide to Going Solar. Accessed Online January 27, 2020: Department of Energy, Office of Energy Efficiency and Renewable Energy: <https://www.energy.gov/eere/solar/homeowner-s-guide-going-solar>

## **APPENDIX A – FACILITY PLOT PLAN AND SOLAR CANOPIES LOCATIONS**





EQUIPMENT IDENTIFICATION	
	DESCRIPTION
01	HYDROGEN STORAGE
02	AIR COOLED HX PUMPS AND TANK
03	NITROGEN RACK
04	COMPRESSORS
05	RECTIFIER
06	ELECTROLYZER
07	WASTEWATER SUMP
08	ELECTRICAL ENCLOSURE
09	AUXILIARY TRANSFORMER
10	VEHICLE FUELING DISPENSER
11	VEHICLE HYDROGEN FUELING STATION
12	U2 FG BLEN DING SKI D

TERMINAL POINT IDENTIFICATION	
	DESCRIPTION
0001	DEMIN WATER TO ELECTROLYZER
0002	H2 TO U1/U2 CTG AND STG COOLING
0003	U2 FG TO U2 BLEN DING SKI D
0004	U2 FG BLENDING TO U2 FG HEATER
0005	WASTEWATER SUMP TO HRSG BD SUMP

NOTES:

1. THIS ARRANGEMENT IS CONCEPTUAL ONLY. CONTRACTOR TO CONFIRM ARRANGEMENT FOR EQUIPMENT AND PROCESS BEING PROPOSED.
2. ALL FINISHED GRADE SHALL HAVE AGGREGATE.

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FOR CONSTRUCTION**

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SDG&E PALOMAR ENERGY CENTER  
2300 HARVESON PL  
ESCONDIDO, CALIFORNIA 92029  
APN: 232-591-01

NEW PHOTOVOLTAIC SYSTEM | 304.24 kWDC (249.9kWAC)

ABBREVIATIONS

(+)	POSITIVE	KAIC	KILOAMPERE INTERRUPTING RATING
(-)	NEGATIVE	kCMIL	THOUSAND CIRCULAR MILS
A	AMPS, AMPERES	KV	KILOVOLTS
AC	ALTERNATING CURRENT	kVA	KILOVOLT-AMPERES
ADA	AMERICANS WITH DISABILITIES ACT	kW	KILOWATTS
AF	AMP FRAME, AMP FUSE	kWh	KILOWATT-HOURS
AFF	ABOVE FINISH FLOOR	LBS	POUNDS
AFG	ABOVE FINISH GRADE	LF	LINEAR FEET
AHJ	AUTHORITY HAVING JURISDICTION	LV	LOW VOLTAGE
AIC	AMPERE INTERRUPTING RATING	M	METERS
AL	ALUMINUM	MAX	MAXIMUM
APPROX	APPROXIMATE	MCB	MAIN CIRCUIT BREAKER
AS	AMP SWITCH	MFR	MANUFACTURER
ASSOC	ASSOCIATION	MIN	MINIMUM
AT	AMP TRIP	MLO	MAIN LUGS ONLY
C	ATS	MSB	MAIN SERVICE BOARD
AVG	AVERAGE	MV	MEDIUM VOLTAGE
AWG	AMERICAN WIRE GAUGE	NEU	NEUTRAL
BKR	CIRCUIT BREAKER	NC	NORMALLY CLOSED
BLDG	BUILDING	NEC	NATIONAL ELECTRIC CODE
C	CONDUIT	NEG	NEGATIVE
CB	CIRCUIT BREAKER	NEM	NET ENERGY METER
CBC	CALIFORNIA BUILDING CODE	NEMA	NATIONAL ELECTRICAL MFR ASSOC
CEC	CALIFORNIA ELECTRIC CODE	NF	NON-FUSED
CFC	CALIFORNIA FIRE CODE	NFPA	NATIONAL FIRE PROTECTION ASSOC
CKT	CIRCUIT	NO	NORMALLY OPEN, NUMBER
CL	CENTER LINE	NRTL	NATIONALLY RECOGNIZED TESTING LAB
CMU	CONCRETE MASONRY UNIT	NTS	NOT TO SCALE
COMM	COMMUNICATION(S)	OC	ON CENTER
CONC	CONCRETE	OCPD	OVERCURRENT PROTECTION DEVICE
CSFM	CALIFORNIA STATE FIRE MARSHAL	OH	OVERHEAD
CT	CURRENT TRANSFORMER	(P)	PROPOSED
CTR	CENTER	P	POLE
CU	COPPER	PB	PULLBOX
DAS	DATA ACQUISITION SYSTEM	PH	PHASE
DC	DIRECT CURRENT	POCC	POINT OF COMMON CONNECTION
DET	DETAIL	POS	POSITIVE
DIA	DIAMETER	PT	POTENTIAL TRANSFORMER
DIM	DIMENSION	PV	PHOTOVOLTAIC
DISCO	DISCONNECT	PVC	POLYVINYL CHLORIDE
DWG	DRAWING	QTY	QUANTITY
(E)	EXISTING	REQD	REQUIRED
EA	EACH	RGM	REVENUE GRADE METER
EC	ELECTRICAL CONTRACTOR	RGS	RIGID GALVANIZED STEEL CONDUIT
EG	EQUIPMENT GROUND	RM	ROOM
EGC	EQUIPMENT GROUNDING CONDUCTOR	RMC	RIGID METAL CONDUIT
ELEC	ELECTRIC, ELECTRICAL	RMS	ROOT MEAN SQUARE
ELEV	ELEVATION	RSD	RAPID SHUTDOWN
EMT	ELECTRICAL METALLIC TUBING	SCC	SHORT CIRCUIT CURRENT
ENT	ELECTRICAL NON-METALLIC TUBING	SCH40	SCHEDULE 40
EXT	EXTERIOR	SCH80	SCHEDULE 80
F	FUSE, FUSED	SLD	SINGLE LINE DIAGRAM
FIN	FINISH	SCHED	SCHEDULE
FL	FLOOR	SS	STAINLESS STEEL
FR	FRAME	SW	SWITCH
FT	FEET	SWBD	SWITCHBOARD
G	GROUND	SWGR	SWITCHGEAR
GALV	GALVANIZED	TEMP	TEMPERATURE, TEMPORARY
GC	GENERAL CONTRACTOR	TYP	TYPICAL
GEC	GROUNDING ELECTRODE CONDUCTOR	UGPS	UNDERGROUND PULL SECTION
GFI/GFCI	GROUND FAULT CIRCUIT INTERRUPTER	UL	UNDERWRITERS LABORATORIES
GFP	GROUND FAULT PROTECTION	UNO	UNLESS NOTED OTHERWISE
GND	GROUND	V	VOLTS
HDG	HOT DIP GALVANIZED	VA	VOLT-AMERES
HH	HANDHOLE	VAC	VOLTS-AC
HZ	HERTZ	VDC	VOLTS-DC
IMC	INTERMEDIATE METAL CONDUIT	VMP	MAX POWER VOLTAGE
IMP	MAX POWER OPERATING CURRENT	VOC	OPEN CIRCUIT VOLTAGE
IN	INCHES	W	WATTS
ISC	SHORT CIRCUIT CURRENT	WP	WEATHERPROOF
J/JB	JUNCTION BOX	WW	WIREWAY
JST	JOIST	XFMR	TRANSFORMER

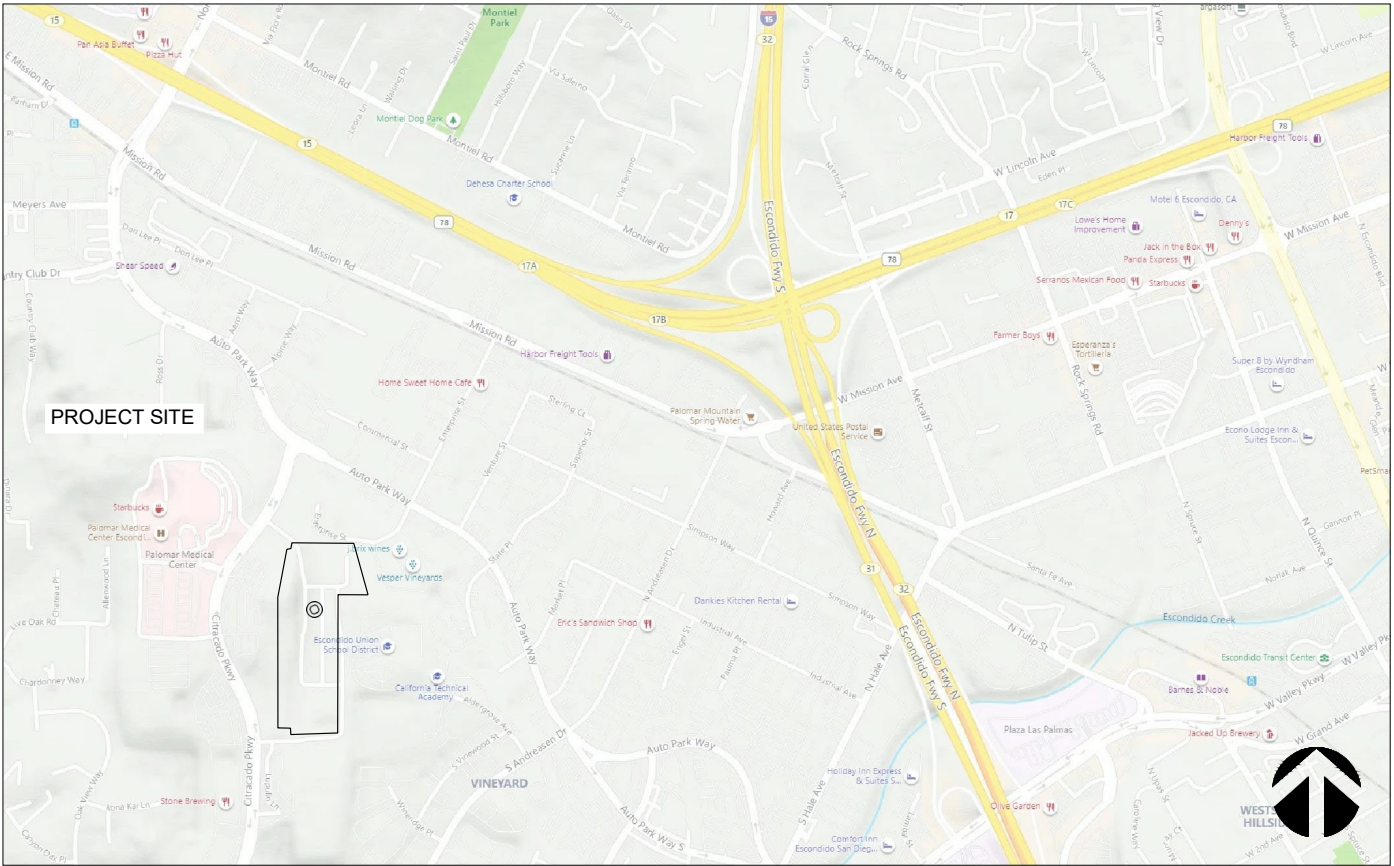
GENERAL NOTES

- 1- WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE 2019 CBC, 2019 CEC, 2019 CFC, 2017 NEC AND ANY ADDITIONAL CODES BEING ENFORCED BY THE AHJ (SUCH AS THE SAN DIEGO AREA ELECTRICAL NEWSLETTERS IF APPLICABLE).
- 2- WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE SERVING ELECTRIC UTILITY.
- 3- ALL PV MODULES AND INVERTERS ARE LISTED, IN COMPLIANCE WITH UL 1703 & UL 1741 AND INSTALLED PER THEIR LISTINGS.
- 4- EXISTING CONDITIONS SHALL BE VERIFIED PRIOR TO COMMENCING WORK.
- 5- NEW EQUIPMENT INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL OR BUILDING ROOF VENTS.
- 6- DO NOT SCALE FROM PLANS - USE GIVEN OR CALCULATED DIMENSIONS ONLY. WHEN IN DOUBT, CALL THE DESIGNER.
- 7- ALL ROOF, WALL, FLOOR AND CEILING PENETRATIONS SHALL BE COORDINATED WITH BUILDING OWNER, ARCHITECT, ROOFER & STRUCTURAL ENGINEER.
- 8- ALL WALL, FLOOR AND CEILING PENETRATIONS SHALL BE SEALED WITH FIRE RETARDANT PER 2019 CBC.
- 9- ALL ROOF PENETRATIONS SHALL BE SEALED AND WATERPROOFED TO MAINTAIN THE EXISTING FIRE RATING, AND SHALL BE PERFORMED BY A LICENSED ROOFING CONTRACTOR. ANY FLASHING DETAILS SHOWN ARE EXAMPLES ONLY.
- 10- CONTRACTOR SHALL PROTECT ALL EXISTING SURFACES.
- 11- PV MODULES, ASSOCIATED EQUIPMENT AND WIRING MATERIAL SHALL BE PROTECTED FROM ANY PHYSICAL DAMAGE.
- 12- ALL EFFORTS SHALL BE TAKEN TO PREVENT GALVANIC CORROSION DUE TO DIRECT CONTACT OF DISSIMILAR METALS.
- 13- PROPER ACCESS AND WORKING CLEARANCE SHALL BE MAINTAINED PER CEC 110.26.
- 14- MARKING OF THE PV SYSTEM SHALL BE IN ACCORDANCE WITH 2019 CEC, 2019 CFC, 2017 NEC AND THE SERVING ELECTRIC UTILITY - SEE MARKING DETAILS ON SUBSEQUENT SHEET(S).
- 15- CONTRACTOR SHALL OBTAIN APPROVAL FROM THE SERVING ELECTRIC UTILITY PRIOR TO ACTIVATING THE PV SYSTEM.
- 16- REMOTE MONITORING OF ANY PV SYSTEM REQUIRES AN ALWAYS-ON NETWORK INTERFACE CONNECTION.
- 17- PLANS MAY ASSUME SOME WORK NOT SHOWN. CONTRACTOR WILL PROVIDE A COMPLETE AND FUNCTIONAL PRODUCT.
- 18- SEE SUBSEQUENT SHEETS FOR ADDITIONAL ELECTRICAL AND STRUCTURAL NOTES.

SHEET INDEX

NUMBER	IDENTIFIER	DESCRIPTION
<u>GENERAL</u>		
01	G-001	COVER SHEET
<u>ELECTRICAL</u>		
-	E-101	ELECTRICAL SITE PLAN
-	E-102	ELECTRICAL EQUIPMENT LAYOUT - ROOF & CP-1
-	E-103	ELECTRICAL EQUIPMENT LAYOUT - CARPORT CP-2 THRU CP-5
-	E-104	ELECTRICAL EQUIPMENT PLAN VIEW AND ELEVATIONS
-	E-801	DATA SHEETS
-	E-802	DATA SHEETS

VICINITY MAP



PROJECT TEAM

**GENERAL CONTRACTOR AND ELECTRICAL DESIGNER**  
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1298 PACIFIC OAKS PLACE  
ESCONDIDO, CA 92029  
(760) 745-2001  
PM: DAYN RICHARDSON  
DESIGNER: AUSTIN EARLEY

**STEEL CONTRACTOR**  
TEICHERT SOLAR  
10620 TREENA ST 140  
SAN DIEGO, CA 92131  
(562) 283-2970  
CONTACT: ANDREAS KARLSON

**STRUCTURAL ENGINEER**  
TKJ STRUCTURAL ENGINEERING  
9820 WILLOW CREEK ROAD  
SUITE 455  
SAN DIEGO, CA 92131  
(858) 649-1700  
CONTACT: BO JAQUESS

**STRUCTURAL ENGINEER**  
ORIE2 ENGINEERING INC.  
9750 MIRAMAR RD. SUITE 310  
SAN DIEGO, CA 92126  
CONTACT: DANIEL FISHER

SITE INFORMATION & PROJECT SCOPE

**SITE DESCRIPTION**

APN: 232-591-01  
LEGAL DESCRIPTION: LOT 1 MAP 433151  
USE CODE DESCRIPTION: SDG&E  
ZONED COUNTY CODE: SDG&E

**APPLICABLE BUILDING CODES**

2019 CALIFORNIA BUILDING CODE  
2019 CALIFORNIA ELECTRICAL CODE  
2019 CALIFORNIA FIRE CODE  
2017 NATIONAL ELECTRIC CODE

**PROPERTY OWNER**

SDG&E  
2300 HARVESON PL.  
ESCONDIDO, CA

**SCOPE OF WORK**

A SOLAR PHOTOVOLTAIC SYSTEM WILL BE INSTALLED ON AN EXISTING COMMERCIAL BUILDING. FIVE STEEL CARPORTS WILL BE INSTALLED IN THE PARKING LOT, ON WHICH A PORTION OF THE PV SYSTEM WILL BE INSTALLED. THE DC SYSTEM WILL OPERATE AT A MAXIMUM OF 1,000VDC. THE PV SYSTEM WILL INTERCONNECT IN PARALLEL WITH THE EXISTING AC ELECTRICAL SYSTEM. THE ENERGY GENERATED BY THE PV SYSTEM WILL OFFSET A PORTION OF THE FACILITY LOADS.

**PHOTOVOLTAIC SYSTEM SUMMARY**

303.24 kWDC (249.9 kWAC) ROOF AND CARPORT MOUNTED PV SYSTEM CONSISTING OF  
\*\* (722) LG420N2W-V5 PV MODULES (420 WDC-STC, 386.9 WDC-CEC)  
\*\* (54) AP SMART RSD-S-PLC RAPID SHUTDOWN DEVICES  
\*\* (3) SMA STP50-US-41 INVERTERS (50.0 kW, 97.5% CEC EFFICIENCY)  
\*\* (3) SMA STP33-US-41 INVERTERS (33.3 kW, 97.5% CEC EFFICIENCY)  
\*\* A UNIRAC/S-5! RACKING SYSTEM  
\*\* A SMA DATA ACQUISITION SYSTEM  
\*\* AC AND DC EQUIPMENT REQUIRED TO CREATE A COMPLETE, CODE COMPLIANT, SAFE AND FUNCTIONAL PRODUCT



REGISTRATION  
**BAKER ELECTRIC, INC.**  
1298 PACIFIC OAKS PL.  
ESCONDIDO, CA 92029  
(760) 745-2001  
**C10-161756**  
EXP. 8/31/2021

PROJECT TITLE  
**SDG&E PALOMAR ENERGY CENTER  
303.24 kWDC PHOTOVOLTAIC PROJECT  
2300 HARVESON PLACE  
ESCONDIDO, CA 92029**

REV	BY	DATE	DESCRIPTION
a.5	AE	08/06/2021	30% CLIENT REVIEW

PROJECT NUMBER	22398
DRAWN BY	AE/IV
CHECKED BY	
DATE	08/06/2021
REVISION	a.5
SHEET IDENTIFIER	<b>G-001</b>
SHEET	OF





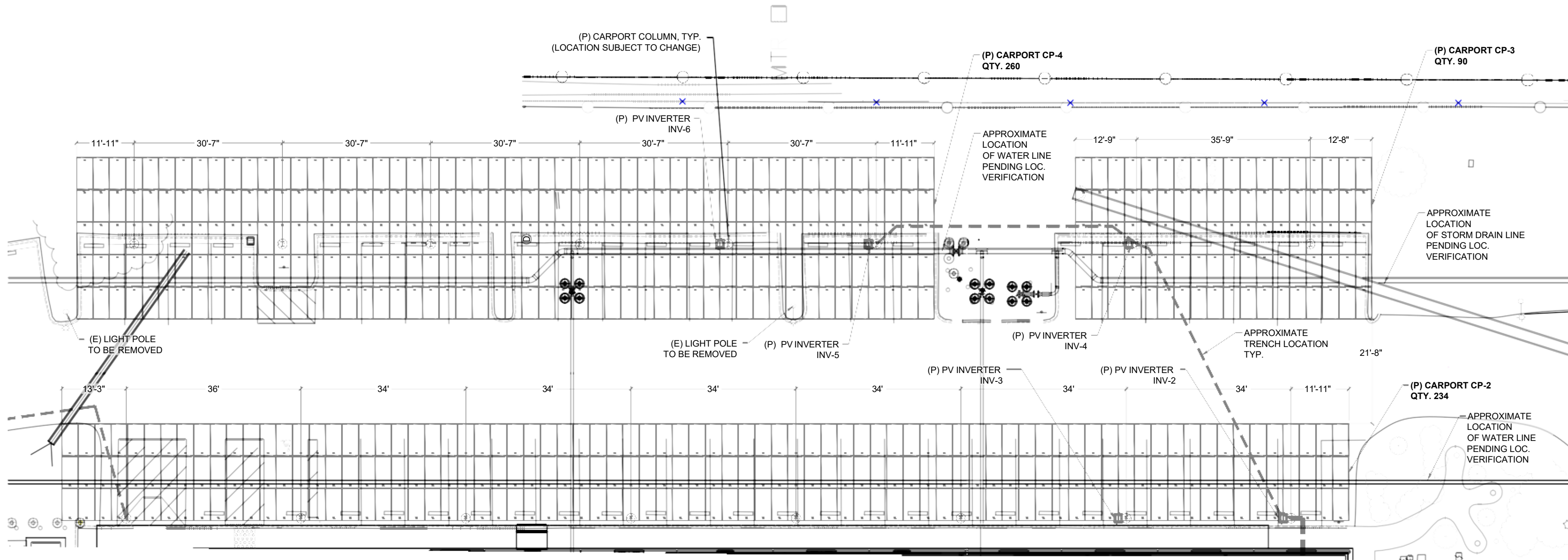


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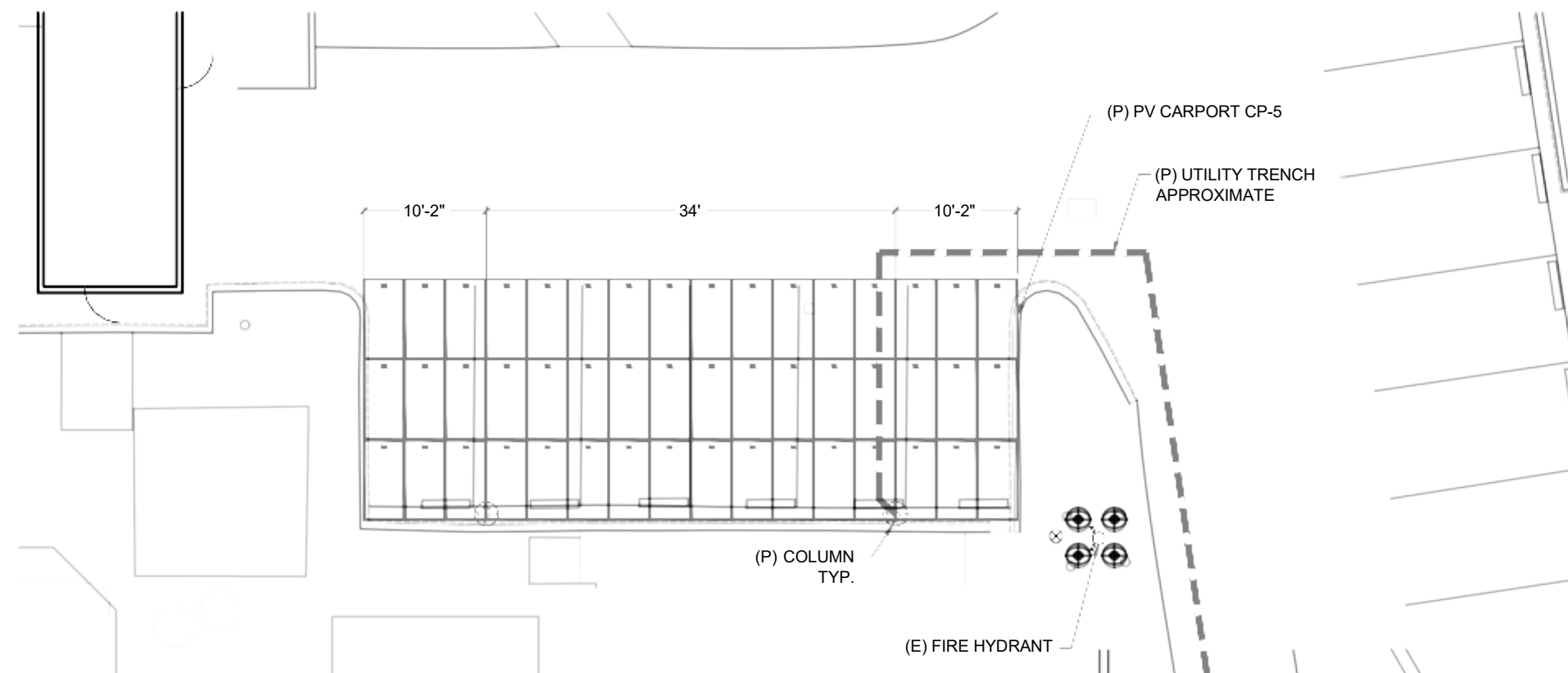
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B

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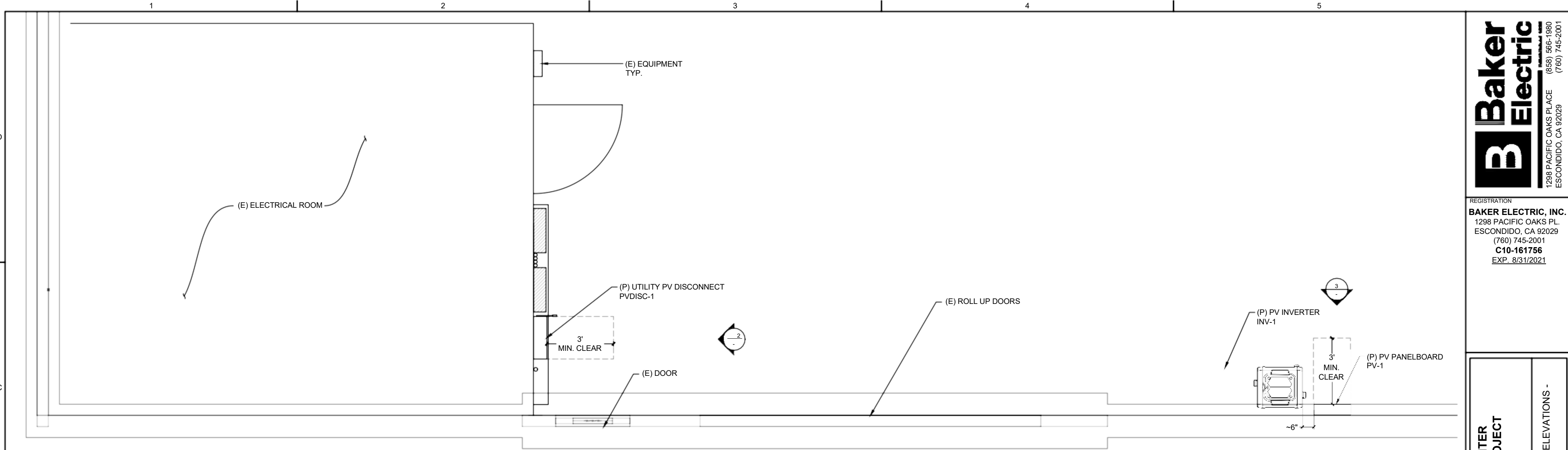
① ELECTRICAL EQUIPMENT LAYOUT - CARPORTS CP-2, CP-3, CP-4  
SCALE - 3/32" = 1'-0"



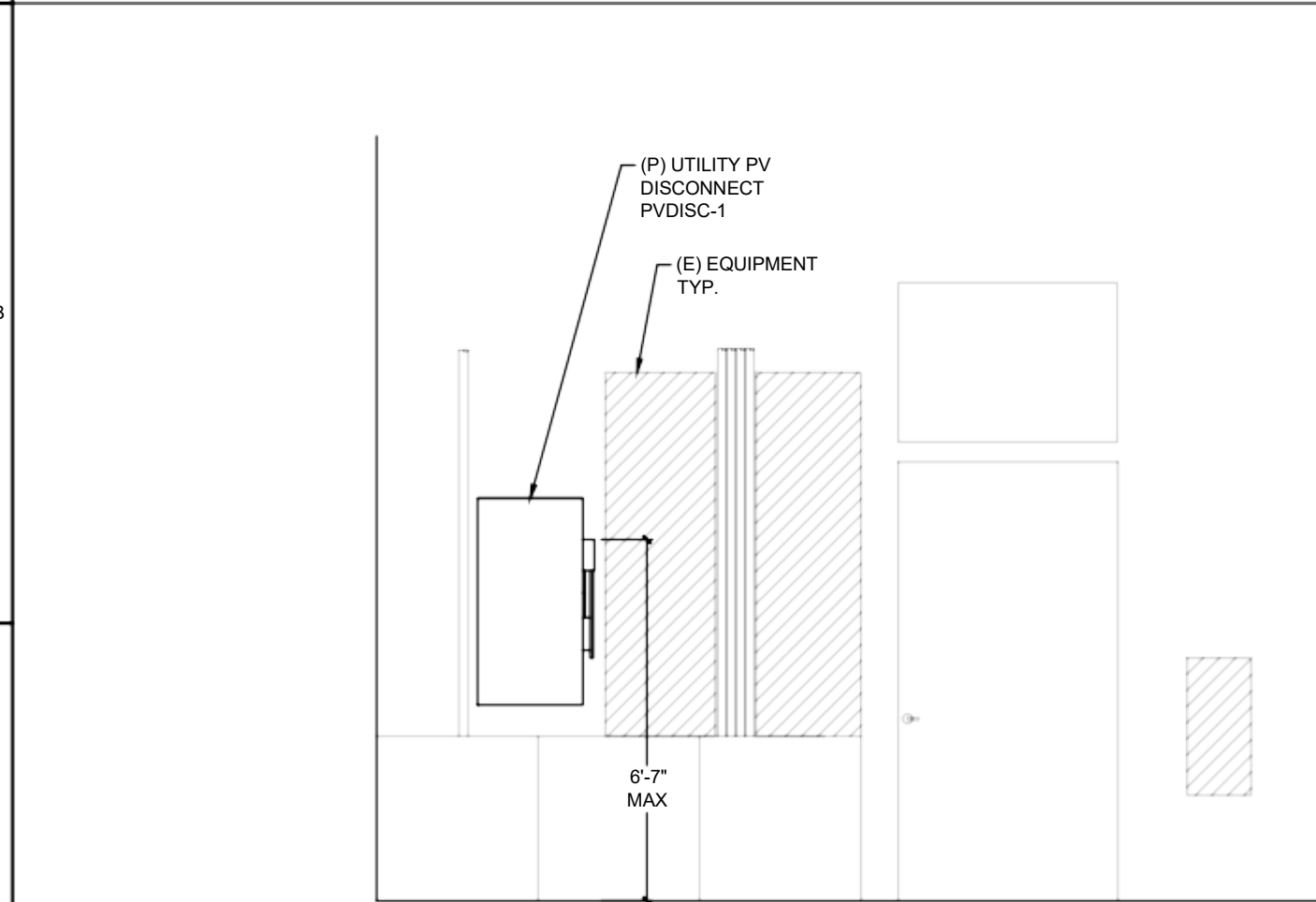
② ELECTRICAL EQUIPMENT LAYOUT - CARPORT CP-5  
SCALE - 1/8" = 1'-0"



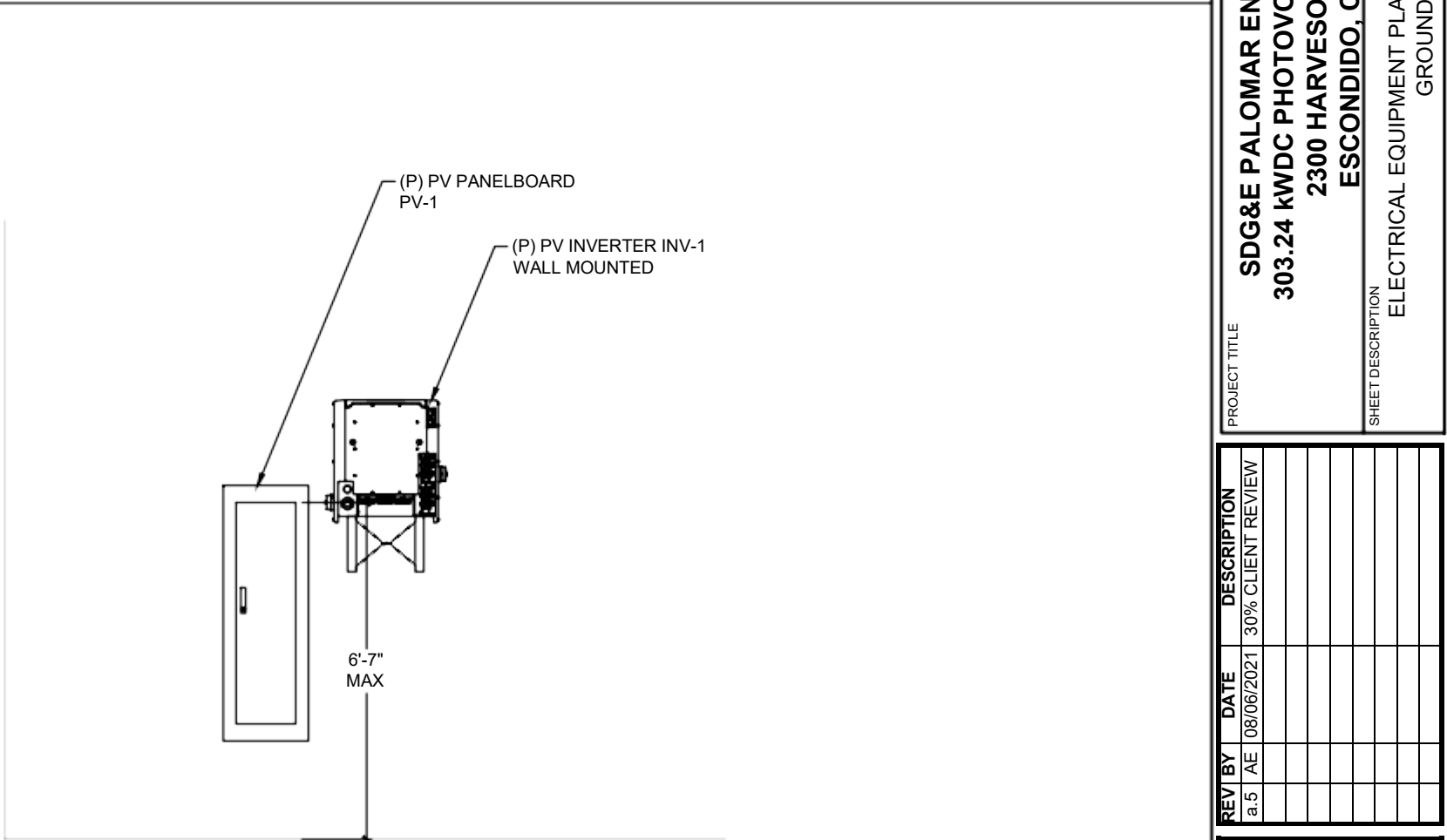
REV	BY	DATE	DESCRIPTION
a.5	AE	08/06/2021	30% CLIENT REVIEW



1 ELECTRICAL EQUIPMENT PLAN VIEW - GROUND FLOOR  
SCALE - 1/2" = 1'0"



2 PVDISC-1 ELEVATION - GROUND FLOOR  
SCALE - 1/2" = 1'0"



3 PVDISC -2 ELEVATION - GROUND FLOOR  
SCALE - 1/2" = 1'0"



REGISTRATION  
**BAKER ELECTRIC, INC.**  
1298 PACIFIC OAKS PL.  
ESCONDIDO, CA 92029  
(760) 745-2001  
**C10-161756**  
EXP. 8/31/2021

PROJECT TITLE	SDG&E PALOMAR ENERGY CENTER	
	303.24 KWDC PHOTOVOLTAIC PROJECT	
	2300 HARVESON PLACE	
SHEET DESCRIPTION	ESCONDIDO, CA 92029	
	ELECTRICAL EQUIPMENT PLAN VIEW AND ELEVATIONS -	
	GROUND FLOOR	

REV	BY	DATE	DESCRIPTION
a.5	AE	08/06/2021	30% CLIENT REVIEW

PROJECT NUMBER		22398
DRAWN BY		AE/IV
CHECKED BY		
DATE		08/06/2021
REVISION		a.5
SHEET IDENTIFIER		<b>E-104</b>
SHEET		OF











## **APPENDIX B – AIR QUALITY AND PUBLIC HEALTH, GHG EMISSIONS AND ENERGY USE, AND NOISE AND VIBRATION ANALYSES**

# **Appendix B – Air Quality and Public Health, GHG Emissions and Energy Use, and Noise and Vibration Analyses**

Prepared for:

**San Diego Gas & Electric  
Palomar Energy Center  
2300 Harveson Place  
Escondido, California 92029**

August 2021

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# Appendix B – Air Quality and Public Health, GHG Emissions and Energy Use, and Noise and Vibration Analyses

## 1.0 INTRODUCTION

This appendix contains evaluations of several of the topics, specifically air quality, public health, greenhouse gas (GHG) emissions, energy, and noise and vibration, that required more detailed quantitative analyses.

## 2.0 AIR QUALITY AND PUBLIC HEALTH

### 2.1 Air Quality and Public Health Significance Criteria

The potential for impacts to air quality and public health from construction and operation of the proposed Project are discussed in this section. The San Diego County *Guidelines for Determining Significance, Air Quality* (County 2007) was used as a basis for determining the significance of the impact to air quality. Guidelines for health risk assessments (HRAs) published by the California Office of Environmental Health Hazard Assessment (OEHHA 1990) were used to assess impacts to public health.

### 2.2 Construction Emissions

The construction emissions analysis was performed using the California Emissions Estimator Model<sup>®</sup> (CalEEMod) version 2020.4.0, the official statewide land use computer model designed to provide a uniform platform for estimating potential criteria pollutant and GHG emissions associated with construction of land use projects under the California Environmental Quality Act (CEQA). The model quantifies direct emissions from construction, including off-road equipment and on-road vehicle use. The mobile source emission factors used in the model include the Assembly Bill (AB) 1493 standards of 2002 and Low Carbon Fuel Standards. The 2020 version allows an analysis to be conducted which relies upon either the original EMFAC2017 emission factors or the California Air Resources Board's (ARB's) EMFAC2017 off-model adjustment factors for certain gasoline-fueled light duty and medium duty vehicles to account for the SAFE Vehicle Rule – Part One. The model also identifies regulatory measures and mitigation measures to reduce criteria pollutant and GHG emissions and calculates the benefits achieved from the selected measures. CalEEMod was developed by the California Air Pollution Control Officers Association (CAPCOA) in collaboration with the San Diego County Air Pollution Control District (SDAPCD) and other California air districts. Default land use data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) were provided by the various California air districts to account for local requirements and conditions.

The following information and assumptions were used in developing the emissions estimates for the Project using CalEEMod:

- Some project parameters (i.e., planned construction schedule and site layout) were defined by San Diego Gas and Electric (SDG&E), while others (i.e., overall site area) were determined using Google Earth measurement tools or site plan drawings;

- Default construction equipment horsepower ratings and load factors contained in CalEEMod were applied to all phases of the Project; and
- The default equipment performance parameters from CalEEMod for each construction phase are representative of actual construction equipment used during construction.

For this project, CalEEMod was run in default mode for the land use category “General Light Industry” for the entire 7,000-square-foot project area to estimate maximum potential impacts. The analysis assumed maximum demolition debris of approximately 76 tons of old asphalt and concrete to clear the project area, or eight truckloads. No site preparation or grading will be necessary or performed. For fugitive dust control from exposed soil on the small, previously graded construction site, twice daily water application was assumed as a mitigation measure in CalEEMod. Peak daily and annual criteria pollutant emissions are summarized in Table B-1 and compared to the San Diego County daily and annual screening-level significance thresholds (County 2007).

The use of diesel-powered construction equipment emits ozone precursors oxides of nitrogen (NO<sub>x</sub>) and volatile organic compounds (VOCs), as well as diesel particulate matter (DPM), which is a composite of toxic air contaminants (TACs) containing a variety of hazardous substances. DPM has been identified as a carcinogen by OEHHA (1990). Large construction projects using multiple large earthmoving equipment are often evaluated to determine if on-site activities may exceed the daily threshold for NO<sub>x</sub> emissions or temporarily expose area residents to hazardous levels of DPM. However, because the proposed Project construction will not involve large earthmoving equipment and is of small size (7,000 square feet) and short duration (less than 6 months), cumulative risks from DPM emissions would be avoided. Per guidance from OEHHA, it is generally not required to perform a health risk assessment (HRA) for construction lasting less than six months and the impacts to public health can be considered to be less than significant (LTS).

As shown in Table B-1, mass emissions of criteria pollutants from construction are below applicable County daily and annual significance thresholds, and hence the impact would be LTS. The CalEEMod output is provided in Attachment 1.

**Table B-1: Daily and Annual Construction Emissions and Significance Evaluation**

Criteria Pollutants	Daily Emissions (lbs/day)	Threshold (lbs/day)	Annual Emissions (tpy)	Threshold (tpy)	Significance
VOC	16.43	75	0.1	13.7	LTS
NO <sub>x</sub>	7.09	250	0.4	40	LTS
CO	7.76	550	0.4	100	LTS
SO <sub>x</sub>	0.01	250	0.0	40	LTS
Total PM <sub>10</sub>	0.51	100	0.02	15	LTS
Total PM <sub>2.5</sub>	0.36	55	0.02	10	LTS

Sources: County 2007, CalEEMod version 2020.4.0.

Notes:

lbs/day are winter or summer maxima for planned land use.

Total PM<sub>10</sub> / PM<sub>2.5</sub> comprises fugitive dust plus engine exhaust and account for application of fugitive dust control mitigation.



### 2.3 Operational Emissions

There would be no direct operational emissions of pollutants from the generation of hydrogen in the electrically powered electrolyzer system. The principal byproduct gas from electrolysis is oxygen (O<sub>2</sub>). There could be some indirect pollutant emissions due to power generation requirements of the new electrolyzer equipment that are over the amount of power produced by the new on-site solar photovoltaic (PV) system.

The normal operating condition will be a 1% blend of hydrogen in the natural gas fuel in one of the PEC combustion turbine generators (CTGs), but the maximum design blend will be 2% per CTG. A blend of up to 2% hydrogen with the natural gas in the two PEC CTGs is not expected to affect the ability of PEC to comply with its existing Permit to Operate (PTO) or air quality Conditions of Certification (COCs). According to recent articles, the major original equipment manufacturers (OEMs) have advanced-class gas turbines that are available and can operate with a blend of up to 30% hydrogen, and research is underway to develop technology to burn up to 100% hydrogen. According to these sources, NO<sub>x</sub> emissions can be controlled to approximately the same levels as natural gas combustion with a blend of up to 30% hydrogen in the fuel. Controlling NO<sub>x</sub> above 30% blend becomes more difficult, requiring more sophisticated burners, fine tuning of the combustion process, a selective catalytic reduction system, or some combination of these solutions.

Likewise, the current oxidation catalysts in use on the two CTGs at PEC are expected to continue to meet permit limits related to carbon monoxide (CO), VOC, and TACs when burning up to 2% (or more) hydrogen in the fuel. The blended hydrogen fuel would also have less sulfur and produce less oxides of sulfur (SO<sub>x</sub>) and fine and respirable particulate matter (PM<sub>10</sub>/PM<sub>2.5</sub>) than 100% pipeline quality natural gas.

At the proposed up to 2% blend level, SDG&E expects that no changes to its current SDAPCD PTO limits will be needed.

Since the new system would be operated by current power plant staff, no additional worker vehicle trips would occur; thus, no quantifiable increase in operational mobile source emissions would be attributable to the proposed Project. Any additional vendor trips associated with the new system would be essentially de minimis compared to existing vendor trips serving the existing PEC facility. The existing delivery of hydrogen cylinders used for generator cooling would no longer be needed because the hydrogen would be produced on-site.

Thus, there would be no direct impacts attributable to criteria pollutant or TAC emissions from Project operation, and the air quality and public health impacts due to the proposed Project will be less than significant.

### 3.0 GREENHOUSE GAS EMISSIONS AND ENERGY USE

GHGs – primarily carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O), collectively reported as carbon dioxide equivalents (CO<sub>2</sub>e) – are directly emitted from stationary source combustion of natural gas in equipment such as water heaters, boilers, process heaters, and furnaces. GHGs are also emitted from mobile sources such as on-road vehicles and off-road construction equipment burning fuels such as gasoline, diesel, biodiesel, propane, or natural gas (compressed or liquefied). Indirect GHG emissions result from electric power generated elsewhere (i.e., power plants) used to operate process equipment, lighting, and utilities at a facility. Also

included in GHG quantification is electric power used to pump the water supply (e.g., aqueducts, wells, pipelines) and disposal and decomposition of municipal waste in landfills (ARB 2017).

### **3.1 Greenhouse Gas and Energy Significance Criteria**

SDAPCD does not publish CEQA significance criteria related to GHG emissions. The criteria published by San Diego County and the City of Escondido are discussed below.

#### **3.1.1 County Climate Change Guidelines**

Because the SDAPCD has not adopted numerical GHG thresholds, the District relies on the February 2018 San Diego County *Guidelines for Determining Significance, Climate Change* and the January 2008 CAPCOA publication *CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*.

Per the County Guidelines, a proposed project would have a less than significant cumulatively considerable contribution to climate change impacts if it is found to be consistent with the County's Climate Action Plan (CAP) and would normally have a cumulatively considerable contribution to climate change impacts if it is found to be inconsistent with the CAP (County 2018).

Consistency with the CAP is determined through the CAP Consistency Review Checklist for discretionary development projects (County 2018). Examples of discretionary projects include growth-inducing residential and commercial developments. However, the proposed project is an industrial activity at an existing, permitted industrial facility (i.e., electric power generation), entirely within land presently zoned industrial, and would not contribute to growth because the hydrogen system would be operated by current employees, i.e., no increase in employment at the site. Thus, the project falls outside the scope of the CAP Consistency Review because it is not a land use development project and would not be growth-inducing.

For industrial projects (stationary sources), the CAPCOA-recommended numeric GHG threshold is 10,000 metric tons (MT) CO<sub>2</sub>e per year (CAPCOA 2008). This threshold has been adopted by other California air districts, such as the South Coast Air Quality Management District (SCAQMD) and Bay Area Air Quality Management District (BAAQMD). Projects with incremental increases below this threshold would not be considered cumulatively considerable. Since the project would have GHG impacts below this threshold (Tables B-2 and B-5), impacts would not be cumulatively considerable.

#### **3.1.2 City of Escondido General Plan and Climate Action Plan**

The City of Escondido General Plan Resource Conservation Element (Chapter VII) Air and Climate Element (Subchapter I) refers to the CAP, as discussed below.

The City of Escondido's 2021 CAP is an update to the GHG inventories, emission projections, and GHG reduction measures identified in the 2013 CAP. The 2021 CAP was developed in partnership with the San Diego Association of Governments (SANDAG) with the goal of achieving GHG reductions and addressing climate change at the local level. The 2021 CAP sets GHG reduction targets and proposes achievable, locally based strategies to reduce GHG emissions from both municipal and community activities (City 2021).

Acting on climate change means both reducing GHG emissions from activities within the City and helping the community adapt to climate change and improve its resilience over the long term. Three essential steps to the CAP process include (City 2021):

1. Develop and maintain a CAP, which includes preparing baseline emissions estimates and projections and developing reduction targets and strategies;
2. Implement the CAP through local measures; and
3. Monitor and report progress on CAP implementation and identify improvements or adjustments that can be made to the plan in the future.

To meet the City's 2030 and 2035 GHG reduction targets under AB 32 and SB 32, the 2021 CAP defines nine GHG reduction strategies and 31 specific measures across five source categories: transportation, energy (electricity and natural gas consumption), water and wastewater, solid waste, and carbon sequestration. The City's nine strategies in the 2021 CAP are:

1. Increase the Use of Zero-Emission or Alternative Fuel Vehicles;
2. Reduce Fossil Fuel Use;
3. Reduce Vehicle Miles Traveled;
4. Increase Building Energy Efficiency;
5. Increase Renewable and Zero-Carbon Energy;
6. Increase Water Efficiency;
7. Diversify Local Water Supply;
8. Reduce and Recycle Solid Waste; and
9. Carbon Sequestration and Land Conservation.

The nine strategies and 31 source-specific measures are consistent with SANDAG's Regional Climate Action Planning Framework.

The proposed Project is consistent with and directly supports CAP strategies 1, 2, and 5 above. The hydrogen system, supplemented with on-site photovoltaic renewable power generation and a hydrogen vehicle fueling station, will enable the use of zero-emission and alternative fuel vehicles, reduce fossil fuel use, and promote zero-carbon energy. Therefore, the proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Also, because the proposed Project would provide an alternative to fossil fuel use in electric power generation and vehicles, it would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

### ***3.1.3 State Energy Standards***

California's Energy Code is designed to reduce wasteful and unnecessary energy consumption in new construction and refurbishment projects. The California Energy Commission updates the Building Energy Efficiency Standards (Title 24, Parts 6 and 11) every 3 years. The 2019 standards improved on the 2016 standards and went into effect on January 1, 2020. In new construction, standards require designed-in energy

conservation features such as high-efficiency lighting and high-efficiency electric motors (CEC 2019).

The proposed Project would utilize all-new equipment that meets current energy efficiency standards, such as high-efficiency electric motors and LED lighting. The proposed Project would also offset approximately 10% of its energy requirements with on-site PV renewable power generation. The proposed Project would be in compliance with applicable energy efficiency standards.

### 3.2 GHG Emissions and Energy Use for Project Construction

Using CalEEMod, direct on-site and off-site GHG emissions were estimated for Project construction. Table B-2 compares total annual construction GHG emissions to the CAPCOA industrial significance threshold of 10,000 MT/year of CO<sub>2</sub>e emissions. CalEEMod default off-site traffic emissions (i.e., worker commuting, truck transport) are included in these emissions estimates. As shown, GHG emissions due to proposed Project construction would be below the 10,000 MT per year significance threshold for industrial sources (CAPCOA 2008) and hence the impacts would be LTS.

**Table B-2: Construction Greenhouse Gas Emissions Summary**

Greenhouse Gases	GHG Emissions (MT/yr)	Threshold (MT/yr)	Significance
CO <sub>2</sub>	59.2	–	–
CH <sub>4</sub>	0.02	–	–
N <sub>2</sub> O	0.00	–	–
CO <sub>2</sub> e	60	10,000	LTS

Sources: CAPCOA 2008, CalEEMod version 2020.4.0

Notes:

Based on peak annual construction emissions

Table B-3 breaks down construction emissions and corresponding fuel usage by mobile source type/group: off-road equipment (Tiers 1-4), on-road heavy-heavy duty diesel trucks (HHDT), on-road medium-heavy and heavy-heavy duty diesel trucks (MHDT, HHDT), and light-duty automobiles and trucks (LDA, LDT1, LDT2).

**Table B-3: Estimated Construction Fuel Consumption – CalEEMod Basis**

Mobile Sources	Types	Fuels	MT CO <sub>2</sub>	CO <sub>2</sub> Emission Factor (kg/gal)	Fuel Consumption (gallons)
Off-Road	Tiers 1-4	Diesel	56.6	10.21	5,540
Hauling	HHDT	Diesel	0.3	10.21	20
Vendor	MHDT, HHDT	Diesel	1.0	10.21	100
Worker	LDA, LDT1, LDT2	Gasoline	1.3	8.78	150
<b>Totals</b>			<b>60</b>	–	<b>5,810</b>

Sources: CalEEMod version 2020.4.0, TCR 2020, 40 CFR 98 Subpart C.

As shown in Table B-3, Project construction would consume approximately 5,800 gallons of liquid fuels, diesel and gasoline combined.

### 3.3 GHG Emissions and Energy Use for Project Operation

As configured, the new hydrogen system will consist of five main groups of electrically powered components: the electrolyzer, two storage cylinder compressors (A/B), the utility air compressor, the paired hydrogen fueling station compressors, ancillary equipment such as supervisory control and data acquisition (SCADA), and nighttime lighting. With all equipment operating, aggregated load would total about 1,480 kilowatts (kW).

A 300-kW solar PV array would provide some offsetting renewable power that would decrease the amount of SDG&E grid power used by the system in aggregate. Since the PV array would supply about 9% of system power needs overall (annual basis), the other 91% would be provided by the SDG&E grid. As shown in Table B-4, after the photovoltaic offset, grid power used by the new system could total approximately 11,000 megawatt-hours (MWh) annually (net load).

**Table B-4: Estimated Operation Electric Power Usage – Maxima**

Device	Type	Input Power (kW)	Operation (hrs/yr)	Consumption (MWh/yr)
Electrolyzer	High Voltage DC Power Supply	2,500	4,380	10,950
Storage Compressors A/B	3-Phase Motors	250	4,380	1,095
Utility Air Compressor	Single-Phase Motor	2	8,760	17.5
Dispenser Compressors	3-Phase Motors	100	400	40.0
SCADA & Lighting	Misc. Devices	3	8,760	26.3
<b>Total Load</b>	–	<b>1,480</b>	–	<b>12,129</b>
Load Offset	Solar PV Array	300	3,500	(1,050)
<b>Net Load</b>	–	–	–	<b>11,079</b>

Source: SDG&E 2021

Per current Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) Global Warming Potentials (GWPs), the SDG&E power mix comprises a GHG content of approximately 542 pounds CO<sub>2</sub>e per MWh (IPCC 2014, CalEEMod 2020). As shown in Table B-5, when computed against the total net load of 11,079 MWh provided in Table B-4, indirect GHG emissions would total approximately 2,724 MT CO<sub>2</sub>e annually, which is below the 10,000 MT per year significance threshold for industrial sources (CAPCOA 2008) and hence the impact from GHG emissions during operation would be LTS.

**Table B-5: Operational Indirect Greenhouse Gas Emissions – SDG&E Power Mix**

Greenhouse Gases	GHG Intensity Factors (lbs/MWh)	Consumption (MWh/yr)	Indirect GHG (MT/yr)	Threshold (MT/yr)	Significance
CO <sub>2</sub>	539.98	–	–	–	–
CH <sub>4</sub>	0.033	–	–	–	–
N <sub>2</sub> O	0.004	–	–	–	–
CO <sub>2</sub> e (AR5)	541.96	11,079	2,724	10,000	LTS

Sources: IPCC October 2014, CAPCOA 2008, CalEEMod version 2020.4.0



## 4.0 NOISE AND VIBRATION

The Project site is in the City of Escondido, San Diego County, in a characteristically urban and densely populated area subject to noise from local traffic on public streets (e.g., Auto Park Way and Citracado Parkway), traffic on highways (I-15 and SR-78), aircraft flyovers, trains, construction, and small power equipment (e.g., pressure washers, utility generators, etc.). The Project site is part of an existing industrial land use, where power plant operational noise has existed since the facility began commercial operation on April 1, 2006. No residences are within 0.25 mile (1,320 feet) of the Project site, which is sufficient attenuation distance from the facility and construction zone to mitigate normal noise effects emanating from the proposed Project site during construction or operation of the new equipment.

### 4.1 Noise Significance Criteria

#### 4.1.1 *City of Escondido General Plan*

California's State General Plan Guidelines direct agencies to incorporate a number of elements into their General Plans, including Safety. Escondido's Community Protection Element (Chapter VI) includes a Noise Element (Subchapter G), which is a required component for General Plans (City 2012).

##### 4.1.1.1 *Noise-Sensitive Land Uses*

Land uses are located throughout the City in areas where the impacts of noise could affect operations or activities. Noise-sensitive land uses (receptors) include:

- Residential developments and care facilities;
- Schools, churches, and transient lodging;
- Hospitals and health care facilities;
- Libraries, museums, and cultural facilities; and
- Golf courses and passive recreational sites.

Noise exposure levels for a variety of land uses are identified in the Noise element, including commercial and industrial land uses, as described below.

##### 4.1.1.2 *Commercial and Industrial Land Uses*

Escondido's development pattern generally distributes commercial and industrial land uses in a north-south and east-west alignment along major transportation corridors in the urban core. Residential areas generally surround these commercial and industrial areas, which can cause noise conflicts depending on several factors. These factors include the type of commercial/industrial activity, hours of operation, building orientation, and the commercial/industrial site location relative to other land uses. The Noise element defines the following acceptance criteria for land use development (City 2012):

- Normally Acceptable – Specified land use is satisfactory, based upon the assumption that buildings involved are of normal conventional construction without any special noise insulation requirements;
- Conditionally Acceptable – New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is

made and needed noise insulation features included in the design; conventional construction, but with closed windows and fresh air supply systems or air conditioning, will usually suffice;

- Normally Unacceptable – New construction or development should generally be discouraged; if new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made with noise insulation features included in the design; and
- Clearly Unacceptable – New construction or development should generally not be undertaken.

For industrial, manufacturing, utility, and agricultural land uses, the Noise element defines the following limits in terms of Community Noise Exposure Level [Ldn or CNEL, in A-weighted decibels (dBA)]:

- Normally Acceptable: up to 75 dBA;
- Conditionally Acceptable: 70 to 80 dBA;<sup>1</sup>
- Normally Unacceptable: over 80 dBA; and
- Clearly Unacceptable: Not defined for commercial and industrial land uses.

#### ***4.1.2 City of Escondido Municipal Code***

Consistent with the Noise element, the City of Escondido Municipal Code, Chapter 17, Article 12, Section 17-229 defines a 1-hour Light Industrial noise limit of 70 dBA and a 1-hour General Industrial noise limit of 75 dBA, both applying at any time day or night. As applicable, the sound level limit at a location on a boundary between two land use classifications is the limit applicable to the receiving land use, and fixed-location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits measured at or beyond 6 feet (1.83 meters) from the boundary of the easement upon which the equipment is located (City 2017).

## **4.2 Noise and Vibration Impacts During Construction**

The Project site (construction area) is approximately 50 feet (15 meters) from one of two combined cycle generating units. When operating, these generating units are on-site sources of continuous background noise. The facility complies with California Division of Occupational Safety and Health (Cal/OSHA) requirements for on-site worker noise protection.

Construction of the proposed Project would require the use of engine-powered equipment. During each phase, there would be a different mix of equipment operating, and cumulative noise levels would vary based on the amount of equipment in operation and the location of each activity at the Project site. In general, use of off-road equipment, on-road vehicles, and portable equipment would generate noise due to engine mechanicals, engine exhaust, driveline mechanicals, shaft-driven devices and accessories, hydraulics operation, and ground friction. No intense percussive actions (e.g., hard rock breaking, large pile-driving) are planned to occur during the site work, and

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<sup>1</sup> Overlaps 5 dBA with Normally Acceptable.

no strong ground-borne vibrations are expected to be generated that could affect nearby structures or be noticeable to persons.

Construction noise is expected to blend with existing industrial operational background noise at the Project site. All construction activities would be short-term and temporary (less than six months). All construction work is planned to be conducted during daylight hours; no nighttime work is planned to be performed. Upon completion of construction, construction-generated noise would permanently cease.

#### **4.3 Noise and Vibration Impacts During Operation**

The new hydrogen system will include electric motor-driven compressors for the hydrogen storage vessels and the fueling station. These compressors, the primary operational noise sources of the new system, will meet Cal/OSHA worker protection noise limits for industrial equipment, e.g., 85 dBA for 8 hours, or 83 dBA for 12 hours. At 16.5 feet, the storage compressor will emit approximately 74 dBA, and the fueling station compressor will emit approximately 70 dBA, which are below Cal/OSHA limits in common use. Operational noise will also be below the General Plan Normally Unacceptable limit (80 dBA) and the Municipal Code General Industrial limit (75 dBA).

Since the facility is an industrial land use and existing workers will operate the new system, no significant additional long-term worker traffic is expected. Since the compression equipment will meet workplace and community standards and will operate in close proximity against existing power plant background noise, with sensitive receptors (e.g., residences and hospital) over 1,000 feet from the site, no significant additional Project-related noise impact is expected over the long term.

### **5.0 REFERENCES**

- California Office of Environmental Health Hazard Assessment (OEHHA). 1990. Diesel Exhaust Particulate. Website (<https://oehha.ca.gov/chemicals/diesel-exhaust-particulate>) accessed June 30, 2021.
- City of Escondido (City). 2021. Climate Action Plan. Website (<https://www.escondido.org/climate-action-plan-documents.aspx>) accessed June 30, 2021.
- City of Escondido (City). 2017. Municipal Code. Chapter 17, Article 12, Section 17-229 – Sound Level Limits Table 17-229. Website (<https://www.escondido.org/escondido-municipal-code>) accessed June 30, 2021.
- City of Escondido (City). 2012. General Plan, and as amended. Chapter VI – Community Protection, Subchapter G – Noise. Website (<https://www.escondido.org/Data/Sites/1/media/PDFs/Planning/GPUpdate/GeneralPlanChapterVI.pdf>) accessed June 30, 2021.

## **ATTACHMENT 1 – CALEEMOD ATTACHMENTS**

## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****Palomar Hydrogen Project****San Diego County, Winter****1.0 Project Characteristics****1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	7.00	1000sqft	0.16	7,000.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.6	<b>Precipitation Freq (Days)</b>	40
<b>Climate Zone</b>	13			<b>Operational Year</b>	2023
<b>Utility Company</b>	San Diego Gas & Electric				
<b>CO2 Intensity (lb/MWhr)</b>	539.98	<b>CH4 Intensity (lb/MWhr)</b>	0.033	<b>N2O Intensity (lb/MWhr)</b>	0.004

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics - Construction only

Land Use -

Construction Phase - 2 weeks for painting

Demolition -

Vehicle Trips - Construction only

Consumer Products - Construction only

Area Coating - Construction only

Landscape Equipment - Construction only

Energy Use - Construction only

Water And Wastewater - Construction only

Solid Waste - Construction only

Construction Off-road Equipment Mitigation -



## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	3500	0
tblAreaCoating	Area_Nonresidential_Interior	10500	0
tblConstructionPhase	NumDays	5.00	10.00
tblConstructionPhase	PhaseEndDate	6/22/2022	6/17/2022
tblConstructionPhase	PhaseEndDate	6/8/2022	6/3/2022
tblConstructionPhase	PhaseStartDate	6/16/2022	6/6/2022
tblConstructionPhase	PhaseStartDate	1/20/2022	1/17/2022
tblConsumerProducts	ROG_EF	2.14E-05	1E-07
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	1E-10
tblConsumerProducts	ROG_EF_PesticidesFertilizers	5.152E-08	1E-11
tblEnergyUse	LightingElect	2.83	0.00
tblEnergyUse	NT24E	4.27	0.00
tblEnergyUse	NT24NG	7.25	0.00
tblEnergyUse	T24E	1.08	0.00
tblEnergyUse	T24NG	4.27	0.00
tblLandscapeEquipment	NumberSummerDays	180	1
tblSolidWaste	SolidWasteGenerationRate	8.68	0.00
tblVehicleTrips	ST_TR	1.99	0.00
tblVehicleTrips	SU_TR	5.00	0.00
tblVehicleTrips	WD_TR	4.96	0.00
tblWater	IndoorWaterUseRate	1,618,750.00	0.00

**2.0 Emissions Summary**

## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****2.1 Overall Construction (Maximum Daily Emission)****Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	16.4302	7.0874	7.7469	0.0132	0.2608	0.3726	0.6000	0.0506	0.3429	0.3747	0.0000	1,274.786 1	1,274.786 1	0.3584	0.0109	1,283.459 4
Maximum	16.4302	7.0874	7.7469	0.0132	0.2608	0.3726	0.6000	0.0506	0.3429	0.3747	0.0000	1,274.786 1	1,274.786 1	0.3584	0.0109	1,283.459 4

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	16.4302	7.0874	7.7469	0.0132	0.1702	0.3726	0.5095	0.0369	0.3429	0.3610	0.0000	1,274.786 1	1,274.786 1	0.3584	0.0109	1,283.459 4
Maximum	16.4302	7.0874	7.7469	0.0132	0.1702	0.3726	0.5095	0.0369	0.3429	0.3610	0.0000	1,274.786 1	1,274.786 1	0.3584	0.0109	1,283.459 4

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	34.72	0.00	15.09	27.13	0.00	3.66	0.00	0.00	0.00	0.00	0.00	0.00

## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.7000e-004	1.0000e-005	7.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>7.7000e-004</b>	<b>1.0000e-005</b>	<b>7.1000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>1.5300e-003</b>	<b>1.5300e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.6300e-003</b>

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.7000e-004	1.0000e-005	7.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>7.7000e-004</b>	<b>1.0000e-005</b>	<b>7.1000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>1.5300e-003</b>	<b>1.5300e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.6300e-003</b>

## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**3.0 Construction Detail****Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/3/2022	1/14/2022	5	10	
2	Building Construction	Building Construction	1/17/2022	6/3/2022	5	100	
3	Architectural Coating	Architectural Coating	6/6/2022	6/17/2022	5	10	

**Acres of Grading (Site Preparation Phase): 0****Acres of Grading (Grading Phase): 0****Acres of Paving: 0****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 10,500; Non-Residential Outdoor: 3,500; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37

**Trips and VMT**

## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	0.00	8.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	3.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Water Exposed Area

**3.2 Demolition - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1647	0.0000	0.1647	0.0249	0.0000	0.0249			0.0000			0.0000
Off-Road	0.7094	6.4138	7.4693	0.0120		0.3375	0.3375		0.3225	0.3225		1,147.9025	1,147.9025	0.2119		1,153.2001
<b>Total</b>	<b>0.7094</b>	<b>6.4138</b>	<b>7.4693</b>	<b>0.0120</b>	<b>0.1647</b>	<b>0.3375</b>	<b>0.5022</b>	<b>0.0249</b>	<b>0.3225</b>	<b>0.3475</b>		<b>1,147.9025</b>	<b>1,147.9025</b>	<b>0.2119</b>		<b>1,153.2001</b>

## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.2 Demolition - 2022****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.4900e-003	0.1348	0.0321	5.0000e-004	0.0140	1.2500e-003	0.0153	3.8400e-003	1.2000e-003	5.0300e-003		55.2890	55.2890	2.6500e-003	8.7800e-003	57.9727
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0316	0.0214	0.2455	7.1000e-004	0.0822	4.6000e-004	0.0826	0.0218	4.3000e-004	0.0222		71.5946	71.5946	2.3300e-003	2.1300e-003	72.2866
<b>Total</b>	<b>0.0351</b>	<b>0.1562</b>	<b>0.2776</b>	<b>1.2100e-003</b>	<b>0.0961</b>	<b>1.7100e-003</b>	<b>0.0979</b>	<b>0.0256</b>	<b>1.6300e-003</b>	<b>0.0273</b>		<b>126.8836</b>	<b>126.8836</b>	<b>4.9800e-003</b>	<b>0.0109</b>	<b>130.2593</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0741	0.0000	0.0741	0.0112	0.0000	0.0112			0.0000			0.0000
Off-Road	0.7094	6.4138	7.4693	0.0120		0.3375	0.3375		0.3225	0.3225	0.0000	1,147.9025	1,147.9025	0.2119		1,153.2001
<b>Total</b>	<b>0.7094</b>	<b>6.4138</b>	<b>7.4693</b>	<b>0.0120</b>	<b>0.0741</b>	<b>0.3375</b>	<b>0.4116</b>	<b>0.0112</b>	<b>0.3225</b>	<b>0.3338</b>	<b>0.0000</b>	<b>1,147.9025</b>	<b>1,147.9025</b>	<b>0.2119</b>		<b>1,153.2001</b>



## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.2 Demolition - 2022****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.4900e-003	0.1348	0.0321	5.0000e-004	0.0140	1.2500e-003	0.0153	3.8400e-003	1.2000e-003	5.0300e-003		55.2890	55.2890	2.6500e-003	8.7800e-003	57.9727
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0316	0.0214	0.2455	7.1000e-004	0.0822	4.6000e-004	0.0826	0.0218	4.3000e-004	0.0222		71.5946	71.5946	2.3300e-003	2.1300e-003	72.2866
<b>Total</b>	<b>0.0351</b>	<b>0.1562</b>	<b>0.2776</b>	<b>1.2100e-003</b>	<b>0.0961</b>	<b>1.7100e-003</b>	<b>0.0979</b>	<b>0.0256</b>	<b>1.6300e-003</b>	<b>0.0273</b>		<b>126.8836</b>	<b>126.8836</b>	<b>4.9800e-003</b>	<b>0.0109</b>	<b>130.2593</b>

**3.3 Building Construction - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422		1,103.9393	1,103.9393	0.3570		1,112.8652
<b>Total</b>	<b>0.6863</b>	<b>7.0258</b>	<b>7.1527</b>	<b>0.0114</b>		<b>0.3719</b>	<b>0.3719</b>		<b>0.3422</b>	<b>0.3422</b>		<b>1,103.9393</b>	<b>1,103.9393</b>	<b>0.3570</b>		<b>1,112.8652</b>

## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.3 Building Construction - 2022****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2100e-003	0.0552	0.0183	2.1000e-004	6.7700e-003	5.8000e-004	7.3500e-003	1.9500e-003	5.5000e-004	2.5000e-003		22.9944	22.9944	7.0000e-004	3.3400e-003	24.0073
Worker	9.4700e-003	6.4100e-003	0.0737	2.1000e-004	0.0246	1.4000e-004	0.0248	6.5400e-003	1.3000e-004	6.6700e-003		21.4784	21.4784	7.0000e-004	6.4000e-004	21.6860
<b>Total</b>	<b>0.0117</b>	<b>0.0616</b>	<b>0.0920</b>	<b>4.2000e-004</b>	<b>0.0314</b>	<b>7.2000e-004</b>	<b>0.0321</b>	<b>8.4900e-003</b>	<b>6.8000e-004</b>	<b>9.1700e-003</b>		<b>44.4728</b>	<b>44.4728</b>	<b>1.4000e-003</b>	<b>3.9800e-003</b>	<b>45.6933</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422	0.0000	1,103.9393	1,103.9393	0.3570		1,112.8652
<b>Total</b>	<b>0.6863</b>	<b>7.0258</b>	<b>7.1527</b>	<b>0.0114</b>		<b>0.3719</b>	<b>0.3719</b>		<b>0.3422</b>	<b>0.3422</b>	<b>0.0000</b>	<b>1,103.9393</b>	<b>1,103.9393</b>	<b>0.3570</b>		<b>1,112.8652</b>

## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.3 Building Construction - 2022****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2100e-003	0.0552	0.0183	2.1000e-004	6.7700e-003	5.8000e-004	7.3500e-003	1.9500e-003	5.5000e-004	2.5000e-003		22.9944	22.9944	7.0000e-004	3.3400e-003	24.0073
Worker	9.4700e-003	6.4100e-003	0.0737	2.1000e-004	0.0246	1.4000e-004	0.0248	6.5400e-003	1.3000e-004	6.6700e-003		21.4784	21.4784	7.0000e-004	6.4000e-004	21.6860
<b>Total</b>	<b>0.0117</b>	<b>0.0616</b>	<b>0.0920</b>	<b>4.2000e-004</b>	<b>0.0314</b>	<b>7.2000e-004</b>	<b>0.0321</b>	<b>8.4900e-003</b>	<b>6.8000e-004</b>	<b>9.1700e-003</b>		<b>44.4728</b>	<b>44.4728</b>	<b>1.4000e-003</b>	<b>3.9800e-003</b>	<b>45.6933</b>

**3.4 Architectural Coating - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	16.2225					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
<b>Total</b>	<b>16.4270</b>	<b>1.4085</b>	<b>1.8136</b>	<b>2.9700e-003</b>		<b>0.0817</b>	<b>0.0817</b>		<b>0.0817</b>	<b>0.0817</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0183</b>		<b>281.9062</b>

## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Architectural Coating - 2022****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1600e-003	2.1400e-003	0.0246	7.0000e-005	8.2100e-003	5.0000e-005	8.2600e-003	2.1800e-003	4.0000e-005	2.2200e-003		7.1595	7.1595	2.3000e-004	2.1000e-004	7.2287
<b>Total</b>	<b>3.1600e-003</b>	<b>2.1400e-003</b>	<b>0.0246</b>	<b>7.0000e-005</b>	<b>8.2100e-003</b>	<b>5.0000e-005</b>	<b>8.2600e-003</b>	<b>2.1800e-003</b>	<b>4.0000e-005</b>	<b>2.2200e-003</b>		<b>7.1595</b>	<b>7.1595</b>	<b>2.3000e-004</b>	<b>2.1000e-004</b>	<b>7.2287</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	16.2225					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
<b>Total</b>	<b>16.4270</b>	<b>1.4085</b>	<b>1.8136</b>	<b>2.9700e-003</b>		<b>0.0817</b>	<b>0.0817</b>		<b>0.0817</b>	<b>0.0817</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0183</b>		<b>281.9062</b>

## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Architectural Coating - 2022****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1600e-003	2.1400e-003	0.0246	7.0000e-005	8.2100e-003	5.0000e-005	8.2600e-003	2.1800e-003	4.0000e-005	2.2200e-003		7.1595	7.1595	2.3000e-004	2.1000e-004	7.2287
<b>Total</b>	<b>3.1600e-003</b>	<b>2.1400e-003</b>	<b>0.0246</b>	<b>7.0000e-005</b>	<b>8.2100e-003</b>	<b>5.0000e-005</b>	<b>8.2600e-003</b>	<b>2.1800e-003</b>	<b>4.0000e-005</b>	<b>2.2200e-003</b>		<b>7.1595</b>	<b>7.1595</b>	<b>2.3000e-004</b>	<b>2.1000e-004</b>	<b>7.2287</b>

## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****4.0 Operational Detail - Mobile****4.1 Mitigation Measures Mobile**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

**4.2 Trip Summary Information**

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

**4.3 Trip Type Information**

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.553514	0.062792	0.181046	0.120736	0.024419	0.006214	0.008493	0.006184	0.000715	0.000556	0.029185	0.000982	0.005164



## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

**5.2 Energy by Land Use - NaturalGas****Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****5.2 Energy by Land Use - NaturalGas****Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**6.0 Area Detail****6.1 Mitigation Measures Area**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.7000e-004	1.0000e-005	7.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
Unmitigated	7.7000e-004	1.0000e-005	7.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003

## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****6.2 Area by SubCategory****Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	7.0000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.0000e-005	1.0000e-005	7.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
<b>Total</b>	<b>7.7000e-004</b>	<b>1.0000e-005</b>	<b>7.1000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>1.5300e-003</b>	<b>1.5300e-003</b>	<b>0.0000</b>		<b>1.6300e-003</b>

## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****6.2 Area by SubCategory****Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	7.0000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.0000e-005	1.0000e-005	7.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
<b>Total</b>	<b>7.7000e-004</b>	<b>1.0000e-005</b>	<b>7.1000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>1.5300e-003</b>	<b>1.5300e-003</b>	<b>0.0000</b>		<b>1.6300e-003</b>

**7.0 Water Detail****7.1 Mitigation Measures Water**

## Palomar Hydrogen Project - San Diego County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****8.0 Waste Detail**

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**8.1 Mitigation Measures Waste****9.0 Operational Offroad**

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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**10.0 Stationary Equipment**

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**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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**Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

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## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****Palomar Hydrogen Project****San Diego County, Summer****1.0 Project Characteristics****1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	7.00	1000sqft	0.16	7,000.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.6	<b>Precipitation Freq (Days)</b>	40
<b>Climate Zone</b>	13			<b>Operational Year</b>	2023
<b>Utility Company</b>	San Diego Gas & Electric				
<b>CO2 Intensity (lb/MW hr)</b>	539.98	<b>CH4 Intensity (lb/MW hr)</b>	0.033	<b>N2O Intensity (lb/MW hr)</b>	0.004

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics - Construction only

Land Use -

Construction Phase - 2 weeks for painting

Demolition -

Vehicle Trips - Construction only

Consumer Products - Construction only

Area Coating - Construction only

Landscape Equipment - Construction only

Energy Use - Construction only

Water And Wastewater - Construction only

Solid Waste - Construction only

Construction Off-road Equipment Mitigation -



## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	3500	0
tblAreaCoating	Area_Nonresidential_Interior	10500	0
tblConstructionPhase	NumDays	5.00	10.00
tblConstructionPhase	PhaseEndDate	6/22/2022	6/17/2022
tblConstructionPhase	PhaseEndDate	6/8/2022	6/3/2022
tblConstructionPhase	PhaseStartDate	6/16/2022	6/6/2022
tblConstructionPhase	PhaseStartDate	1/20/2022	1/17/2022
tblConsumerProducts	ROG_EF	2.14E-05	1E-07
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	1E-10
tblConsumerProducts	ROG_EF_PesticidesFertilizers	5.152E-08	1E-11
tblEnergyUse	LightingElect	2.83	0.00
tblEnergyUse	NT24E	4.27	0.00
tblEnergyUse	NT24NG	7.25	0.00
tblEnergyUse	T24E	1.08	0.00
tblEnergyUse	T24NG	4.27	0.00
tblLandscapeEquipment	NumberSummerDays	180	1
tblSolidWaste	SolidWasteGenerationRate	8.68	0.00
tblVehicleTrips	ST_TR	1.99	0.00
tblVehicleTrips	SU_TR	5.00	0.00
tblVehicleTrips	WD_TR	4.96	0.00
tblWater	IndoorWaterUseRate	1,618,750.00	0.00

**2.0 Emissions Summary**

## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****2.1 Overall Construction (Maximum Daily Emission)****Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	16.4300	7.0846	7.7598	0.0132	0.2608	0.3726	0.6000	0.0506	0.3429	0.3747	0.0000	1,278.938 <sub>8</sub>	1,278.938 <sub>8</sub>	0.3584	0.0108	1,287.559 <sub>7</sub>
Maximum	16.4300	7.0846	7.7598	0.0132	0.2608	0.3726	0.6000	0.0506	0.3429	0.3747	0.0000	1,278.938 <sub>8</sub>	1,278.938 <sub>8</sub>	0.3584	0.0108	1,287.559 <sub>7</sub>

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	16.4300	7.0846	7.7598	0.0132	0.1702	0.3726	0.5095	0.0369	0.3429	0.3610	0.0000	1,278.938 <sub>8</sub>	1,278.938 <sub>8</sub>	0.3584	0.0108	1,287.559 <sub>7</sub>
Maximum	16.4300	7.0846	7.7598	0.0132	0.1702	0.3726	0.5095	0.0369	0.3429	0.3610	0.0000	1,278.938 <sub>8</sub>	1,278.938 <sub>8</sub>	0.3584	0.0108	1,287.559 <sub>7</sub>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	34.72	0.00	15.09	27.13	0.00	3.66	0.00	0.00	0.00	0.00	0.00	0.00

## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.7000e-004	1.0000e-005	7.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>7.7000e-004</b>	<b>1.0000e-005</b>	<b>7.1000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>1.5300e-003</b>	<b>1.5300e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.6300e-003</b>

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.7000e-004	1.0000e-005	7.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>7.7000e-004</b>	<b>1.0000e-005</b>	<b>7.1000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>1.5300e-003</b>	<b>1.5300e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.6300e-003</b>

## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**3.0 Construction Detail****Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/3/2022	1/14/2022	5	10	
2	Building Construction	Building Construction	1/17/2022	6/3/2022	5	100	
3	Architectural Coating	Architectural Coating	6/6/2022	6/17/2022	5	10	

**Acres of Grading (Site Preparation Phase): 0****Acres of Grading (Grading Phase): 0****Acres of Paving: 0****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 10,500; Non-Residential Outdoor: 3,500; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37

**Trips and VMT**

## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	0.00	8.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	3.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Water Exposed Area

**3.2 Demolition - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1647	0.0000	0.1647	0.0249	0.0000	0.0249			0.0000			0.0000
Off-Road	0.7094	6.4138	7.4693	0.0120		0.3375	0.3375		0.3225	0.3225		1,147.9025	1,147.9025	0.2119		1,153.2001
<b>Total</b>	<b>0.7094</b>	<b>6.4138</b>	<b>7.4693</b>	<b>0.0120</b>	<b>0.1647</b>	<b>0.3375</b>	<b>0.5022</b>	<b>0.0249</b>	<b>0.3225</b>	<b>0.3475</b>		<b>1,147.9025</b>	<b>1,147.9025</b>	<b>0.2119</b>		<b>1,153.2001</b>

## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.2 Demolition - 2022****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.5900e-003	0.1299	0.0316	5.0000e-004	0.0140	1.2500e-003	0.0152	3.8400e-003	1.2000e-003	5.0300e-003		55.2656	55.2656	2.6600e-003	8.7800e-003	57.9482
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0292	0.0190	0.2589	7.5000e-004	0.0822	4.6000e-004	0.0826	0.0218	4.3000e-004	0.0222		75.7708	75.7708	2.1900e-003	1.9700e-003	76.4114
<b>Total</b>	<b>0.0328</b>	<b>0.1489</b>	<b>0.2905</b>	<b>1.2500e-003</b>	<b>0.0961</b>	<b>1.7100e-003</b>	<b>0.0979</b>	<b>0.0256</b>	<b>1.6300e-003</b>	<b>0.0273</b>		<b>131.0364</b>	<b>131.0364</b>	<b>4.8500e-003</b>	<b>0.0108</b>	<b>134.3596</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0741	0.0000	0.0741	0.0112	0.0000	0.0112			0.0000			0.0000
Off-Road	0.7094	6.4138	7.4693	0.0120		0.3375	0.3375		0.3225	0.3225	0.0000	1,147.9025	1,147.9025	0.2119		1,153.2001
<b>Total</b>	<b>0.7094</b>	<b>6.4138</b>	<b>7.4693</b>	<b>0.0120</b>	<b>0.0741</b>	<b>0.3375</b>	<b>0.4116</b>	<b>0.0112</b>	<b>0.3225</b>	<b>0.3338</b>	<b>0.0000</b>	<b>1,147.9025</b>	<b>1,147.9025</b>	<b>0.2119</b>		<b>1,153.2001</b>

## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.2 Demolition - 2022****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.5900e-003	0.1299	0.0316	5.0000e-004	0.0140	1.2500e-003	0.0152	3.8400e-003	1.2000e-003	5.0300e-003		55.2656	55.2656	2.6600e-003	8.7800e-003	57.9482
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0292	0.0190	0.2589	7.5000e-004	0.0822	4.6000e-004	0.0826	0.0218	4.3000e-004	0.0222		75.7708	75.7708	2.1900e-003	1.9700e-003	76.4114
<b>Total</b>	<b>0.0328</b>	<b>0.1489</b>	<b>0.2905</b>	<b>1.2500e-003</b>	<b>0.0961</b>	<b>1.7100e-003</b>	<b>0.0979</b>	<b>0.0256</b>	<b>1.6300e-003</b>	<b>0.0273</b>		<b>131.0364</b>	<b>131.0364</b>	<b>4.8500e-003</b>	<b>0.0108</b>	<b>134.3596</b>

**3.3 Building Construction - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422		1,103.9393	1,103.9393	0.3570		1,112.8652
<b>Total</b>	<b>0.6863</b>	<b>7.0258</b>	<b>7.1527</b>	<b>0.0114</b>		<b>0.3719</b>	<b>0.3719</b>		<b>0.3422</b>	<b>0.3422</b>		<b>1,103.9393</b>	<b>1,103.9393</b>	<b>0.3570</b>		<b>1,112.8652</b>

## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.3 Building Construction - 2022****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2300e-003	0.0532	0.0178	2.1000e-004	6.7700e-003	5.8000e-004	7.3500e-003	1.9500e-003	5.5000e-004	2.5000e-003		22.9826	22.9826	7.0000e-004	3.3400e-003	23.9941
Worker	8.7600e-003	5.7000e-003	0.0777	2.2000e-004	0.0246	1.4000e-004	0.0248	6.5400e-003	1.3000e-004	6.6700e-003		22.7312	22.7312	6.6000e-004	5.9000e-004	22.9234
<b>Total</b>	<b>0.0110</b>	<b>0.0589</b>	<b>0.0955</b>	<b>4.3000e-004</b>	<b>0.0314</b>	<b>7.2000e-004</b>	<b>0.0321</b>	<b>8.4900e-003</b>	<b>6.8000e-004</b>	<b>9.1700e-003</b>		<b>45.7138</b>	<b>45.7138</b>	<b>1.3600e-003</b>	<b>3.9300e-003</b>	<b>46.9176</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422	0.0000	1,103.9393	1,103.9393	0.3570		1,112.8652
<b>Total</b>	<b>0.6863</b>	<b>7.0258</b>	<b>7.1527</b>	<b>0.0114</b>		<b>0.3719</b>	<b>0.3719</b>		<b>0.3422</b>	<b>0.3422</b>	<b>0.0000</b>	<b>1,103.9393</b>	<b>1,103.9393</b>	<b>0.3570</b>		<b>1,112.8652</b>



## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.3 Building Construction - 2022****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2300e-003	0.0532	0.0178	2.1000e-004	6.7700e-003	5.8000e-004	7.3500e-003	1.9500e-003	5.5000e-004	2.5000e-003		22.9826	22.9826	7.0000e-004	3.3400e-003	23.9941
Worker	8.7600e-003	5.7000e-003	0.0777	2.2000e-004	0.0246	1.4000e-004	0.0248	6.5400e-003	1.3000e-004	6.6700e-003		22.7312	22.7312	6.6000e-004	5.9000e-004	22.9234
<b>Total</b>	<b>0.0110</b>	<b>0.0589</b>	<b>0.0955</b>	<b>4.3000e-004</b>	<b>0.0314</b>	<b>7.2000e-004</b>	<b>0.0321</b>	<b>8.4900e-003</b>	<b>6.8000e-004</b>	<b>9.1700e-003</b>		<b>45.7138</b>	<b>45.7138</b>	<b>1.3600e-003</b>	<b>3.9300e-003</b>	<b>46.9176</b>

**3.4 Architectural Coating - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	16.2225					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
<b>Total</b>	<b>16.4270</b>	<b>1.4085</b>	<b>1.8136</b>	<b>2.9700e-003</b>		<b>0.0817</b>	<b>0.0817</b>		<b>0.0817</b>	<b>0.0817</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0183</b>		<b>281.9062</b>

## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Architectural Coating - 2022****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9200e-003	1.9000e-003	0.0259	7.0000e-005	8.2100e-003	5.0000e-005	8.2600e-003	2.1800e-003	4.0000e-005	2.2200e-003		7.5771	7.5771	2.2000e-004	2.0000e-004	7.6411
<b>Total</b>	<b>2.9200e-003</b>	<b>1.9000e-003</b>	<b>0.0259</b>	<b>7.0000e-005</b>	<b>8.2100e-003</b>	<b>5.0000e-005</b>	<b>8.2600e-003</b>	<b>2.1800e-003</b>	<b>4.0000e-005</b>	<b>2.2200e-003</b>		<b>7.5771</b>	<b>7.5771</b>	<b>2.2000e-004</b>	<b>2.0000e-004</b>	<b>7.6411</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	16.2225					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
<b>Total</b>	<b>16.4270</b>	<b>1.4085</b>	<b>1.8136</b>	<b>2.9700e-003</b>		<b>0.0817</b>	<b>0.0817</b>		<b>0.0817</b>	<b>0.0817</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0183</b>		<b>281.9062</b>

## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Architectural Coating - 2022****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9200e-003	1.9000e-003	0.0259	7.0000e-005	8.2100e-003	5.0000e-005	8.2600e-003	2.1800e-003	4.0000e-005	2.2200e-003		7.5771	7.5771	2.2000e-004	2.0000e-004	7.6411
<b>Total</b>	<b>2.9200e-003</b>	<b>1.9000e-003</b>	<b>0.0259</b>	<b>7.0000e-005</b>	<b>8.2100e-003</b>	<b>5.0000e-005</b>	<b>8.2600e-003</b>	<b>2.1800e-003</b>	<b>4.0000e-005</b>	<b>2.2200e-003</b>		<b>7.5771</b>	<b>7.5771</b>	<b>2.2000e-004</b>	<b>2.0000e-004</b>	<b>7.6411</b>

## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****4.0 Operational Detail - Mobile****4.1 Mitigation Measures Mobile**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

**4.2 Trip Summary Information**

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

**4.3 Trip Type Information**

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.553514	0.062792	0.181046	0.120736	0.024419	0.006214	0.008493	0.006184	0.000715	0.000556	0.029185	0.000982	0.005164

## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

**5.2 Energy by Land Use - NaturalGas****Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****5.2 Energy by Land Use - NaturalGas****Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**6.0 Area Detail****6.1 Mitigation Measures Area**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.7000e-004	1.0000e-005	7.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
Unmitigated	7.7000e-004	1.0000e-005	7.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003

## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****6.2 Area by SubCategory****Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	7.0000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.0000e-005	1.0000e-005	7.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
<b>Total</b>	<b>7.7000e-004</b>	<b>1.0000e-005</b>	<b>7.1000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>1.5300e-003</b>	<b>1.5300e-003</b>	<b>0.0000</b>		<b>1.6300e-003</b>

## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****6.2 Area by SubCategory****Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	7.0000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.0000e-005	1.0000e-005	7.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
<b>Total</b>	<b>7.7000e-004</b>	<b>1.0000e-005</b>	<b>7.1000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>1.5300e-003</b>	<b>1.5300e-003</b>	<b>0.0000</b>		<b>1.6300e-003</b>

**7.0 Water Detail****7.1 Mitigation Measures Water**



## Palomar Hydrogen Project - San Diego County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****8.0 Waste Detail**

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**8.1 Mitigation Measures Waste****9.0 Operational Offroad**

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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**10.0 Stationary Equipment**

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**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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**Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

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## Palomar Hydrogen Project - San Diego County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****Palomar Hydrogen Project****San Diego County, Annual****1.0 Project Characteristics****1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	7.00	1000sqft	0.16	7,000.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.6	<b>Precipitation Freq (Days)</b>	40
<b>Climate Zone</b>	13			<b>Operational Year</b>	2023
<b>Utility Company</b>	San Diego Gas & Electric				
<b>CO2 Intensity (lb/MW hr)</b>	539.98	<b>CH4 Intensity (lb/MW hr)</b>	0.033	<b>N2O Intensity (lb/MW hr)</b>	0.004

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics - Construction only

Land Use -

Construction Phase - 2 weeks for painting

Demolition -

Vehicle Trips - Construction only

Consumer Products - Construction only

Area Coating - Construction only

Landscape Equipment - Construction only

Energy Use - Construction only

Water And Wastewater - Construction only

Solid Waste - Construction only

Construction Off-road Equipment Mitigation -

## Palomar Hydrogen Project - San Diego County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	3500	0
tblAreaCoating	Area_Nonresidential_Interior	10500	0
tblConstructionPhase	NumDays	5.00	10.00
tblConstructionPhase	PhaseEndDate	6/22/2022	6/17/2022
tblConstructionPhase	PhaseEndDate	6/8/2022	6/3/2022
tblConstructionPhase	PhaseStartDate	6/16/2022	6/6/2022
tblConstructionPhase	PhaseStartDate	1/20/2022	1/17/2022
tblConsumerProducts	ROG_EF	2.14E-05	1E-07
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	1E-10
tblConsumerProducts	ROG_EF_PesticidesFertilizers	5.152E-08	1E-11
tblEnergyUse	LightingElect	2.83	0.00
tblEnergyUse	NT24E	4.27	0.00
tblEnergyUse	NT24NG	7.25	0.00
tblEnergyUse	T24E	1.08	0.00
tblEnergyUse	T24NG	4.27	0.00
tblLandscapeEquipment	NumberSummerDays	180	1
tblSolidWaste	SolidWasteGenerationRate	8.68	0.00
tblVehicleTrips	ST_TR	1.99	0.00
tblVehicleTrips	SU_TR	5.00	0.00
tblVehicleTrips	WD_TR	4.96	0.00
tblWater	IndoorWaterUseRate	1,618,750.00	0.00

**2.0 Emissions Summary**

## Palomar Hydrogen Project - San Diego County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****2.1 Overall Construction****Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1207	0.3943	0.4101	6.7000e-004	2.8700e-003	0.0207	0.0236	6.8000e-004	0.0192	0.0199	0.0000	59.1940	59.1940	0.0173	2.3000e-004	59.6958
Maximum	0.1207	0.3943	0.4101	6.7000e-004	2.8700e-003	0.0207	0.0236	6.8000e-004	0.0192	0.0199	0.0000	59.1940	59.1940	0.0173	2.3000e-004	59.6958

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1207	0.3943	0.4101	6.7000e-004	2.4100e-003	0.0207	0.0232	6.1000e-004	0.0192	0.0198	0.0000	59.1939	59.1939	0.0173	2.3000e-004	59.6957
Maximum	0.1207	0.3943	0.4101	6.7000e-004	2.4100e-003	0.0207	0.0232	6.1000e-004	0.0192	0.0198	0.0000	59.1939	59.1939	0.0173	2.3000e-004	59.6957

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	16.03	0.00	1.91	10.29	0.00	0.35	0.00	0.00	0.00	0.00	0.00	0.00

### EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

## 2.2 Overall Operational

### Unmitigated Operational

[illegible]

## Palomar Hydrogen Project - San Diego County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****2.2 Overall Operational****Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.3000e-004	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>1.3000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**3.0 Construction Detail****Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/3/2022	1/14/2022	5	10	
2	Building Construction	Building Construction	1/17/2022	6/3/2022	5	100	
3	Architectural Coating	Architectural Coating	6/6/2022	6/17/2022	5	10	

## Palomar Hydrogen Project - San Diego County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****Acres of Grading (Site Preparation Phase): 0****Acres of Grading (Grading Phase): 0****Acres of Paving: 0****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 10,500; Non-Residential Outdoor: 3,500; Striped Parking Area: 0  
(Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	0.00	8.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	3.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Water Exposed Area

## Palomar Hydrogen Project - San Diego County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.2 Demolition - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.2000e-004	0.0000	8.2000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5500e-003	0.0321	0.0374	6.0000e-005		1.6900e-003	1.6900e-003		1.6100e-003	1.6100e-003	0.0000	5.2068	5.2068	9.6000e-004	0.0000	5.2308
<b>Total</b>	<b>3.5500e-003</b>	<b>0.0321</b>	<b>0.0374</b>	<b>6.0000e-005</b>	<b>8.2000e-004</b>	<b>1.6900e-003</b>	<b>2.5100e-003</b>	<b>1.2000e-004</b>	<b>1.6100e-003</b>	<b>1.7300e-003</b>	<b>0.0000</b>	<b>5.2068</b>	<b>5.2068</b>	<b>9.6000e-004</b>	<b>0.0000</b>	<b>5.2308</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	6.7000e-004	1.6000e-004	0.0000	7.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.2507	0.2507	1.0000e-005	4.0000e-005	0.2629
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.0000e-004	1.2300e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3276	0.3276	1.0000e-005	1.0000e-005	0.3307
<b>Total</b>	<b>1.6000e-004</b>	<b>7.7000e-004</b>	<b>1.3900e-003</b>	<b>0.0000</b>	<b>4.7000e-004</b>	<b>1.0000e-005</b>	<b>4.7000e-004</b>	<b>1.3000e-004</b>	<b>1.0000e-005</b>	<b>1.3000e-004</b>	<b>0.0000</b>	<b>0.5784</b>	<b>0.5784</b>	<b>2.0000e-005</b>	<b>5.0000e-005</b>	<b>0.5936</b>



## Palomar Hydrogen Project - San Diego County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.2 Demolition - 2022****Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.7000e-004	0.0000	3.7000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5500e-003	0.0321	0.0374	6.0000e-005		1.6900e-003	1.6900e-003		1.6100e-003	1.6100e-003	0.0000	5.2068	5.2068	9.6000e-004	0.0000	5.2308
<b>Total</b>	<b>3.5500e-003</b>	<b>0.0321</b>	<b>0.0374</b>	<b>6.0000e-005</b>	<b>3.7000e-004</b>	<b>1.6900e-003</b>	<b>2.0600e-003</b>	<b>6.0000e-005</b>	<b>1.6100e-003</b>	<b>1.6700e-003</b>	<b>0.0000</b>	<b>5.2068</b>	<b>5.2068</b>	<b>9.6000e-004</b>	<b>0.0000</b>	<b>5.2308</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	6.7000e-004	1.6000e-004	0.0000	7.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.2507	0.2507	1.0000e-005	4.0000e-005	0.2629
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.0000e-004	1.2300e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3276	0.3276	1.0000e-005	1.0000e-005	0.3307
<b>Total</b>	<b>1.6000e-004</b>	<b>7.7000e-004</b>	<b>1.3900e-003</b>	<b>0.0000</b>	<b>4.7000e-004</b>	<b>1.0000e-005</b>	<b>4.7000e-004</b>	<b>1.3000e-004</b>	<b>1.0000e-005</b>	<b>1.3000e-004</b>	<b>0.0000</b>	<b>0.5784</b>	<b>0.5784</b>	<b>2.0000e-005</b>	<b>5.0000e-005</b>	<b>0.5936</b>

## Palomar Hydrogen Project - San Diego County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.3 Building Construction - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0343	0.3513	0.3576	5.7000e-004		0.0186	0.0186		0.0171	0.0171	0.0000	50.0739	50.0739	0.0162	0.0000	50.4787
<b>Total</b>	<b>0.0343</b>	<b>0.3513</b>	<b>0.3576</b>	<b>5.7000e-004</b>		<b>0.0186</b>	<b>0.0186</b>		<b>0.0171</b>	<b>0.0171</b>	<b>0.0000</b>	<b>50.0739</b>	<b>50.0739</b>	<b>0.0162</b>	<b>0.0000</b>	<b>50.4787</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-004	2.7500e-003	9.0000e-004	1.0000e-005	3.3000e-004	3.0000e-005	3.6000e-004	1.0000e-004	3.0000e-005	1.2000e-004	0.0000	1.0427	1.0427	3.0000e-005	1.5000e-004	1.0886
Worker	4.3000e-004	3.1000e-004	3.6800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9829	0.9829	3.0000e-005	3.0000e-005	0.9922
<b>Total</b>	<b>5.4000e-004</b>	<b>3.0600e-003</b>	<b>4.5800e-003</b>	<b>2.0000e-005</b>	<b>1.5300e-003</b>	<b>4.0000e-005</b>	<b>1.5700e-003</b>	<b>4.2000e-004</b>	<b>4.0000e-005</b>	<b>4.5000e-004</b>	<b>0.0000</b>	<b>2.0256</b>	<b>2.0256</b>	<b>6.0000e-005</b>	<b>1.8000e-004</b>	<b>2.0808</b>

## Palomar Hydrogen Project - San Diego County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.3 Building Construction - 2022****Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0343	0.3513	0.3576	5.7000e-004		0.0186	0.0186		0.0171	0.0171	0.0000	50.0738	50.0738	0.0162	0.0000	50.4787
<b>Total</b>	<b>0.0343</b>	<b>0.3513</b>	<b>0.3576</b>	<b>5.7000e-004</b>		<b>0.0186</b>	<b>0.0186</b>		<b>0.0171</b>	<b>0.0171</b>	<b>0.0000</b>	<b>50.0738</b>	<b>50.0738</b>	<b>0.0162</b>	<b>0.0000</b>	<b>50.4787</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-004	2.7500e-003	9.0000e-004	1.0000e-005	3.3000e-004	3.0000e-005	3.6000e-004	1.0000e-004	3.0000e-005	1.2000e-004	0.0000	1.0427	1.0427	3.0000e-005	1.5000e-004	1.0886
Worker	4.3000e-004	3.1000e-004	3.6800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9829	0.9829	3.0000e-005	3.0000e-005	0.9922
<b>Total</b>	<b>5.4000e-004</b>	<b>3.0600e-003</b>	<b>4.5800e-003</b>	<b>2.0000e-005</b>	<b>1.5300e-003</b>	<b>4.0000e-005</b>	<b>1.5700e-003</b>	<b>4.2000e-004</b>	<b>4.0000e-005</b>	<b>4.5000e-004</b>	<b>0.0000</b>	<b>2.0256</b>	<b>2.0256</b>	<b>6.0000e-005</b>	<b>1.8000e-004</b>	<b>2.0808</b>

## Palomar Hydrogen Project - San Diego County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Architectural Coating - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0811					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0200e-003	7.0400e-003	9.0700e-003	1.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2787
<b>Total</b>	<b>0.0821</b>	<b>7.0400e-003</b>	<b>9.0700e-003</b>	<b>1.0000e-005</b>		<b>4.1000e-004</b>	<b>4.1000e-004</b>		<b>4.1000e-004</b>	<b>4.1000e-004</b>	<b>0.0000</b>	<b>1.2766</b>	<b>1.2766</b>	<b>8.0000e-005</b>	<b>0.0000</b>	<b>1.2787</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	1.2000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0328	0.0328	0.0000	0.0000	0.0331
<b>Total</b>	<b>1.0000e-005</b>	<b>1.0000e-005</b>	<b>1.2000e-004</b>	<b>0.0000</b>	<b>4.0000e-005</b>	<b>0.0000</b>	<b>4.0000e-005</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.0328</b>	<b>0.0328</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0331</b>

## Palomar Hydrogen Project - San Diego County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****3.4 Architectural Coating - 2022****Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0811					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0200e-003	7.0400e-003	9.0700e-003	1.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2787
<b>Total</b>	<b>0.0821</b>	<b>7.0400e-003</b>	<b>9.0700e-003</b>	<b>1.0000e-005</b>		<b>4.1000e-004</b>	<b>4.1000e-004</b>		<b>4.1000e-004</b>	<b>4.1000e-004</b>	<b>0.0000</b>	<b>1.2766</b>	<b>1.2766</b>	<b>8.0000e-005</b>	<b>0.0000</b>	<b>1.2787</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	1.2000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0328	0.0328	0.0000	0.0000	0.0331
<b>Total</b>	<b>1.0000e-005</b>	<b>1.0000e-005</b>	<b>1.2000e-004</b>	<b>0.0000</b>	<b>4.0000e-005</b>	<b>0.0000</b>	<b>4.0000e-005</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.0328</b>	<b>0.0328</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0331</b>

## Palomar Hydrogen Project - San Diego County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****4.0 Operational Detail - Mobile****4.1 Mitigation Measures Mobile**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

**4.2 Trip Summary Information**

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

**4.3 Trip Type Information**

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.553514	0.062792	0.181046	0.120736	0.024419	0.006214	0.008493	0.006184	0.000715	0.000556	0.029185	0.000982	0.005164

### EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

[illegible]

### EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

**Unmitigated**

**Mitigated**

[illegible]



## Palomar Hydrogen Project - San Diego County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****5.3 Energy by Land Use - Electricity****Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**6.0 Area Detail****6.1 Mitigation Measures Area**

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 6.2 Area by SubCategory

### Unmitigated

[illegible]

## Palomar Hydrogen Project - San Diego County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****6.2 Area by SubCategory****Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>1.3000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**7.0 Water Detail****7.1 Mitigation Measures Water**

## Palomar Hydrogen Project - San Diego County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

**7.2 Water by Land Use****Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## Palomar Hydrogen Project - San Diego County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****7.2 Water by Land Use****Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**8.0 Waste Detail****8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied****8.2 Waste by Land Use****Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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Palomar Hydrogen Project - San Diego County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

10.0 Stationary Equipment

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Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

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