

# La Jolla Band of Luiseño Indians

## *2024 Priority Climate Action Plan*

Developed by the Center for Sustainable  
Energy for the La Jolla Band of Luiseño Indians

U.S. Environmental Protection Agency  
Climate Pollution Reduction Grant

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Center for  
Sustainable  
Energy®

# CONTRIBUTIONS AND ACKNOWLEDGEMENTS

## Thank You

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Many individuals participated in the development of this Priority Climate Action Plan and contributed invaluable institutional knowledge to inform the performance measures recommended. This project would not have been possible without the countless support and significant time contributions from the following groups and individuals:

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## DEFINITIONS

**Center for Sustainable Energy (CSE):** A national nonprofit that accelerates adoption of clean transportation and distributed energy through program design and administration.

**Comprehensive Climate Action Plan (CCAP):** A narrative report that provides an overview of the tribe or territory's significant GHG sources/sinks and sectors, establishes near-term and long-term GHG emission reduction goals, and provides strategies and identifies measures that address the highest priority sectors to help the tribe or territory meet those goals.

**Environmental Protection Agency (EPA):** An independent agency of the United States government tasked with environmental protection matters.

**Fee Land:** Territory purchased by tribes in which the tribe acquires legal title under specific statutory authority.

**Greenhouse Gases (GHG):** Any of various gaseous compounds (such as carbon dioxide or methane) that absorb infrared radiation, trap heat in the atmosphere, and contribute to the greenhouse effect.

**Greenhouse Gas (GHG) Inventory:** A list of emission sources and sinks and the associated emissions quantified using standard methods. The PCAP will include a 'simplified' inventory. The CCAP will include a comprehensive inventory of emissions and sinks.

**La Jolla Band of Luiseño Indians (La Jolla Band):** A federally recognized tribe of Luiseño Indians located in northern San Diego County in Southern California.

**Priority Climate Action Plan (PCAP):** A narrative report that includes a focused list of near-term, high-priority, and implementation-ready measures to reduce GHG pollution and an analysis of estimated GHG emissions reductions.

**Performance Measures:** Projects and programs identified to reduce GHG emissions for various environmental sectors.

**Tribal Greenhouse Gas Inventory Tool (TGIT):** A spreadsheet-based tool developed by the Environmental Protection Agency to help tribes across the county to evaluate their greenhouse gas emissions. The tool has two modules, one for developing a community wide GHG emission inventory and one for developing a Tribal government operations inventory.

**Trust Land:** Territory, whereby one party agrees to hold title to the property for the benefit of another party. Trust land held on behalf of individuals are known as allotments.

# TABLE OF CONTENTS

Contributions and Acknowledgements.....	1
Definitions.....	2
List of Figures.....	5
List of Tables.....	5
1 Executive Summary.....	6
2 Introduction.....	8
2.1 Project Overview.....	8
2.2 Scope and Purpose.....	9
2.3 Authority to Implement.....	9
3 Tribal Background and Goals.....	10
3.1 La Jolla Band of Luiseño Indians.....	10
3.1.1 Tribal Membership and Residences.....	11
3.1.2 Tribal Council and Departments.....	12
3.1.3 Tribal-Owned Buildings.....	12
3.2 Tribal Sustainability Goals and Past Studies.....	13
3.2.1 La Jolla Band Past Studies.....	13
3.2.2 La Jolla Band Sustainability Projects.....	15
3.3 Special Considerations for the La Jolla Band Reservation.....	17
3.3.1 Environmental Factors.....	17
3.3.2 Utility Challenges.....	18
3.3.3 Financial Constraints.....	18
4 PCAP Elements.....	20
4.1 Data Collection.....	20
4.2 Greenhouse Gas Inventory.....	21
4.2.1 Tribal Greenhouse gas Inventory Tool.....	21
4.2.2 GHG Inventory Results.....	21
4.3 Community Engagement.....	23
4.3.1 Tribal Council Meetings.....	23

4.3.2. General Membership Community Event..... 24

4.4 GHG Reduction Priority Implementation-Ready Measures ..... 25

    4.4.1 Transportation..... 25

    4.4.2 Electric Power ..... 29

    4.4.3 Buildings ..... 33

    4.4.4 Waste, Water, and Sustainable Materials..... 37

5 Next Steps ..... 38

    5.1 Pursuit of Funding for Priority Climate Action Measures ..... 38

    5.2 Development of a Comprehensive Climate Action Plan ..... 38

6 Appendices ..... 39

    Appendix A: La Jolla Band Community Event Flyer..... 39

    Appendix B: La Jolla Band Community Project Feedback Form ..... 40

## LIST OF FIGURES

FIGURE 1 – MAP OF LA JOLLA BAND OF LUISEÑO INDIANS RESERVATION AS OF JUNE 2017

FIGURE 2 – ADMINISTRATIVE STRUCTURE OF THE LA JOLLA BAND OF LUISEÑO INDIANS

FIGURE 3 – LA JOLLA BAND FIRE THREATS AND FLOODING HAZARDS MAP

FIGURE 4 – HIGHWAY 76 GRILL COMMUNITY EVENT PHOTO 1

FIGURE 5 – HIGHWAY 76 GRILL COMMUNITY EVENT PHOTO 2

## LIST OF TABLES

TABLE 1 – LA JOLLA BAND ENVIRONMENTAL REPORTS LIST

TABLE 2 – LA JOLLA BAND SUSTAINABILITY PROJECTS LIST

TABLE 3 – SHUTTLE BUS ASSUMPTIONS

TABLE 4 – IMPACT OF SHUTTLE SYSTEM ON GHG EMISSIONS

TABLE 5 – TRANSPORTATION SECTOR MEASURE 1: ELECTRIC VEHICLE INFRASTRUCTURE

TABLE 6 – TRANSPORTATION SECTOR MEASURE 2: TRIBAL-OWNED VEHICLE FLEET ELECTRIFICATION

TABLE 7 – POWER SECTOR MEASURE 1: SOLAR AND STORAGE AT THE TRIBAL ADMINISTRATION BUILDING AND GYMNASIUM

TABLE 8 – POWER SECTOR MEASURE 2: COORDINATE EFFORTS FOR SOLAR AND STORAGE RESILIENCY PROJECT AT THE LA JOLLA TRADING POST FUELING STATION

TABLE 9 – POWER SECTOR MEASURE 3: SOLAR DEPLOYMENT ON TRIBAL RESIDENCES

TABLE 10 – SOLAR AND BATTERY SYSTEMS BASED ON HOME ENERGY USE PROFILES

TABLE 11 – SOLAR AND BATTERY SYSTEMS BASED ON HOME ENERGY USE PROFILES (ALL HOMES)

TABLE 12 – SOLAR AND BATTERY SYSTEMS BASED ON HOME ENERGY USE PROFILES (ELDERS' HOMES)

TABLE 13 – BUILDING SECTOR MEASURE 1: INSTALL AIR SOURCE HEAT PUMP MINI-SPLIT SYSTEMS AT TRIBAL RESIDENCES FOR SPACE HEATING

TABLE 14 – SINGLE HOME SPACE HEATING EMISSIONS SAVINGS ESTIMATES

TABLE 15 – HOME SPACE HEATING EMISSIONS SAVINGS ESTIMATES FOR MULTIPLE SCENARIOS

TABLE 16 – BUILDING SECTOR MEASURE 2: INSTALL AIR SOURCE HEAT PUMP HOT WATER HEATERS AT TRIBAL RESIDENCES FOR HOT WATER HEATING

TABLE 17 – SINGLE HOME WATER HEATING EMISSIONS SAVINGS ESTIMATES

TABLE 18 – HOME WATER HEATING EMISSIONS SAVINGS ESTIMATES FOR MULTIPLE SCENARIOS

TABLE 19 – BUILDING SECTOR MEASURE 3: IMPLEMENT ENERGY STAR BUILDING PERFORMANCE STANDARDS ON ALL NEW RESIDENTIAL CONSTRUCTION

TABLE 20 – YEAR 1 EMISSIONS SAVINGS FOR TEN ENERGY STAR CERTIFIED BUILT HOMES

# 1 EXECUTIVE SUMMARY

The Environmental Protection Agency's (EPAs) Climate Pollution Reduction Grant (CPRG) program provides \$5 billion in grants to states, local governments, tribes, and territories to develop and implement plans for reducing greenhouse gas (GHG) emissions and other harmful air pollution, with funding released in two phases: noncompetitive planning grants and competitive implementation grants.

Under the EPA CPRG planning grants, the La Jolla Band of Luiseño Indians was awarded \$400,000 in federal funding. The tribe partnered with the San Pasqual Band of Mission Indians, a grant sub awardee, and the Center for Sustainable Energy, a clean energy non-profit, to develop a Priority Climate Action Plan (PCAP) for each tribe and a combined Comprehensive Climate Action Plan (CCAP). As part of these activities, the tribe assessed GHG emissions sources across key sectors: electric power, transportation, commercial and residential buildings, industry, agriculture and land management and waste and materials management.

This report summarizes the outcome of the La Jolla Band of Luiseño Indians' climate planning activities including development of a GHG emissions inventory and proposed priority climate action measures to reduce GHG emissions. This PCAP first provides context on the La Jolla Band of Luiseño Indians tribe, including background on the Reservation, Tribal government, Tribal membership, sustainability goals, past studies, and special considerations. After a thorough literature review and background study, the project team worked diligently to collect extensive data from the tribe, including Tribal government and community propane usage, electricity usage and fleet vehicle data.

The project team used the EPA's Tribal Greenhouse Gas Inventory Tool (TGIT) to input the data gathered and evaluate the tribe's GHG emissions. The GHG inventory and planning activities for the tribe focus primarily on 4 of the 6 sectors identified by the EPA: transportation, electric power, commercial and residential buildings, and waste and materials management. This plan includes a summary of the developed GHG inventory and a discussion of implementation-ready measures the tribe can move forward with to reduce near-term GHG emissions. The measures identified in this plan were informed by the GHG emissions inventory and aim to address the highest emission areas, specifically the transportation, electric power, building and waste sectors.

The project team developed a list of potential measures based on the analysis in the TGIT, and then vetted these potential projects with the community. While implementation measures were assessed within the waste sector, the project team determined that none of the potential projects were feasible for near-term implementation. Therefore, they are not explored in greater detail in this report and instead will be included in the forthcoming CCAP.

In the transportation sector, the project team assessed seven potential projects for reducing emissions associated with mobile combustion both specific to the La Jolla Band's Tribal government operations and the community. Ultimately, the team moved forward with reviewing the estimated GHG emissions reduction impacts of two priority implementation measures: 1) installing publicly accessible electric vehicle charging stations at Tribal government offices and business enterprises; and 2) transitioning older enterprise fleet vehicles to equivalent electric or hybrid electric vehicles. Combined, the two measures

are estimated to reduce the GHG emissions in the transportation sector up to 143 tons of carbon dioxide, 909 pounds of methane and 1856 pounds of nitrous oxide annually.

In the electric power sector, the project team assessed seven potential projects for reducing emissions. Ultimately, the team moved forward with reviewing the estimated GHG emissions reduction impacts of three priority implementation measures: 1) installing a solar and battery storage microgrid at the Tribal Administration Building and Gymnasium; 2) installing a solar and battery storage microgrid at the La Jolla Trading Post Fueling Station; and 3) deploying solar on all Tribal residences. Combined, the three measures are estimated to reduce the GHG emissions in the power sector up to 275 tons of carbon dioxide, 992 pounds of methane and 1221 pounds of nitrous oxide annually.

In the building sector, the project team assessed eight potential projects for reducing emissions. Ultimately, the team moved forward with reviewing the estimated GHG emissions reduction impacts of three priority implementation measures: 1) installing air source heat pump mini-split systems at Tribal residences for space heating; 2) installing air source heat pump hot water heaters at Tribal residences for hot water heating; and 3) implementing Energy Star building performance standards on all new residential construction. Combined, the three measures are estimated to reduce the GHG emissions in the building sector up to 421 tons of carbon dioxide, 1200 pounds of methane and 2246 pounds of nitrous oxide annually.



## 2 INTRODUCTION

### 2.1 Project Overview

The La Jolla Band of Luiseño Indians (La Jolla Band) is one of six federally recognized tribes of Luiseño Indians in Southern California and is in northeast San Diego County. On August 11, 2023, the La Jolla Band was awarded \$400,000 under the Environmental Protection Agency’s (EPA) Climate Pollution Reduction Grant (CPRG).

The CPRG grant funding will help the La Jolla Band build capacity to set and achieve ambitious but necessary greenhouse gas (GHG) emission reduction goals. The La Jolla Band has a rich history of extensive energy planning exercises and performance monitoring efforts but has had limited opportunity to implement projects. In partnership with the San Pasqual Band of Mission Indians, the La Jolla Band chose to collaborate with the Center for Sustainable Energy (CSE), a national non-profit, to develop a Priority Climate Action Plan (PCAP).

Under the leadership of the La Jolla Environmental Protection Office (EPO), the project team gathered Tribal data and established a government and community GHG emissions inventory for 2022. This GHG inventory was then used to help identify sectors and sources of high emissions and inform the identification of priority climate action measures the tribe can implement within the near-term to reduce their GHG emissions.

The PCAP for the La Jolla Band expands on the existing energy studies and community plans that have been put in motion, such as the tribe’s 2011 energy plan and its 2019 climate adaptation plan and help the La Jolla Band achieve its mission of providing a healthy and clean community for its current membership and future generations.

The PCAP will help the La Jolla Band to:

1. Improve understanding of current and future GHG emissions.
2. Identify priority strategies to reduce emissions and understand the other potential benefits of those strategies.
3. Engage a variety of stakeholders in an emissions reduction planning process.

The goals and objectives provided in this PCAP will also inform the Comprehensive Climate Action Plan (CCAP) which will be submitted at the end of the CPRG planning grant period.

### LA JOLLA BAND ENVIRONMENTAL PROTECTION OFFICE

#### MISSION STATEMENT

The mission of the La Jolla Environmental Protection Office is to safeguard public health and to restore, protect, and enhance the natural environment of the La Jolla Indian Reservation while promoting traditional values and enhancing tribal sovereignty.

#### VISION STATEMENT

Our vision for the La Jolla Indian Reservation is a well-informed healthy community, living in a clean and culturally sound environment, with the tribe’s stewardship and programs serving as a model for communities worldwide.

## 2.2 Scope and Purpose

The work completed under this planning grant builds on existing energy planning and implementation activities and focuses on the tribe's priority areas: energy, transportation, and mobility. The priority performance measures identified in the PCAP were developed after extensive review of past work and existing Reservation conditions, analysis of Reservation GHG emissions, and in close collaboration with Tribal leadership and the Tribal community. The following outlines the steps to developing the PCAP.

1. On September 27, 2023, the CSE team met with the La Jolla Band Tribal Council to discuss the EPA CPRG planning grant and to develop a baseline of the tribe's needs. During this visit, the CSE team toured the Reservation with the director of the EPO, Rob Roy, to become familiar with the land and establish an understanding of the enterprises, practices and areas of interest for development on the Reservation.
2. The project team collected existing studies and reports and conducted a literature review of Tribal planning documents and industry best practices in GHG inventory development. The findings of this literature review are captured in Section 3.
3. The project team worked closely with the EPO to collect a variety of Reservation data both at the government and community level across the sectors identified by the EPA in the TGIT.
4. Using the TGIT, the project team analyzed the datasets and created a comprehensive list of projects that could reduce emissions within the highest emission source categories.
5. The project team first presented data findings to the La Jolla Tribal Council on January 24, 2024 and used this conversation as an opportunity to identify further projects of interest from the Tribal government.
6. After the Tribal Council meeting and refining the list of potential performance measures, the team lead an outreach event on February 13, 2024 to gather community feedback on recommended projects and gather further projects of interest from Reservation residents.
7. The project team used the input from the community event and additional input from the EPO Director to determine high interest projects from the list of potential performance measures. This allowed the potential project list to be narrowed down to two to three primary projects that can be pursued in the short term via the implementation phase of the EPA CPRG.
8. The project team conducted initial emission reduction assessments for each selected priority project to establish estimated emissions reductions associated with each measure. The recommended priority measures are explored in detail in Section 4.4 GHG Reduction Priority Implementation-Ready Measures.

## 2.3 Authority to Implement

As a federally recognized tribe, the La Jolla Band and its Tribal council have the authority to implement the projects recommended in this PCAP. The La Jolla Reservation has its own procedures to develop projects on land within the Reservation's jurisdiction that differ from typical county, city or state permitting regulations. If the recommended projects are approved by the Tribal Council or are voted on during a general meeting, they can be implemented on the Reservation.

### 3 TRIBAL BACKGROUND AND GOALS

#### 3.1 La Jolla Band of Luiseño Indians

The La Jolla Band of Luiseño Indians (La Jolla Band) is one of six federally recognized tribes of Luiseño Indians in Southern California. The La Jolla Reservation is in northeast San Diego County along the foothills of Palomar Mountain, and adjacent to the Cleveland National Forest. The Reservation is approximately 20 miles east of Interstate 15 and off State Highway 76 - 25 miles east of the City of Escondido, and 60 miles northeast of the City of San Diego. Spanning 8,822 acres, the Reservation is remote, rural, and mountainous with the San Luis Rey River running through the Reservation. The Reservation’s terrain is rugged with elevation levels ranging between 900 feet above sea level at its southwestern border to 5,200 feet above sea level at the Reservation’s northwestern corner. The surrounding region is primarily undeveloped, and land uses in the vicinity include pasture crop land, commercial, and recreational areas with limited development.<sup>1</sup>

While the Luiseño tribe has existed in Southern California for thousands of years, the La Jolla Reservation was formally established by Executive Order on December 27th, 1875; with additional land returned to the tribe in 1877. The borders of the present-day Reservation were formalized in 1892 with the additional allotment of 634 acres of land.<sup>2</sup> The land is held in trust for the tribe by the U.S. Department of the Interior through the Bureau of Indian Affairs. The Reservation includes a mixture of buildings comprised of residential units, Tribal administration buildings and several commercial enterprises. The Reservation continues to develop sustainably with the goal of ensuring a safe and healthy environment that provides an increased quality of life and economic well-being for their Tribal members in unity with their brother and sister tribes.<sup>3</sup>

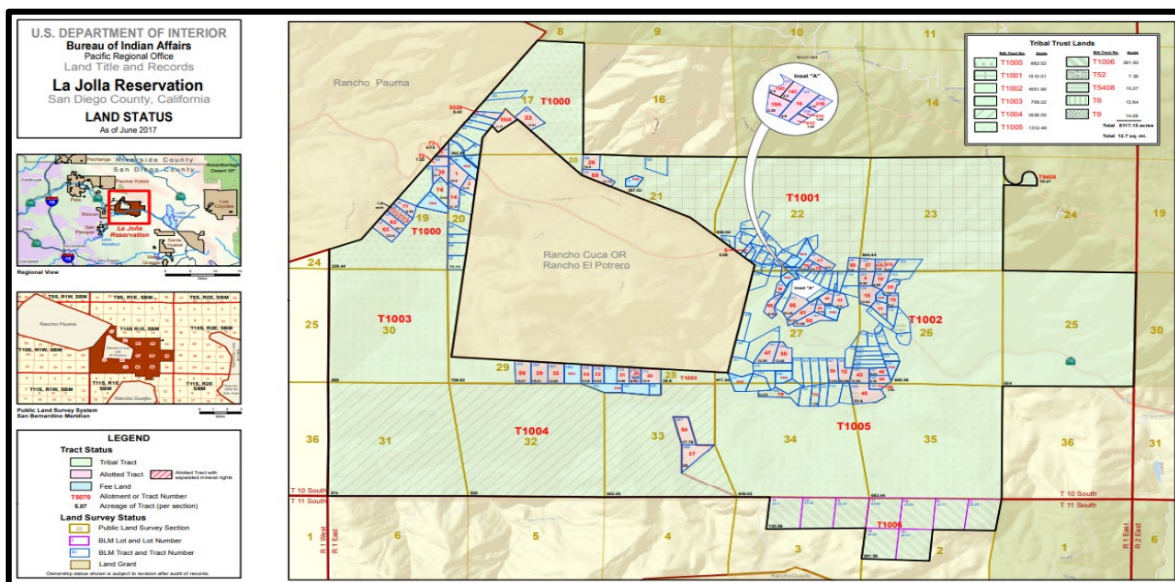


FIGURE 1 – MAP OF LA JOLLA BAND OF LUISEÑO INDIANS RESERVATION AS OF JUNE 2017

<sup>1</sup> La Jolla Band of Luiseño Indians Multi-Hazard Mitigation Plan 2019

<sup>2</sup> Southern California Tribal Chairmen's Association - <https://sctca.net/la-jolla-band-of-Luiseño-indians/>

<sup>3</sup> La Jolla Band of Luiseño Indians Energy Plan 2011

### 3.1.1 TRIBAL MEMBERSHIP AND RESIDENCES

As of 2023, La Jolla Band Tribal membership consists of approximately 710 enrolled members, which includes individuals who reside on the Reservation and individuals who reside off the Reservation. The Reservation is home to approximately 650 total residents, member, non-member Indians and non-Indians, who live on Reservation land. Reservation residents primarily live in one of the three main residential communities which combined total an estimated 215 residential homes of various size, age, and construction type. The West Side residential area is located at the western border of the Reservation while the two remaining residential areas located along Church Road and in Poomacha are situated further east near the San Luis Rey River.<sup>4</sup>

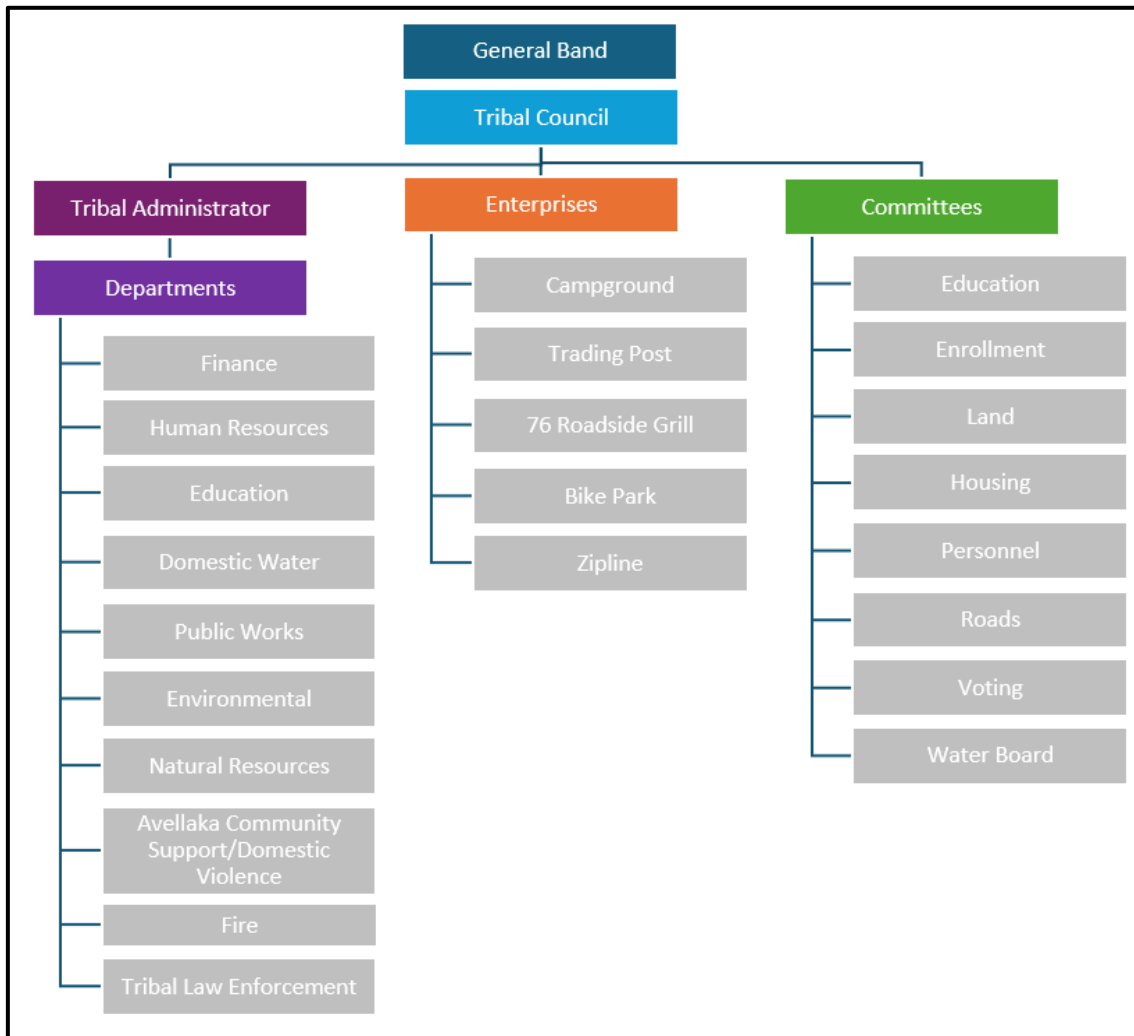


FIGURE 2 – ADMINISTRATIVE STRUCTURE OF THE LA JOLLA BAND OF LUISEÑO INDIANS

<sup>4</sup> La Jolla Band of Luiseño Indians Multi-Hazard Mitigation Plan 2019

### 3.1.2 TRIBAL COUNCIL AND DEPARTMENTS

The Tribal government structure is comprised of a five-member Tribal Council that is elected by General Tribe Members. The Tribal Council consists of a Chairman, Vice-Chairman, Treasurer, Secretary, and one Member-at-Large, and is governed by the La Jolla Band's General Members. The Council serves two-year staggered terms in efforts to prevent an entire Council transition at one time. All Tribal Members are involved in Reservation decision making; however, the Tribal Council manages day-to-day Tribal business.<sup>5</sup> Under the leadership of the Chairman, there are 10 governmental departments that are tasked with the security, economic health, and environmental wellbeing for current and future generations of the La Jolla Band community. Tribal government departments include Finance, Human Resources, Education, Domestic Water, Public Works, Environmental, Natural Resources, Avellaka – Community Support/Domestic Violence, Fire, and Tribal Law Enforcement.

In tandem with these departments, there are eight committees that support the work of the Tribal Council and include: Education, Enrollment, Land, Housing, Personnel, Roads, Voting and Water Board. All committees are staffed by active volunteers and function similarly to the departments in a city or county. The tribe has a limited number of specialized staff and primarily relies on the work of its volunteer and hired per-project professionals. This allows the tribe to be economically efficient as funding cannot currently support standing staff members. Figure 2 illustrates the existing administrative structure of the La Jolla Reservation.

### 3.1.3 TRIBAL-OWNED BUILDINGS

All Tribal-owned administrative buildings and business infrastructure are in the eastern portion of the Reservation and include the Tribal Hall and Education Building, Gymnasium, Water Park, Trading Post and the La Jolla Campground. The tribe additionally operates a Grill, Bike Park, Zipline, Waste Transfer Station, and several water tanks that store fresh water for Reservation residents. Many Tribal administrative departments are located within the Tribal Hall and Education Building which shares a plot of land with the Gymnasium. Tribally owned buildings and community spaces act multifunctionally - community events, formal meetings, or emergency distribution centers are typically held within the same building at differing times.

The Reservation additionally contains cultural structures in the form of a church, two historical adobe buildings, and five cemeteries. It should be noted that the Reservation does contain additional cultural sites, but they were not identified in previous reports. Their location and descriptions were acknowledged to be held in confidence by the tribe and protected under the Archaeological Resources Protection Act of 1979.<sup>6</sup> Further structures may be developed in the future, but Tribal members and residents are not permitted to build on the Reservation without approval from the Tribal Council. The La Jolla Band has noted the tribe wishes to limit the types of infrastructure on the Reservation for social and cultural reasons, and all projects are developed with this mindset.

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<sup>5</sup> La Jolla Band of Luiseño Indians Multi-Hazard Mitigation Plan 2019

<sup>6</sup> La Jolla Band of Luiseño Indians Multi-Hazard Mitigation Plan 2019

### 3.2 Tribal Sustainability Goals and Past Studies

The La Jolla Band has a long history and vision of adopting sustainability practices in efforts to reduce impacts on the environment – In particular impacts on the San Luis Rey River which was designated as a Priority Category I Watershed.<sup>7</sup> Created to maintain the vitality of the Reservation’s land, the La Jolla Band EPO leads clean energy and sustainability development efforts on the Reservation. The department maintains a staff of five people, including the Director, Air Program Manager, Water Program Manager, Environmental Technician, and Administrative Assistant. Department staff extensively collaborate with various La Jolla Band departments including the Domestic Water Department, Public Works Department, and the Natural Resources Department to develop and implement initiatives that support the tribe’s energy goals and objectives. Under the leadership of Rob Roy, the Environmental Director, the La Jolla EPO strives to fulfill its mission of the La Jolla Band becoming a regional energy leader while upholding the values of the community.<sup>8</sup>

“The Tribe’s most important resources are their members, the water, and their land. The Tribe is seeking additional land within the Reservation boundaries for future economic development and possible expansion of existing projects. The Tribe desires to limit the types of industry on the Reservation for social and cultural reasons. All projects on the Reservation are developed with this in mind.”

“Energy development is inextricably linked with revenue creation, monetary savings, economic development, jobs, environmental protection, and an increased quality of life.”

– 2019 HAZARD MITIGATION PLAN

In a vision statement from a 2010 community meeting, the La Jolla Band emphasized the desire to have adequate housing built with indigenous materials and energy efficient codes that aligned with the tribe’s cultural values. They also envisioned an economy that utilized reliable access to renewable and sustainable resources through increased energy infrastructure. The La Jolla Band’s vision includes universal access to these economic and reliable sources of power for all Tribal residents.<sup>9</sup> The La Jolla Band’s values and goals stand as the foundation of the tribe’s commitment to adopting green energy and decreasing their GHG emissions as the Reservation continues to develop and guide the measures explored and recommended in this PCAP.

#### 3.2.1 LA JOLLA BAND PAST STUDIES

There have been various environmental reports commissioned by the tribe over the past decade that address topics from hazard mitigation, resiliency planning, and energy transition strategies to reduce GHG emissions. These reports were reviewed to establish background and baseline information for the PCAP analysis. Dating back to 2011, when the La Jolla Band commissioned an Energy Plan, the tribe identified a set of energy-related objectives that would represent real opportunities for the tribe to achieve their energy vision and address environmental concerns. These objectives included investing in small and large

<sup>7</sup> La Jolla Band of Luiseño Indians Multi-Hazard Mitigation Plan 2019

<sup>8</sup> La Jolla Band of Luiseño Indians Energy Plan 2011

<sup>9</sup> La Jolla Band of Luiseño Indians Energy Plan 2011

scale solar, developing energy efficient building codes, and exploring alternative renewable energy resources. These energy-focused strategies inspired focus on lessening the Reservation’s GHG emissions and streamlining resource efficiency. Between 2010 to 2023, further reports have been commissioned and include a Master Community Plan, Strategic Plans, an Energy Plan, various Multi-Hazard Mitigation Assessments, and multiple GHG Emission Inventories. A selective list of the La Jolla Band’s reports dating from 2011 can be seen in the table below. No reports dated before 2011 were included in the literature review.

TABLE 1 – LA JOLLA BAND ENVIRONMENTAL REPORTS LIST

Report Name	Impact
La Jolla Band Master Community Plan 2011	Developed strategies that addressed the planning needs for the La Jolla Band Reservation. Identified short- and long-term goals for all Tribal Departments.
La Jolla Band Energy Plan 2011	Established the tribe’s strategic energy vision and goals and identified a series of projects and programs that support its goals for energy resiliency and sustainability, including large and small scale solar, forming a Tribally owned utility, developing energy efficient building codes, and developing right of way bargaining.
La Jolla Band Multi-Hazard Mitigation Plan 2012	Identified risks and methods to mitigate damage caused by natural and human caused disasters. Recommended energy-related objectives including strengthening energy resiliency for critical services and emergency response.
La Jolla Band Multi-Hazard Mitigation Plan 2014	Expanded upon identified risks and methods to mitigate damage caused by natural and human caused disasters. Recommended energy-related objectives including strengthening energy resiliency for critical services and emergency response.
La Jolla Band Baseline Greenhouse Gas Emissions Inventory for Government Operations 2015	A level III emissions inventory that created a baseline inventory accounting for Greenhouse Gas Emissions associated with Tribal government operations.
La Jolla Band Environmental Protection Office Strategic Plan 2015	Outlined the mission, vision, core values and long-term goals for the La Jolla Band EPO regarding environmental emergency preparedness, energy resources, education and outreach and climate change.
La Jolla Band Tribal Hazard Identification and Threat Assessment 2018	Expanded upon the 2014 Multi-Hazard Mitigation Plan. Placed a community emphasis on emergency response capability.

Report Name	Impact
La Jolla Band Multi-Hazard Mitigation Plan 2019	Expanded upon identified risks and methods to mitigate damage caused by natural and human caused disasters. Recommended energy-related objectives including strengthening energy resiliency for critical services and emergency response.
La Jolla Band Reservation-Wide Emissions Inventory 2019	A level II emissions inventory that established a thorough and up-to-date list of sources and emissions that affect the air quality breathed by individuals who live and work on the La Jolla Indian Reservation.
La Jolla Band Tribal Environmental Plan 2023	Outlined an updated list of the La Jolla Band EPOs goals and activities based on environmental sector including air, climate, education and outreach, energy, emergencies, land use, water, waste, and other GHG sources.

**3.2.2 LA JOLLA BAND SUSTAINABILITY PROJECTS**

In response to the strategies identified in these reports, the La Jolla Band EPO continues to make incredible efforts to pursue funding, partnerships and opportunities to implement projects that promote sustainable development and reduce Tribal GHG emissions. Aligning with assessment results, previously identified opportunities are pursued or discarded based on project viability. For example, according to studies performed in 2000, wind resources at the La Jolla Band Reservation are insufficient to support economically viable wind generation development. Alternatively, large-and small-scale solar energy generation options represented a more promising opportunity for reaching the La Jolla Band’s sustainability and economical goals. Accordingly, the La Jolla Band has deferred further development of any wind power at this time, instead focusing efforts on solar and housing retrofits. Through the work of the La Jolla Band Environmental Department and other agencies, the La Jolla Band since 2015 has pursued the following projects:

TABLE 2 – LA JOLLA BAND SUSTAINABILITY PROJECTS LIST

Project/Partnership	Description	Implementation Timeline
La Jolla Band and Grid Alternatives Partnership 2010	Project to install 43 photovoltaic solar and deliver 15 energy storage systems to La Jolla Tribal members. Project was led by Grid Alternatives	Completed 2010
La Jolla Band and Grid Alternatives Partnership - Solar Spring Break Program 2015	Project to install photovoltaic solar and deliver battery storage to la Jolla Tribal members living off-grid. Project was led by Grid Alternatives.	Completed 2015



<b>Project/Partnership</b>	<b>Description</b>	<b>Implementation Timeline</b>
La Jolla Plug-In Hybrid Funding 2019	Allowed the Environmental Protection Office to purchase two electric plug-in hybrid vehicles to be utilized for departmental work.	Vehicles purchased in 2019 and 2023
La Jolla Band Housing Construction - Rural Innovation Fund Program 2021	Project to construct two new healthy design homes on the La Jolla Indian Reservation in tandem with the All-Mission Indian Housing Authority.	Grant received in 2021
La Jolla Bureau of Reclamation Funding 2021	Secured funding to install renewable energy technologies on existing water pump and storage systems.	Completed in 2022
La Jolla Band and Grid Alternatives Partnership - Tribal Solar Accelerator Fund Project 2022	Project to install photovoltaic solar and deliver battery storage to la Jolla Tribal members living off-grid. Project was led by Grid Alternatives.	Systems delivered and installed in 2022
La Jolla Band and U.S Department of Housing and Urban Development Partnership - Affordable Housing and Community Development 2022	Project to construct homeowner units on the La Jolla Band Reservation in efforts to increase energy efficient housing units in tandem with the All-Mission Indian Housing Authority.	Grant received in 2022
La Jolla Tribal Government Renewable Energy Development Project 2022	Initiated the installation of a ground mounted solar photovoltaic array and battery energy storage system that will provide sustained power to the La Jolla Trading Post.	Anticipated completion in 2024
La Jolla Settlement Funding 2022	Funding allowing for the purchase of the Reservation's first electric van to replace a diesel vehicle and install six electric vehicle charging stations.	Anticipated completion in 2024
La Jolla Adventure Park Reconfiguration 2023	Project which aimed to construct disaster resilient infrastructure improvements to the La Jolla Adventure Park in partnership with San Dieguito Energy.	Anticipated project completion in 2024

As the Department continues to pursue the efficiency and affordability of sustainability projects, they have noted that ongoing activities will need continuous efforts as well as further funding. Projects that have received funding will need ongoing support from the Tribal council and stakeholders to reach completion. The tribe has plans for future developments but does not currently have available funding to

initiate larger-scale projects. The tribe continues to pursue grant opportunities to implement projects in efforts to realize the tribe’s energy and sustainability goals.

### 3.3 Special Considerations for the La Jolla Band Reservation

As any community, the La Jolla Band must work to address environmental, community or culturally specific challenges as they arise. These challenges may include funding availability, utility relations, and development restrictions. Due to its location in Southern California, the tribe must also address a variety of environmental factors that are specific to the topography of the region. These challenges will influence aspects of the La Jolla Band PCAP and are expanded upon below.

#### 3.3.1 ENVIRONMENTAL FACTORS

Located in Southern California, the La Jolla Band Reservation is susceptible to a variety of natural disasters such as flooding, landslides, wildfires and earthquakes. The Reservation is located in an earthquake hazard zone as the Elsinore Fault Zone runs through the middle of the Reservation.<sup>10</sup> The dry climate and low-lying vegetation also make the Reservation susceptible to wildfires. In tandem with the high Santa Ana Winds and the steep slopes on the Reservation, wildfires spread quickly. The La Jolla Band’s hazard mitigation plans have recurrently identified damages from interconnected wildfires and floods to be the largest and costliest disasters for the tribe to address.<sup>11</sup> Due to a lack of vegetation regrowth following wildfires, Reservation residents are at risk during heavy rains as surrounding areas are susceptible to flash flooding and landslides. Reports indicated that portions of the La Jolla Campground - the Reservation’s primary revenue stream - is prone to mud flows and high water levels. The extensive damage caused by the 2007 Poomacha Witch wildfires which burned 94% of the Reservation<sup>12</sup>, as well as the disastrous flood impacts of the 2017 Winter Storms and 2023’s Hurricane Hillary

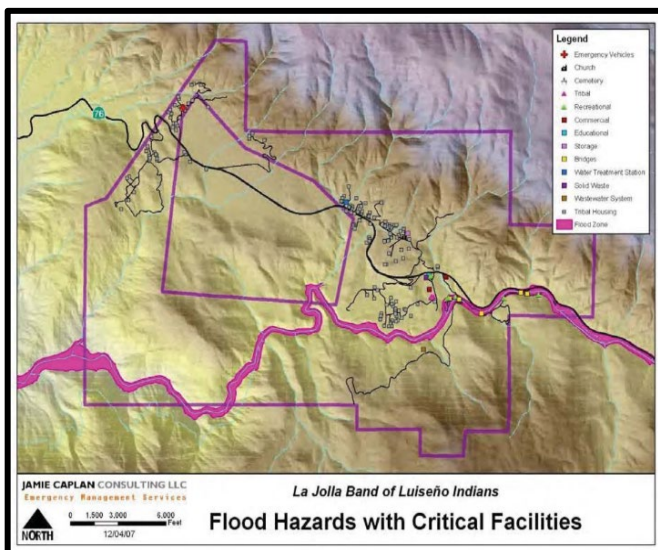
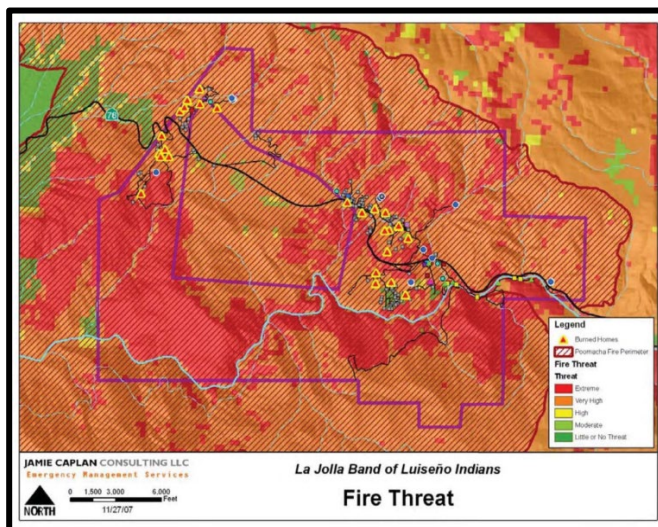


FIGURE 3 – FIRE THREATS AND FLOODING

<sup>10</sup> La Jolla Band of Luiseño Indians Multi-Hazard Mitigation Plan 2019

<sup>11</sup> La Jolla Band of Luiseño Indians Multi-Hazard Mitigation Plan 2019

<sup>12</sup> La Jolla Band of Luiseño Indians Multi-Hazard Mitigation Plan 2019

respectively convey the need for further adoption of resiliency strategies to address crises and maintain Reservation disaster response.

Environmental threats also directly result in localized physical damage to utility distribution systems and can instigate San Diego Gas and Electric (SDGE) Public Safety Power Shut-off events (PSPS). Residential units are spread throughout the mountainous terrain, and there are few paved roads that connect different areas of the land. Most of the smaller streets are dirt roads that wrap around steep rock slopes and valleys. Due to the remote location of the Reservation, blackouts occur semi-frequently and may last for multiple days at a time before utility infrastructure and powerlines are repaired.

### **3.3.2 UTILITY CHALLENGES**

The Reservation relies upon electricity from the regional Investor-Owned Utility (IOU) SDGE. The tribe does not have authority to set energy rates or directly provide utility level electricity service to their members. Electrical service is provided by SDGE through two overhead lines that traverse the terrain to residents and commercial accounts. SDGE does not currently provide natural gas to this area as it would be very costly to install the required infrastructure to these remote areas. In 2011, it was documented that the tribe and Tribal residents mostly make use of propane deliveries for heating needs.<sup>13</sup> The remote location of the Reservation and steep surrounding slopes limit prospective areas for development on the Reservation.

In tandem with limited utility reach, Tribal Nation governments are experiencing energy related economic hardship due to continuously increasing electric power costs. As energy costs continue to rise, the La Jolla Band has expressed interest in adopting projects that offset reliance on 3<sup>rd</sup> party utility services such as integrating large scale solar generation or even forming a Tribally owned utility.<sup>14</sup> According to reports from neighboring tribes, IOU's are often resistant to utility-scale energy projects and can create multiple roadblocks such as mega-watt limitations per installation.<sup>15</sup> Working with SDGE while pursuing energy independence projects may present challenges as larger scale Tribal projects are introduced.

### **3.3.3 FINANCIAL CONSTRAINTS**

Financial barriers play a large role in how and whether sustainability projects can be pursued in a timely manner. Distributed Energy Resources are still costly, and pursuit of larger projects often require extensive upfront equipment costs that are challenging to fund without grants, partnerships, or federal assistance. Furthermore, the introduction of more complex projects that require maintenance may be financially cost prohibitive as specialized full-time staffing will be required on the Reservation. To achieve energy independence and improve the tribe's economic quality of life, the La Jolla Band has considered pursuing a variety of large- and small-scale methods to introduce clean energy technology, or update energy efficiency on the Reservation. The tribe has continuously expressed interest in developing energy efficient building codes to retrofit and weatherize older housing stock, install further residential solar panels, and construct new energy efficient housing units to alleviate the housing shortage. In tandem, the

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<sup>13</sup> La Jolla Band of Luiseño Indians Energy Plan 2011

<sup>14</sup> La Jolla Band of Luiseño Indians Energy Plan 2011

<sup>15</sup> San Pasqual Strategic Energy and Resiliency Plan 2016

Tribal council also wishes to pursue larger projects such as transitioning from a septic system to a sewer and water treatment plant, introduce thermal solar systems for the campground showers, and potentially access geothermal energy generation. The tribe has indicated an interest in a diversification of revenue streams in efforts to generate funding for renewable energy projects, but further development will require extensive funding. The La Jolla Band anticipates needing continued collaboration with other tribes, Tribal Organizations, and US. Federal Agencies to create opportunities to support clean energy developments on the Reservation.

## 4 PCAP ELEMENTS

### 4.1 Data Collection

Data collection for the GHG emissions inventory was the most involved and most challenging portion of the PCAP development. The program team selected to focus on 2022 for establishing the tribe's GHG inventory because it was the most recent calendar year with minimal impacts due to COVID-19 and ensured the most comprehensive data set compared to years prior.

For the GHG emissions assessment to be most effective in identifying the highest GHG emitters and establishing impactful reduction measures, the data used in the emissions inventory analysis needed to be as detailed and accurate as possible. Accordingly, the CSE project team and the La Jolla Band Environmental Protection Office worked diligently to collect a wide range of data. The following is a list of data requested from the La Jolla Band.

- Tribal population
- Tribal government departments and number of employees
- Inventory of Tribal government buildings and building characteristics
- 2022 propane consumption for Tribal government buildings
- 2022 residential propane consumption
- Gasoline and diesel consumption for backup generators
- Inventory of existing on-site generation
- Sources of stationary combustion
- Vehicle miles travelled for Tribal-owned vehicles
- Fleet data for Tribal-owned vehicles
- Inventory of heavy-duty equipment
- Employee commute information
- 2022 electricity consumption for all tribe-owned buildings
- Sample of residential electricity consumption data
- Wastewater treatment plant details

Much of the requested information was not readily available to the project team. This was due to a limited amount of previous government documentation in response to cultural oral tradition. An added challenge for the community emissions assessment was the need to collect documents from a small pool of Tribal members willing to disclose their energy usage. This sample of data was then used to estimate residential energy usage across all residents.

The Environmental Protection Office's data collection involved coordination across multiple entities within the tribe, and as such this process took over four months. For example, as part of the Tribal fleet analysis, the team needed odometer readings for each government-owned vehicle to estimate the annual vehicle miles travelled. Collecting information proved challenging for the department and the project team as data was received in sections and often needed follow up to confirm data parameters or Reservation circumstances.

## 4.2 Greenhouse Gas Inventory

### 4.2.1 TRIBAL GREENHOUSE GAS INVENTORY TOOL

The team used the EPA’s Tribal Greenhouse Gas Inventory Tool (TGIT) to develop a 2022 GHG emissions inventory for the La Jolla Band, both at the Tribal government level and broader community level. The TGIT is a spreadsheet-based tool developed by the EPA to help tribes in developing a relatively quick and simple GHG inventory across multiple sectors including residential, commercial, transportation and waste and water management. To start, the tool is pre-programmed to include default emissions factors and assumptions to help guide the user and calculate emissions with limited community-specific information. As much as possible, the program team substituted the placeholder default values with community-specific information. The program team completed a TGIT for Tribal operations and a TGIT for community emissions.

### 4.2.2 GHG INVENTORY RESULTS

The majority of inputs to the TGIT were based on actual measured or recorded data and supplemented by industry best practice resources or estimates provided by trusted Tribal employees. Emissions were identified for over ten different Tribal Departments that served about 650 members living on the Reservation during the 2022 baseline year. These emissions were calculated using the TGIT default CAMX eGRID subregion for all Scope 1, 2 and 3 emissions sources. Specific resources and methodologies are provided in the supporting documents for this PCAP.

Propane bills were collected for all Tribal buildings and entered into the Tribal Operations TGIT and for residential consumption, the local LPG provider (Fallbrook Propane) confirmed a total amount that was delivered to homes in 2022. This accounted for 70% of all residential deliveries, which allowed the project team to estimate the remaining homes using various fuel providers. The average consumption per home was compared to EIA’s Residential Energy Consumption Survey<sup>16</sup> (RECS) data for a similar climate zone and was considered appropriate. Electric utility interval data was provided by SDG&E for all tribe owned buildings and analyzed for annual consumption before being entered into the TGIT. Residential electric energy consumption was estimated using RECS data for all 215 homes on the Reservation. Of these 215 homes, 50 have solar PV and/or battery storage installed and were discounted 25% of grid consumption based on NREL estimates<sup>17</sup> for energy offset by on site renewables.

Mobile combustion estimates for Tribal fleet vehicles were derived from the inventory containing vehicle make, model, model year and current odometer readings. Estimated light-duty Vehicle Miles Traveled (VMT) for 2022 was calculated by dividing odometer readings by vehicle age (using model year). Fuel consumption was then calculated by dividing annual VMT estimates with vehicle-specific published miles-per-gallon (MPG) or miles-per-gallon equivalents (MPGe) for currently owned EVs. For heavy equipment that runs by hours of operation, we received yearly hours used by the tribe and looked up equipment specific fuel usage estimates per hour of operation. VMT and fuel usage were input into the TGIT in bins by department, model year, and fuel type. To verify results from the TGIT, the project team calculated MT

<sup>16</sup> <https://www.eia.gov/consumption/residential/>

<sup>17</sup> <https://www.nrel.gov/docs/fy09osti/43844.pdf>

CO<sub>2</sub>e by multiplying the estimated fuel consumption for each vehicle by Lbs of CO<sub>2</sub>e per gallon.<sup>18</sup> These estimates were within 1% of estimates derived from the TGIT tool.

Residential based light duty VMT and fuel consumption was estimated using vehicle registration data acquired from the CA Department of Motor Vehicles (DMV) by fuel type, model year and zip code.<sup>19</sup> The Tribal territory does not fit neatly into each zip code. To estimate vehicle ownership within the Tribal area, we identified the Zip Code Tabulation Area (ZCTA) that overlapped most with Tribal boundaries. We calculated the proportion of the ZCTA population belonging to each tribe using the ZCTA data. We then multiplied this proportion by the DMV counts for each ZCTA to estimate Tribal vehicles. This provided estimates of vehicles by type, fuel type and model year for each tribe, consistent with expected ownership rates. We applied CA-specific VMT estimates from the Federal Highway Administration<sup>20</sup> to each vehicle to estimate total annual VMT. Fuel consumption estimates were created by dividing VMT by average MY MPG/MPGe from fuel economy.gov.<sup>21</sup> For DMV records that did not specify model year, but only indicated they were older than 2009, we applied the average fuel economy for vehicles between 1976-2008 using Real World MPG.<sup>22</sup> Results were entered into the TGIT by vehicle type and model year. To verify results from the TGIT, we applied the same method utilized on the fleet vehicles to calculate MT CO<sub>2</sub>e. These estimates were within 1% of estimates derived from the TGIT tool. Employee commute details were also collected and showed that the 99 employees' preferred method of transport was in a single occupant vehicle on their average commute of 17.9 miles to the Reservation.

All homes on the Reservation utilize a septic system as well as most of the Tribal buildings and enterprises. An advanced integrated wastewater pond system (AIWPS) is located near the campground and serves a few of the enterprises including guest camper RV dumping. These anaerobic systems were captured in the TGIT as well as the fact that there is no imported domestic water for the Reservation. Tree canopy cover, or forestry, was calculated using USDA geodata to estimate that 24% of the Reservation is under tree cover, sequestering a portion of carbon in the atmosphere. An additional emissions source identified is the burning of firewood at the La Jolla Campground which was calculated using a record of sales for bundles sold during 2022. All other emissions sources represented in the TGIT either were not applicable or had insufficient data to inventory. These omitted sources were considered minimal and would not have a large impact on the total emissions identified and inventoried within this report.

Based on the provided and analyzed data, CSE was able to conclude that the highest emissions on the La Jolla Band Reservation predominantly came from four emission sources:

- Mobile Combustion
- Stationary combustion
- Electricity consumption

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<sup>18</sup> <https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle>. Grams of CO<sub>2</sub> per gallon for both gas and diesel vehicles was converted to lbs of CO<sub>2</sub>e.

<sup>19</sup> <https://data.ca.gov/dataset/vehicle-fuel-type-count-by-zip-code>

<sup>20</sup> <https://www.policygenius.com/auto-insurance/average-miles-driven-by-state/>

<sup>21</sup> <https://www.fueleconomy.gov/feg/download.shtml>

<sup>22</sup> The 2023 EPA Automotive Trends Report. <https://www.epa.gov/system/files/documents/2023-12/420r23033.pdf>

- Wastewater treatment

Mobile combustion was the highest GHG emission source and accounted for 75% of produced emissions with electricity consumption at 11% being a very far second. The remainder of emission source categories were stationary combustion at 8%, and wastewater treatment at 4%. The remaining 2% of emissions were categorized under other and represent a combination of smaller sources such as burning of firewood at the La Jolla campground.

Note, while the waste, water, and sustainable materials sector was explored for potential implementation measures, there are no proposed measures in this category that the tribe plans to move forward with in the near-term implementation phase. While project proposed in this sector may be able to help reduce GHG emissions on the Reservation, the project team determined that there is not sufficient data at this time to understand and estimate the emissions reduction impacts of implementing these measures. Therefore, they were not explored further at this time, but will be taken into consideration in the development of the CCAP.

## 4.3 Community Engagement

### 4.3.1 TRIBAL COUNCIL MEETINGS

The project team conducted an initial meeting with the Tribal Council on September 27, 2023, before the grant period officially started on October 1, 2023, to share information about the grant and better understand the tribe's goals and priorities. During this initial meeting, the project team was provided a tour of the Reservation, led by the Environmental Director Rob Roy, who provided an overview of the Reservation's residential areas, government buildings, existing energy projects, and the Reservation's enterprises. The project team additionally received information regarding areas of interest for development on the Reservation.

In the following months, the project team collaborated with the EPO to begin the process of collecting and analyzing data. On January 24, 2024, the project team once again met with the Tribal Council after initial calculations were completed to help inform a list of priority measures. During this meeting, the Tribal Council was provided information on the progress of the PCAP and the results of the team's data analysis. With the identification of four sectors (1) Mobile Combustion, (2) Stationary combustion, (3) Electricity consumption, and (4) Wastewater treatment, as being the primary emitters, the Tribal Council assisted the project team in narrowing down potential implementation measures. The Tribal Council additionally recommended further projects of interest to the tribe that were not initially flagged by the project team. Recommendations from the Tribal Council included potentially pursuing residential energy efficiency and electrification measures in partnership with the All-Mission Indian Housing Authority (AMIHA), integrating solar panels on community buildings such as the fire station or elder center, and electrifying the Reservation's agricultural tools. During this meeting, the Tribal Council also assisted with the initial planning of a community event for general Tribal members to provide their feedback on the grant and proposed projects.



#### 4.3.2. GENERAL MEMBERSHIP COMMUNITY EVENT

On February 13, 2024 from 4:00PM to 6:00PM, the project team hosted a community outreach event at the La Jolla Band Reservation. The team led a “Dinner and Discussion” event at a local enterprise, the Grill on Highway 76. CSE and the EPO collaborated to circulate flyers (Appendix A), advertise the event on the Tribal website, and relay event information via word of mouth in efforts to promote event attendance. At the height of the event, there were 20 attendees with approximately 18 attendees staying for the full duration of the event. The event began with a 20-minute presentation from members of the project team who overviewed the EPA CPRG program, and then explained the work that had been completed on the PCAP portion of the grant. This community event was intended to garner community feedback on priority implementation measures. After providing the project background, the remainder of the presentation and the following open floor discussion was focused on the La Jolla Band’s specific GHG inventory and potential GHG emissions reduction measures.

During the community meeting, the project team circulated copies of a feedback form to the participants. This document, included in Appendix B, listed out all potential priority implementation-ready measures identified during the GHG emissions inventory assessment. The participants had an opportunity to mark each measure as important, neutral, or cross out measures that they did not find to be important. They could also add feedback and comments to elaborate on project ideas or propose additional ideas. The CSE project team received 18 feedback forms back from community members and used these forms as



FIGURE 4 – HIGHWAY 76 GRILL COMMUNITY EVENT

a base to determine which community projects to look further into and recommend as priority measures.

The open-floor discussion gave the project team a better understanding of projects of interest for general tribe members in comparison to the Tribal Council and the EPO. General tribe members were overall aligned with the interests of the Reservation leaders and departments and recommended projects that would expand PV and storage technologies on the Reservation, improve building heating and cooling, and supported the adoption of EV and hybrid vehicles. The Director of the EPO noted that the community began installing PV systems 12 years ago through a variety of programs and thus members were very comfortable with the idea of installing further solar and energy storage systems. The community also responded positively to the idea of updated appliances to lower their energy costs and improve building heating and cooling systems.



FIGURE 5 – HIGHWAY 76 GRILL COMMUNITY EVENT

Community members did express some hesitation with fully adopting electric vehicles and charging stations due to an ongoing history of blackouts in the area and concerns over the amount of energy usage charging infrastructure would require. Community members additionally emphasized the desire for the Reservation to be self-sustaining and less reliant on the local utility electric SDGE for their energy needs. The community additionally expects the Reservation population to increase in size by 2050 and noted that they wanted future building developments to integrate passive and

nature compatible technologies to cool and heat their homes such as building homes with culturally significant materials like adobe, having structures be close to the ground for natural insulation, and strategically adopting solar tubes and south facing windows to align with the sun.

The project team further noted recommendations that included wind turbines, recycling and composting programs, solar water heating technology, and food sovereignty from community members, but acknowledge that these projects would require further data analysis and feasibility studies to determine emission reduction impacts. These ideas may be explored in the upcoming CCAP.

#### 4.4 GHG Reduction Priority Implementation-Ready Measures

With the identification of the highest emission sources on the La Jolla Reservation, CSE worked with the La Jolla Band EPO, Tribal Council and Community members to develop a list of high-priority projects. These projects are specifically targeted to lower emissions produced by the highest emission sources identified by the TGIT.

##### 4.4.1 TRANSPORTATION

The project team reviewed seven potential projects within the transportation sector:

- Install public electric vehicle charging stations at the Tribal Administration Building, Campgrounds, and the Trading Post Gas Station.
- Install charging stations for Tribal-owned electric vehicles near their assigned department.
- Transition enterprise vehicles to electric or hybrid vehicles.
- Transition heavy-duty Tribal service diesel vehicles and equipment to electric vehicles. (Ex: vehicles used for public works such as fire trucks and waste management vehicles.)
- Establish a ridesharing or van-pool program for Tribal members to reduce private car off the Reservation.
- Develop a shuttle system between Tribal enterprises to reduce private car use on the Reservation.
- Develop a pilot to encourage members of the community to purchase zero-emission vehicles.

During the community outreach event, the project team heard some hesitation and resistance to vehicle electrification due to susceptibility to power outages and how this would impact the feasibility of full electric conversion. There are also limits to the proposal to transition heavy-duty diesel vehicles and equipment due to limited non-combustion alternatives. There is a potential to introduce hybrid or hydrogen vehicles, but zero-emissions vehicle technologies for heavy-duty vehicles are limited.

Of the potential projects discussed, three were of most interest to the Tribal community participants with half or more of the feedback respondents indicating that the projects were of high importance. These projects included installation of public electric vehicle charging infrastructure, establishing a ridesharing program for Tribal members, and developing a shuttle system between Tribal enterprises to reduce private care use on the Reservation. In addition to these three measures which received strong community support, the Director of the EPO indicated that transitioning the enterprise/Tribal-owned vehicle fleet to electric or hybrid vehicles was a high priority to the La Jolla Band.

When the project team looked closer at the development of a shuttle system, the data showed that implementing a shuttle service, even with electric buses, would likely have little to no impact on GHG emissions. In fact, in one scenario, the deployment of a shuttle system showed that it might actually increase emissions on the Reservation.

The project team began by conducting a literature review to determine the impacts on vehicle miles traveled (VMT) from deployment of a shuttle bus service; however, there were limited resources with assessments analogous to what the team was considering for the La Jolla Band. The team ended up using a range of estimate VMT reduction from a SANDAG resource which stated a 0.02 – 2.5% reduction in VMT from a shuttle service and used the upper and lower bounds for a low and high scenario. The team made the following assumptions regarding a shuttle system for the GHG emissions reductions analysis:

TABLE 3 – SHUTTLE BUS ASSUMPTIONS

<b>Assumptions</b>	
Round-Trip Mileage (miles)	25
Schedule (minutes)	30
Trips (per hr, per bus)	1
Concurrent Trips	2
Estimated Miles (per hr)	50
Estimated Hours of Operation (per day)	8
Total Daily VMT	508
Yearly VMT	185,420

Using these assumptions, the project team then estimated how much VMT could be reduced from the residential fleet in combination with the VMT added by an electric bus. The results of this review show that in the low VMT estimate (0.02%), a shuttle system would add VMT and emissions. If the reduction of residential vehicle VMT is at the higher end (2.5%), the VMT and emissions would be reduced, but only slightly. The results of this analysis are shown in Table 5 below.

TABLE 4 – IMPACT OF SHUTTLE SYSTEM ON GHG EMISSIONS

	<b>Total VMT Compared to Business-As-Usual (BAU)</b>	<b>Change in MT CO2e</b>
<b>Low Change to Residential VMT (0.02% Reduction)</b>	+183,900	+58.9
<b>High Change to Residential VMT (2.5% Reduction)</b>	-4,362	-19.0

Considering the limited GHG emissions impact and the additional costs of purchasing, maintaining, and operating electric shuttle buses, the team determined that there is not a compelling enough impact on emissions to proceed with the development of a shuttle system as a priority GHG emissions reduction measure. In a similar vein, the team decided to not look further into the idea of a ride-sharing system at this time as well. The tribe may be able to explore the idea of dedicating a handful of electric vehicles from the Tribal-owned fleet to a community ridesharing program. This configuration would displace VMT from personal combustion vehicles and would also expose Tribal members to electric vehicles which may help adoption of EVs from Tribal members. The GHG emissions reduction impacts of a program such as this one would require further study and may be included in the CCAP if the project team determines it is a feasible option.

Accordingly, the project team moved forward with assessing two transportation projects as potential implementation-ready measures that can help reduce GHG emissions in the short term: deployment of on-site electric vehicle charging infrastructure and electrification of the tribe-owned fleet.

**TABLE 5 – TRANSPORTATION SECTOR MEASURE 1: ELECTRIC VEHICLE INFRASTRUCTURE**

<b>Transportation Sector Measure 1:</b> Install public electric vehicle charging stations at all Tribal government offices and business enterprises.	<b>Implementing Agency</b>	La Jolla Band of Luiseño Indians Environmental Protection Office
	<b>Implementation Milestones</b>	Assessment of electric vehicle infrastructure needs to support vehicle electrification, completed siting analysis, procurement of charging equipment, installation of equipment on the sites and interconnection with and permission to operate from SDG&E.
	<b>Geographic Location(s)</b>	All government buildings and Tribal enterprises.
	<b>Funding Sources</b>	EPA CPRG Implementation Grant CALeVIP (If applicable)
	<b>Metrics Tracking</b>	Published project overview, 2 status updates, and final report tracking construction progress
	<b>Cost</b>	To be determined during Implementation Grant application development
	<b>Annual Estimated Emission Reductions</b>	Up to 114.99 tons carbon dioxide, 901 lbs. methane, 1,058 lbs. nitrous oxide
	<b>Implementation Authority</b>	La Jolla Band of Luiseño Indians Tribal Council

Little research exists on the impacts on EV adoption per charging station installed. This is a common question in EV circles about whether EV charging leads to EV adoption or vice versa. However, if we

assume that the availability of public charging would have some impact on Tribal member’s ability to adopt an EV, we can also assume that some of the residential fleet may electrify as a result of installing charging equipment. Since there is uncertainty about how much EV adoption may occur because of charging installation, the project team chose to review emissions reductions assuming no more than 5% of Tribal residents may go electric (equivalent to ~30 vehicles in the case of La Jolla based on residential fleet estimates). Therefore, it is estimated that between 0 and 128.40 MT CO2e could be reduced as a result of installing chargers. In addition, while not quantified for this report, EV chargers installed on Tribal lands may have additional benefit of facilitating more electric vehicle travel for people driving through Tribal lands or using the tribe’s enterprises.

While electrification of the government-owned fleet was not of particular importance to the broader La Jolla Band community, this measure is a significant goal for the Tribal government. Therefore, it was included in the implementation measures reviewed further. Analysis of the La Jolla vehicle fleet preliminarily identified 11 vehicles that, based on current model being utilized, have an analogous EV available for replacement. These vehicles were either light duty pickup trucks or Vans. For Light duty pickup trucks, a Ford F-150 Lightning is considered as a replacement and for vans a Lightning ZEV3 Zero Emission Transit Passenger Van is considered as a replacement. The project team then created updated fuel consumption estimates using the MPGe for these vehicles and dividing by annual VMT estimates for these vehicles. The team then calculated emissions savings using the TGIT tool.

Initial estimates assume 27.99 tons carbon dioxide, 8.66 lbs. methane, 798.85 lbs. nitrous oxide could be reduced by replacing these vehicles. Note that further reductions may be possible depending on the process of finalizing which vehicles will get replaced.

TABLE 6 – TRANSPORTATION SECTOR MEASURE 2: TRIBAL-OWNED VEHICLE FLEET ELECTRIFICATION

<b>Transportation Sector Measure 2:</b> Transition enterprise vehicles to electric vehicles.	<b>Implementing Agency</b>	La Jolla Band of Luiseño Indians Environmental Protection Office
	<b>Implementation Milestones</b>	Determination of best vehicles to replace and/or cycle, including department level analysis of what vehicles may move to other departments. Determine the most appropriate EV to replace identified vehicles based on use of the previous vehicle. Complete charger installations. Train staff on EV use.
	<b>Geographic Location</b>	All Tribal departments
	<b>Funding Sources</b>	EPA CPRG Implementation Grant
	<b>Metrics Tracking</b>	Published project overview, 2 status updates.
	<b>Cost</b>	To be determined during Implementation Grant application
	<b>Annual Estimated Emission Reductions</b>	27.99 tons carbon dioxide, 8.66 lbs. methane, 798.85 lbs. nitrous oxide
	<b>Implementation Authority</b>	La Jolla Band of Luiseño Indians Tribal Council

#### 4.4.2 ELECTRIC POWER

The project team reviewed seven potential projects within the electric power sector to reduce GHG emissions:

- Implement solar panels and battery storage into the planning of a new fire station and elder center.
- Install solar and battery storage at the Tribal Administration building and Gymnasium to maintain power during outages and emergencies.
- Install solar carports at the waterpark to serve both the enterprise and surrounding buildings.
- Install solar and storage at the Trading Post Gas Station, the largest electric energy consumer.
- Deploy residential technologies to reduce power losses, reduce peak demand, and lower electricity costs.
- Develop resources so Tribal members can reach out to the Environmental Protection Office to learn about available incentive programs, tax credits and rebates they may be eligible for.
- Develop community renewable energy generation, microgrids, or vehicle-grid infrastructure.

During the community outreach event, the project team heard strong feedback from the community that the La Jolla Band has a desire to become more self-sustaining in supporting its power needs to rely less on SDGE. This drove interest in community energy projects such as renewable energy technologies, vehicle to grid infrastructure and microgrids.

Of the potential projects discussed, three were of most interest to the Tribal community participants with well over half or more of the feedback respondents indicating that the projects were of high importance. These projects included installing solar panels and battery storage at the La Jolla Trading Post for backup power at the fueling stations, installing solar and battery storage technologies at the Tribal Administration building and Gymnasium to maintain power during outages and emergencies and installing solar and battery storage on residential homes. In addition to these three measures which received strong community support, the program team received feedback from the Tribal Council that the Tribal government has significant interest in developing a Reservation microgrid to provide resiliency benefits and more energy independence.

While integrating solar and storage technologies into the planning and development of the new Fire Station and Elder Center is of interest to the La Jolla Band, these new facilities are still under construction and have not been occupied. At this time, there is not enough information available to reliably assess potential GHG emissions reductions or avoided GHG emissions attributed to installing solar and storage on these facilities. Depending on the progress of the planning for these new facilities during the scope of the CCAP development, an assessment may be able to be included at that time.

Accordingly, the project team moved forward with assessing the other three projects as potential implementation-ready measures that can help reduce GHG emissions in the power sector in the near-term. While assessing these potential projects further, the project team found that installing community solar with distributed generation credits would have limited financial and GHG emissions impacts in comparison to deploying solar at all or a portion of all the Tribal residences on the Reservation. Other

hurdles for siting a community solar project would be physically interconnecting homes and Tribal buildings to the system under strict utility safety regulations, gaining right-of-way for running transmission cables and the installation cost to run said cables and installing supporting electrical infrastructure. Instead of further investigating the potential for community solar, the team completed an analysis of residential solar and storage deployment. It is important to note that the deployment of paired solar and storage systems at each residence will still allow the homes to island from the grid during a planned or unplanned outage.

The following emissions results were calculated using the MTCO<sub>2</sub>e values found in the EPA’s Tribal Government Inventory Tool based on electric kWh or gallons of LPG propane saved. Electric savings for Power Sector Measures 1 through 3 were modeled using NREL’s REopt Lite<sup>23</sup> optimization tool and LPG propane savings were estimated using the EIA’s Residential Energy Consumption Survey (RECS)<sup>24</sup> in Building Sector Measure 1 and 2. Energy Star Certified homes’ savings were estimated using values claimed by the EPA<sup>25</sup> for Building Sector Measure 3.

**TABLE 7 – POWER SECTOR MEASURE 1: SOLAR AND STORAGE AT THE TRIBAL ADMINISTRATION BUILDING AND GYMNASIUM**

<b>Power Sector Measure 1:</b> Install solar and battery storage microgrid at the Tribal Administration building and Gymnasium to maintain power during outages and emergencies.	<b>Implementing Agency</b>	La Jolla Band of Luiseño Indians Environmental Protection Office
	<b>Implementation Milestones</b>	Purchase of material, construction start, construction end, interconnection agreement signed
	<b>Geographic Location</b>	22000 CA-76, Pauma Valley, CA 92061
	<b>Funding Sources</b>	EPA CPRG Implementation Grant
	<b>Metrics Tracking</b>	Published project overview, 2 status updates, and final report tracking construction progress
	<b>Cost</b>	To be determined during Implementation Grant application
	<b>Annual Estimated Emission Reductions</b>	19.1 tons carbon dioxide, 68.80 lbs. methane, 84.01 lbs. nitrous oxide
	<b>Implementation Authority</b>	La Jolla Band of Luiseño Indians Tribal Council

The Tribal Administration Building and Gymnasium are utilized daily by the community and host a majority of Tribal employees, including the Tribal Council. These facilities are used during utility power outages or natural disasters as an emergency shelter for local community members. A 65 kW<sup>26</sup> solar PV system paired with a 29 kW / 220 kWh battery storage system was sized with energy resiliency set as the goal of REopt Lite’s optimization model. This system will be able to provide 85% of annual electricity from renewable sources and support up to 75% of the both facilities load through a 48-hour long power outage utilizing

<sup>23</sup> <https://reopt.nrel.gov/tool/>

<sup>24</sup> <https://www.eia.gov/consumption/residential/>

<sup>25</sup> <https://www.energystar.gov/about/how-energy-star-protects-environment/energy-efficiency>

<sup>26</sup> System sizes are estimated using NREL’s REopt Lite modeling tool and are subject to final design engineer’s approval

solar PV and battery storage. Utility 15-min interval data was used to model both buildings and it should be noted that there is adequate roof space for installing up to 150 kW of solar PV.

**TABLE 8 – POWER SECTOR MEASURE 2: COORDINATE EFFORTS FOR SOLAR AND STORAGE RESILIENCY PROJECT AT THE LA JOLLA TRADING POST FUELING STATION**

<b>Power Sector Measure 2:</b> Coordinate efforts for solar and storage resiliency project at the La Jolla Trading Post Fueling Station	<b>Implementing Agency</b>	La Jolla Band of Luiseño Indians Environmental Protection Office
	<b>Implementation Milestones</b>	Purchase of material, construction start, construction end, interconnection agreement signed
	<b>Geographic Location</b>	22003 CA-76, Pauma Valley, CA 92061
	<b>Funding Sources</b>	\$550k existing Tribal funds from DOE grant; remaining cost paid by EPA CPRG Implementation Grant
	<b>Metrics Tracking</b>	Published project overview, 2 status updates, and final report tracking construction progress
	<b>Cost</b>	To be determined during Implementation Grant application
	<b>Annual Estimated Emission Reductions</b>	38.1 tons carbon dioxide, 136.9 lbs. methane, 167.4 lbs. nitrous oxide
	<b>Implementation Authority</b>	La Jolla Band of Luiseño Indians Tribal Council

The La Jolla Trading Post is a combination fueling station, convenience store and dine-in restaurant located on CA-76, at the entrance to the La Jolla Campgrounds. It is the most electric consuming building that the tribe owns, using 240,423 kWh in the baseline year of 2022. This Tribal enterprise serves the community and visitors to the Reservation as an important fueling station and rest area and is a source of income for the Reservation. Efforts for planning and installing a solar PV and battery storage system are already in process between the Tribal Environmental Office, GRID Alternatives and Swell Energy where about \$550,000 from the Department of Energy has already been identified as a partial funding source. Our analysis for this site suggested installing a 109-kW solar PV system paired with a 36 kW / 245 kWh battery storage system sized with energy resiliency set as the goal of REopt Lite’s optimization model. This system will be able to provide 66% of annual electricity from renewable sources and support up to 25% of critical loads, such as fuel pumps, through a 48-hour long power outage utilizing solar PV and battery storage. Utility 15-min interval data was used to model this building. It should be noted that there is adequate roof space for installing up to 50 kW of solar PV and the remaining 59 kW would be installed as car port solar PV, providing shaded parking for guests.

**TABLE 9 – POWER SECTOR MEASURE 3: SOLAR DEPLOYMENT ON TRIBAL RESIDENCES**

<b>Power Sector Measure 3:</b> Install solar on residences.	<b>Implementing Agency</b>	La Jolla Band of Luiseño Indians Environmental Protection Office
	<b>Implementation Milestones</b>	Purchase of material, construction start, construction end, interconnection agreement signed
	<b>Geographic Location</b>	Homes located on the Reservation, Pauma Valley, CA 92061



<b>Funding Sources</b>	EPA CPRG Implementation Grant
<b>Metrics Tracking</b>	Published project overview, 2 status updates, and final report tracking construction progress
<b>Cost</b>	To be determined during Implementation Grant application
<b>Annual Estimated Emission Reductions</b>	218.4 tons carbon dioxide, 788.3 lbs. methane, 970.2 lbs. nitrous oxide
<b>Implementation Authority</b>	La Jolla Band of Luiseño Indians Tribal Council

A centralized renewable generator would not be able to provide the energy resiliency that the La Jolla Band community needs due to the scattered placement of homes on the Reservation and issues with right-of-way for electrical infrastructure. Therefore, one solution is to provide each of the 165 homes on the Reservation, that don't currently have solar PV or battery storage, with a paired system to add on-site generation and the ability to have backup power and island from the grid during an outage. Three unique monthly energy use profiles were created to represent high, medium, and low energy use homes. Below are the estimated annual electric energy and emissions offset, and the solar PV and battery storage system size as modeled by REopt Lite for a single home.

TABLE 10 – SOLAR AND BATTERY SYSTEMS BASED ON HOME ENERGY USE PROFILES

Energy Use Profile	High	Medium	Low
Annual kWh Offset	7,448	5,512	3,470
PV System Size (kW)	5	4	2
BESS System Size (kW/kWh)	2 / 15	2 / 11	1 / 7
<b>Annual Offset CO2 (MTCO2e)</b>	<b>1.80</b>	<b>1.33</b>	<b>0.84</b>
Annual Offset CH4 (MTCO2e)	0.0029	0.0022	0.0014
Annual Offset N2O (MTCO2e)	0.0036	0.0027	0.0017

The values above were then multiplied by 55 homes for each category, 165 in total, to represent an even distribution of high, medium and low energy use homes on the Reservation. The three unique energy profiles were estimated using an average from sample monthly energy data for 22 homes on the neighboring San Pasqual Reservation. The project team was able to collect energy usage data from six homes on the La Jolla Band Reservation; however, this data was not sufficient for performing this analysis. The project team believes the residential energy data from San Pasqual is equivalent to similar homes at the La Jolla Band as the homes are typically similar construction type, size and climate zone. The project team anticipates that this assumption will yield more accurate results compared to using residential data from RECS, the only other available data. The table below represents the total installed solar PV and battery storage capacity as well as the expected energy and emissions savings if all the homes on the Reservation were retrofitted with solar and storage.

TABLE 11 – SOLAR AND BATTERY SYSTEMS BASED ON HOME ENERGY USE PROFILES (ALL HOMES)

<b>All Home Retrofit Scenario Summary (165 Homes)</b>	
Annual kWh Offset	903,650

PV System Capacity (kW)	605
BESS System Capacity (kW/kWh)	275 / 1,815
Annual Offset CO2 (MTCO2e)	218.35
Annual Offset CH4 (MTCO2e)	0.3575
Annual Offset N2O (MTCO2e)	0.44

Our second recommendation of retrofitting all 165 homes on the Reservation is to address homes where elders reside due to the fact that this community is more vulnerable to health concerns during power outages. It's estimated that about 75% of the homes (or about 120 homes) are occupied by at least one elder, which totals about 120 homes. The table below represents the total energy and emissions saved when 40 homes of each energy profile are retrofitted with an appropriate sized solar PV and battery storage system, as outlined in Table 10 above.

TABLE 12 – SOLAR AND BATTERY SYSTEMS BASED ON HOME ENERGY USE PROFILES (ELDERS' HOMES)

<b>Elder's Home Retrofit Scenario Summary (120 Homes)</b>	
Annual kWh Offset	657,200
PV System Capacity (kW)	440
BESS System Capacity (kW/kWh)	200 / 1320
Annual Offset CO2 (MTCO2e)	158.8
Annual Offset CH4 (MTCO2e)	0.26
Annual Offset N2O (MTCO2e)	0.32

#### 4.4.3 BUILDINGS

The program team reviewed eight potential projects within the building sector to reduce GHG emissions:

- Implement a clean heating standard with air source heat pumps.
- Implement end-use energy efficiency measures in existing government-owned buildings.
- Develop an incentive program to encourage Tribal members to purchase certified energy-efficient appliances, heating and cooling equipment, lighting and building products to replace inefficient products.
- Establish policies to promote electrification of government-owned, commercial, and residential buildings, including converting from propane water heaters to efficient heat pump hot water heaters.
- Establish policies to accelerate the incorporation of efficient electric technologies and electric vehicle charging at new single-family, multi-unit, or affordable residential buildings.
- Implement building energy performance management for government-owned buildings and other energy consuming resources, such as water pumps.
- Implement benchmarking, energy efficiency portfolio standards and building performance standards.
- Promote recovery and destruction of high-global warming potential (GWP) hydrofluorocarbons (HFCs) used in existing appliances, air conditioning systems, and commercial chillers.

Of the potential projects discussed, three were of most interest to the Tribal community participants with more than half of the feedback respondents indicating that the projects were of high importance. These projects included installing air source heat pumps for space heating at residences, installing air source heat pumps for water heating at residences, and developing an Energy Start Building Performance for all new residential construction. Accordingly, the project team moved forward with assessing these three projects as potential implementation-ready measures that can help reduce GHG emissions in the building sector in the short term.

**TABLE 13 – BUILDING SECTOR MEASURE 1: INSTALL AIR SOURCE HEAT PUMP MINI-SPLIT SYSTEMS AT TRIBAL RESIDENCES FOR SPACE HEATING**

<b>Building Sector Measure 1:</b> Install air source heat pump mini-split systems for space heating at Tribal residences	<b>Implementing Agency</b>	La Jolla Band of Luiseño Indians Environmental Protection Office
	<b>Implementation Milestones</b>	Purchase of material, construction start, 50% homes retrofitted, construction end
	<b>Geographic Location</b>	Homes located on the Reservation, Pauma Valley, CA 92061
	<b>Funding Sources</b>	EPA CPRG Implementation Grant
	<b>Metrics Tracking</b>	Published project overview, 2 status updates, and final report tracking construction progress
	<b>Cost</b>	To be determined during Implementation Grant application
	<b>Annual Estimated Emission Reductions</b>	205.1 tons carbon dioxide, 568.9 lbs. methane, 1,090.4 lbs. nitrous oxide
	<b>Implementation Authority</b>	La Jolla Band of Luiseño Indians Tribal Council

Currently Tribal residence homes are being heated by LPG propane space heating sources that can be converted to efficient electric air source heat pump mini-split systems that would also provide cooling. This would consider a fuel switch from burning LPG propane in the home, and using systems like hot-water baseboard heating, to an electric powered heating system using an indoor fan coil and an outdoor compressor unit. These mini-split systems can provide very efficient heating and cooling by using the ambient air as a heat sink when conditioning a space and they offer better zone control over central home heating systems. Below are the estimated space heating savings for a single home on the Reservation using RECS data to calculate annual fuel consumption reduction in a *mixed-dry and hot-dry* climate zone. These values are for scalability purposes and the main intention is to install these systems on all 215 Tribal residences.

**TABLE 14 – SINGLE HOME SPACE HEATING EMISSIONS SAVINGS ESTIMATES**

<b>Space Heating Emissions Savings</b>	<b>Single Home</b>
Annual Savings (MMBtu)	14.5
Annual Propane Savings (Gal)	158.4
Annual Offset CO2 (MTCO2e)	0.9540
Annual Offset CH4 (MTCO2e)	0.0012
Annual Offset N2O (MTCO2e)	0.0023

The values above were multiplied by 215 homes to represent the total LPG propane emissions savings for the community if all homes were to be retrofitted with an air source heat pump. It should be noted that the emissions savings is representative of the LPG fuel savings only and that it assumes all-electric would be provided by newly installed solar PV and battery storage as detailed in Power Sector Measure 3: Solar Deployment on Tribal Residences. Below is a table showing the results of this analysis for several scenarios, including our intended measure covering all 215 homes, as well as a portion of the homes on the Reservation.

**TABLE 15 – HOME SPACE HEATING EMISSIONS SAVINGS ESTIMATES FOR MULTIPLE SCENARIOS**

<b>Space Heating Emissions Savings</b>	<b>50 Homes</b>	<b>100 Homes</b>	<b>215 Homes</b>
Annual Savings (MMBtu)	725.0	1,450.0	3,117.5
Annual Propane Savings (Gal)	7,919.4	15,838.9	34,053.5
Annual Offset CO2 (MTCO2e)	47.7	95.4	205.1
Annual Offset CH4 (MTCO2e)	0.0600	0.1200	0.2580
Annual Offset N2O (MTCO2e)	0.1150	0.2300	0.4945

If Power Sector Measure 3 is not implemented and onsite renewable energy is not the main power source for these systems, this measure would still yield an emissions savings based on the benefit of using grid electric energy over the burning of onsite LPG propane in the home.

**TABLE 16 – BUILDING SECTOR MEASURE 2: INSTALL AIR SOURCE HEAT PUMP HOT WATER HEATERS AT TRIBAL RESIDENCES FOR HOT WATER HEATING**

<b>Building Sector Measure 2:</b> Install air source heat pump hot water heaters at Tribal residences	<b>Implementing Agency</b>	La Jolla Band of Luiseño Indians Environmental Protection Office
	<b>Implementation Milestones</b>	Purchase of material, construction start, 50% homes retrofitted, construction end
	<b>Geographic Location</b>	Homes located on the Reservation, Pauma Valley, CA 92061
	<b>Funding Sources</b>	EPA CPRG Implementation Grant
	<b>Metrics Tracking</b>	Published project overview, 2 status updates, and final report tracking construction progress
	<b>Cost</b>	To be determined during Implementation Grant application
	<b>Annual Estimated Emission Reductions</b>	212.2 tons carbon dioxide, 616.3 lbs. methane, 1,137.8 lbs. nitrous oxide
	<b>Implementation Authority</b>	La Jolla Band of Luiseño Indians Tribal Council

Currently Tribal residence homes are using LPG propane fueled hot water heaters to heat domestic hot water that can be converted to an air source heat pump hot water heater. This would consider a fuel switch from burning LPG propane in the home to an electric powered heat pump boiler. These systems can provide very efficient water heating by using ambient air as a heat sink when heating a tank of water for domestic use. Below are the estimated hot water heating savings for a single home on the Reservation

using RECS data to calculate annual fuel consumption reduction in a mixed-dry and hot-dry climate zone. These values are for scalability purposes and the main intention is to install these systems on all 215 Tribal residences.

**TABLE 17 – SINGLE HOME WATER HEATING EMISSIONS SAVINGS ESTIMATES**

<b>Water Heating Emissions Savings</b>	<b>Single Home</b>
Annual Savings (MMBtu)	15.0
Annual Propane Savings (Gal)	163.9
Annual Offset CO2 (MTCO2e)	0.9871
Annual Offset CH4 (MTCO2e)	0.0013
Annual Offset N2O (MTCO2e)	0.0024

The values above were multiplied by 215 homes to represent the total LPG propane emissions savings for the community if all homes were to be retrofitted with an air source heat pump hot water heater. It should be noted that the emissions savings is representative of the LPG fuel savings only and that it assumes all-electric would be provided by newly installed solar PV and battery storage as detailed in Power Sector Measure 3: Solar Deployment on Tribal Residences. Below is a table showing the results of this analysis for several scenarios, including our intended measure covering all 215 homes, as well as a portion of the homes on the Reservation.

**TABLE 18 – HOME WATER HEATING EMISSIONS SAVINGS ESTIMATES FOR MULTIPLE SCENARIOS**

<b>Water Heater Emissions Savings</b>	<b>50 Homes</b>	<b>100 Homes</b>	<b>215 Homes</b>
Annual Savings (MMBtu)	750.0	1,500.0	3,225.0
Annual Propane Savings (Gal)	8,192.5	16,385.0	35,227.8
Annual Offset CO2 (MTCO2e)	49.4	98.7	212.2
Annual Offset CH4 (MTCO2e)	0.0650	0.1300	0.2795
Annual Offset N2O (MTCO2e)	0.1200	0.2400	0.5160

If Power Sector Measure 3 is not implemented and onsite renewable energy is not the main power source for these systems, this measure would still yield an emissions savings based on the benefit of using grid electric energy over the burning of onsite LPG propane in the home.

**TABLE 19 – BUILDING SECTOR MEASURE 3: IMPLEMENT ENERGY STAR BUILDING PERFORMANCE STANDARDS ON ALL NEW RESIDENTIAL CONSTRUCTION**

<b>Building Sector Measure 3:</b> Implement Energy Star Building Performance Standards on all new residential construction.	<b>Implementing Agency</b>	La Jolla Band of Luiseño Indians Environmental Protection Office
	<b>Implementation Milestones</b>	Purchase of material, construction start, 50% homes retrofitted, construction end
	<b>Geographic Location</b>	Homes located on the Reservation, Pauma Valley, CA 92061
	<b>Funding Sources</b>	EPA CPRG Implementation Grant
	<b>Metrics Tracking</b>	Published project overview, 2 status updates, and final report tracking construction progress

	<b>Cost</b>	To be determined during Implementation Grant application
	<b>Annual Estimated Emission Reductions</b>	4.08 tons carbon dioxide, 14.8 lbs. methane, 17.9 lbs. nitrous oxide
	<b>Implementation Authority</b>	La Jolla Band of Luiseño Indians Tribal Council

The tribe has historically grown by about 10 new homes being constructed per year and that growth rate is expected to continue for the foreseeable future. Considering there are no existing energy efficiency goals beyond standard building code that the tribe must adhere to, it would be beneficial for the Reservation to adopt a minimum standard of efficiency for all new homes being built. Energy Star Certified<sup>27</sup> homes create a standard that is stated to be “at least 10% more energy efficient than homes built to code and can achieve a 20% improvement on average while providing homeowners with better quality, performance and comfort.” These homes would require specific minimum efficiency ratings for things like Energy Star appliances and other energy consuming systems. The table below is representative of ten homes being built in Year 1 to this code and the associated emissions savings. The electric savings were deemed from the RECS estimation for a typical home in a mixed-dry and hot-dry climate zone.

TABLE 20 – YEAR 1 EMISSIONS SAVINGS FOR TEN ENERGY STAR CERTIFIED BUILT HOMES

<b>Emissions Savings Summary</b>	<b>Year 1</b>
Avg # of Homes Built per Year	10
Estimated Savings per Year (kWh)	16,910
Annual Offset CO2	4.08
Annual Offset CH4	0.0067
Annual Offset N2O	0.0081

#### 4.4.4 WASTE, WATER, AND SUSTAINABLE MATERIALS

The project team assessed four potential projects within the waste, water and sustainable materials sector to reduce GHG emissions:

- Develop community composting to divert food/yard waste, reduce GHG emissions and increase beneficial use of organic waste.
- Create educational programs to reduce waste and increase reuse or recycling rates.
- Shift away from plastic water bottles and other single-use plastics.
- Install renewable energy and energy efficiency measures at water pumping stations and wastewater treatment facilities.

While these projects were of varied interest to the community for reducing GHG emissions, the project team determined that they were not feasible to implement in the short term and would require further study to determine potential GHG emission reduction estimates. Accordingly, the team did not do any further analysis of these projects at this time but may explore one or more in further detail during the development of the CCAP.

<sup>27</sup> <https://www.energystar.gov/about/how-energy-star-protects-environment/energy-efficiency>

## 5 NEXT STEPS

### 5.1 Pursuit of Funding for Priority Climate Action Measures

The La Jolla Band has working relationships with Grid Alternatives, HUD, and a variety of other organizations that provide grant funding for clean energy and related projects. While these programs exist, the tribe has noted that it is at times challenging to participate. Additional funding can be available but is limited and may not be consistent to complete full projects.

As noted in the priority measures sections throughout Section 4.4, the La Jolla Band will rely on the EPA CPRG implementation grant funding to support the implementation of these identified PCAP measures. The La Jolla Band plans to submit grant applications for EPA CPRG implementation funding competition, both in the general competition due April 1<sup>st</sup> and the set aside tribe and territory funding due May 1<sup>st</sup>. The project team will make an effort to layer the implementation grant funding with other available funding and programs where possible.

### 5.2 Development of a Comprehensive Climate Action Plan

The CCAP will build upon the work completed through the development of the PCAP by developing business-as-usual and future emissions scenarios, setting GHG reduction targets with additional stakeholder input, and developing a workforce plan to support the achievement of CCAP activities and goals.

There were a handful of projects and measures that were identified in the PCAP process that were not able to be explored in great enough detail to pursue in the PCAP stage for implementation. The program team intends to review as many of these potential projects as necessary in further detail during the development of the CCAP.


## 6 APPENDICES

### Appendix A: La Jolla Band Community Event Flyer

**DINNER & DIALOGUE:**

# Creating a Community Climate Action Plan


**February 13, 2024**  
4:00–6:00 p.m.  
La Jolla 76 Roadside Grill


  
Complimentary dinner provided


*The Environmental Protection Office is seeking broad community participation in planning energy action measures to address climate change and its impacts on our community.*

The tribe, in partnership with the **La Jolla Band of Luiseno Indians** and the Center for Sustainable Energy, received \$400,000 in grant funding from the U.S. Environmental Protection Agency (EPA) to develop priorities and climate action plans to reduce greenhouse gas emissions.

The purpose of this community meeting is to discuss measures that can meet these objectives and bring environmental, economic, workforce development and health benefits to the tribe. Projects identified in this phase can be used to apply for future funding through the EPA to implement our plans.

  
**Learn what our tribe is doing now to prepare a grant request** for our own climate action plan.




  
**Discover how the program can develop efficient and clean energy technologies.**

  
**Find out how projects can potentially reduce utility costs and power outages.**

**Community members can ask questions, share insights and actively engage in shaping the energy future of our tribe for generations to come.**

**We look forward to hearing your ideas!**

For more information, contact **Melissa Cintron** at the Center for Sustainable Energy  
[melissa.cintron@energycenter.org](mailto:melissa.cintron@energycenter.org)



This project is funded through the U.S. Environmental Protection Agency Climate Pollution Reduction Grant.

CSE-EPACPRG-022024



# Appendix B: La Jolla Band Community Project Feedback Form

February 13, 2024

## Climate Pollution Reduction Grant

### La Jolla Community Project Feedback

#### Transportation Sector

	Install public electric vehicle charging stations at the Tribal Administration Building, <u>Camgrounds</u> and the Trading Post Gas Station.
	Install charging stations for Tribal-owned electric vehicles near their assigned department.
	Transition enterprise vehicles to electric vehicles.
	Transition heavy-duty tribal service diesel vehicles and equipment to electric vehicles. (Ex: vehicles used for public works such as fire trucks and waste management vehicles.)
	Establish a ridesharing or van-pool program for Tribal members to reduce private car off the reservation
	Develop a shuttle system between tribal enterprises to reduce private car use on the reservation.
	Develop a pilot to encourage members of the community to purchase zero-emission vehicles.

#### Electric Power Sector

	Implement solar panels and battery storage into the planning of a new fire station and elder center.
	Install solar and battery storage at the Tribal Administration building and Gymnasium to maintain power during outages and emergencies.
	Install solar carports at the waterpark to serve both the enterprise and surrounding buildings.
	Install solar and storage at the Trading Post Gas Station, the largest electric energy consumer.
	Deploy residential technologies to reduce power losses, reduce peak demand, and lower electricity costs.
	Develop resources so tribal members can reach out to the Environmental Protection Office to learn about available incentive programs, tax credits and rebates they may be eligible for.
	Develop community renewable energy generation, microgrids, or vehicle-grid infrastructure.

#### Buildings Sector

	Implement a clean heating standard.
	Implement end-use energy efficiency measures in existing government-owned buildings.
	Develop an incentive to encourage Tribal members to purchase certified energy-efficient appliances, heating and cooling equipment, lighting, and building products to replace inefficient products.
	Establish policies to promote electrification of government-owned, commercial, and residential buildings, including converting from propane water heaters to efficient heat pump hot water heaters.
	Establish policies to accelerate the incorporation of efficient electric technologies and electric vehicle charging at new single-family, multi-unit, or affordable residential buildings.
	Implement building energy performance management for government-owned buildings and other energy consuming resources, such as water pumps.
	Implement benchmarking, energy efficiency portfolio standards and building performance standards.
	Promote recovery and destruction of high-global warming potential (GWP) hydrofluorocarbons (HFCs) used in existing appliances, air conditioning systems, and commercial chillers.

#### Waste, Water, and Sustainable Materials Management Sector

	Develop community composting to divert food/yard waste, reduce GHG emissions and increase beneficial use of organic waste.
	Create educational programs to reduce waste and increase reuse or recycling rates.
	Shift away from plastic water bottles and other single-use plastics.
	Install renewable energy and energy efficiency measures at water pumping stations and wastewater treatment facilities.

# San Pasqual Band of Mission Indians

## *2024 Priority Climate Action Plan*

Developed by the Center for Sustainable Energy  
for the San Pasqual Band of Mission Indians

US. Environmental Protection Agency

Climate Pollution Reduction Grant

March 1, 2024



Center for  
Sustainable  
Energy®

# CONTRIBUTIONS AND ACKNOWLEDGEMENTS

## Thank You

This report was prepared for and in partnership with the San Pasqual Band of Mission Indians by Center for Sustainable Energy, funded by a U.S Environmental Protection Agency Climate Pollution Reduction Grant award.

Many individuals participated in the development of this Priority Climate Action Plan and contributed invaluable institutional knowledge to inform the performance measures recommended. This project would not have been possible without the countless support and significant time contributions from the following groups and individuals:

### **San Pasqual Band of Mission Indians Business Committee**

Stephen W. Cope – Chairman  
Victoria Diaz – Vice Chair  
Jenny Alto – Secretary/Treasurer  
Roberta Cameron– Tribal Councilmember  
Joyce Stein – Tribal Councilmember

### **San Pasqual Band of Mission Indians Environmental Department**

John Flores – Environmental Director  
Melissa Morales – Environmental Manager  
Desiree Morales-Whitman – Utility Manager  
Vanessa Martinez – Clean Water Coordinator  
David Orozco – Transfer Station Operator

### **La Jolla Band of Luiseño Indians Environmental Department**

Rob Roy – Environmental Director

### **Center for Sustainable Energy**

Chris Vogel – Senior Energy Engineer  
Jamie Orose – Senior Managing Researcher  
Janet Bowers – Research Analyst  
Dema Tzamaras – Senior Project Manager  
Melissa Cintron – Project Manager



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## DEFINITIONS

**Center for Sustainable Energy (CSE):** A national nonprofit that accelerates adoption of clean transportation and distributed energy through program design and administration.

**Comprehensive Climate Action Plan (CCAP):** A narrative report that provides an overview of the tribe or territory's significant GHG sources/sinks and sectors, establishes near-term and long-term GHG emission reduction goals, and provides strategies and identifies measures that address the highest priority sectors to help the tribe or territory meet those goals.

**Environmental Protection Agency (EPA):** An independent agency of the United States government tasked with environmental protection matters.

**Fee Land:** Territory purchased by tribes in which the tribe acquires legal title under specific statutory authority.

**Greenhouse Gases (GHG):** Any of various gaseous compounds (such as carbon dioxide or methane) that absorb infrared radiation, trap heat in the atmosphere, and contribute to the greenhouse effect.

**Greenhouse Gas (GHG) Inventory:** A list of emission sources and sinks and the associated emissions quantified using standard methods. The PCAP will include a 'simplified' inventory. The CCAP will include a comprehensive inventory of emissions and sinks.

**Priority Climate Action Plan (PCAP):** A narrative report that includes a focused list of near-term, high-priority, and implementation-ready measures to reduce GHG pollution and an analysis of estimated GHG emissions reductions.

**Performance Measures:** Projects and programs identified to reduce GHG emissions for various environmental sectors.

**San Pasqual Band of Mission Indians (San Pasqual Band):** A federally recognized tribe of Mission Indians located in the San Diego County region of Southern California.

**Tribal Greenhouse Gas Inventory Tool (TGIT):** A spreadsheet-based tool developed by the Environmental Protection Agency to help tribes across the county to evaluate their greenhouse gas emissions. The tool has two modules, one for developing a community wide GHG emission inventory and one for developing a Tribal government operations inventory.

**Trust Land:** Territory, whereby one party agrees to hold title to the property for the benefit of another party. Trust land held on behalf of individuals are known as allotments.

# TABLE OF CONTENTS

- Contributions And Acknowledgements ..... 1
- Definitions ..... 2
- List Of Figures ..... 5
- List Of Tables ..... 5
- 1 Executive Summary ..... 6
- 2 Introduction ..... 8
  - 2.1 Project Overview ..... 8
  - 2.2 Scope And Purpose ..... 9
  - 2.3 Authority To Implement..... 9
- 3 Tribal Background And Goals ..... 10
  - 3.1 San Pasqual Band Of Mission Indians ..... 10
    - 3.1.1 Tribal Membership And Residences ..... 11
    - 3.1.2 Business Council And Departments ..... 11
    - 3.1.3 Tribal-Owned Buildings ..... 12
  - 3.2 Tribal Sustainability Goals And Past Studies ..... 12
    - 3.2.1 San Pasqual Band Past Studies ..... 13
    - 3.2.2 San Pasqual Band Sustainability Projects ..... 15
  - 3.3 Special Considerations For The San Pasqual Reservation ..... 17
    - 3.3.1 Environmental Factors ..... 17
    - 3.3.2 Utility Challenges And Regulatory Restrictions ..... 18
    - 3.3.3 Financial Constraints ..... 19
- 4 Pcap Elements ..... 20
  - 4.1 Data Collection ..... 20
  - 4.2 Greenhouse Gas Inventory ..... 20
    - 4.2.1 Tribal Greenhouse Gas Inventory Tool ..... 20
    - 4.2.2 Ghg Inventory Results ..... 21
  - 4.3 Community Engagement ..... 23
    - 4.3.1 Environmental Department Meeting ..... 23
    - 4.3.2. General Membership Community Event ..... 24

4.4 Ghg Reduction Priority Implementation-Ready Measures ..... 25

    4.4.1 Transportation..... 25

    4.4.2 Electric Power..... 29

    4.4.3 Buildings ..... 34

    4.4.4 Waste, Water, And Sustainable Materials ..... 38

5 Next Steps ..... 39

    5.1 Pursuit Of Funding For Priority Climate Action Measures ..... 39

    5.2 Development Of A Comprehensive Climate Action Plan ..... 39

6 Appendices..... 40

    Appendix A: San Pasqual Community Event Flyer ..... 40

    Appendix B: San Pasqual Community Project Feedback Form ..... 41

## LIST OF FIGURES

FIGURE 1 – MAP OF SAN PASQUAL BAND RESERVATION AS OF MAY 2023

FIGURE 2 – ADMINISTRATIVE STRUCTURE OF THE SAN PASQUAL BAND

FIGURE 3 – SAN PASQUAL BAND TRIBAL HALL SOLAR CARPORT AND EV CHARGER PROJECTS

FIGURE 4 – MAP OF THE SAN PASQUAL BAND RESERVATION’S HISTORIC WILDFIRE FOOTPRINT

FIGURE 5 – TRIBAL HALL COMMUNITY EVENT PHOTO 1

FIGURE 6 – TRIBAL HALL COMMUNITY EVENT PHOTO 2

## LIST OF TABLES

TABLE 1 – SAN PASQUAL BAND TRIBALLY OWNED BUILDINGS AND SQUARE FOOTAGE

TABLE 2 – SAN PASQUAL BAND ENVIRONMENTAL REPORTS LIST

TABLE 3 – SAN PASQUAL BAND SUSTAINABILITY PROJECTS LIST

TABLE 4 – TRANSPORTATION SECTOR MEASURE 1: ELECTRIC VEHICLE INFRASTRUCTURE

TABLE 5 – TRANSPORTATION SECTOR MEASURE 2: TRIBAL-OWNED VEHICLE FLEET ELECTRIFICATION

TABLE 6 – TRANSPORTATION SECTOR MEASURE 3: COMMUNITY OUTREACH MATERIALS AND EVENTS

TABLE 7 – TRANSPORTATION SECTOR MEASURE 4: ENCOURAGE A SHIFT IN PRIMARY MODE OF TRANSPORTATION

TABLE 8 – POWER SECTOR MEASURE 1: SOLAR AND STORAGE AT THE PUBLIC WORKS BUILDING

TABLE 9 – POWER SECTOR MEASURE 2: SOLAR AND STORAGE AT THE DOMESTIC WATER TANK PUMP STATION

TABLE 10 – POWER SECTOR MEASURE 3: COORDINATE EFFORTS FOR SOLAR AND STORAGE RESILIENCY PROJECT AT THE HORIZON FUEL CENTER

TABLE 11 – POWER SECTOR MEASURE 4: SOLAR DEPLOYMENT ON TRIBAL RESIDENCES

TABLE 12 – SOLAR AND BATTERY SYSTEMS BASED ON HOME ENERGY USE PROFILES

TABLE 13 – SOLAR AND BATTERY SYSTEMS BASED ON HOME ENERGY USE PROFILES (ALL HOMES)

TABLE 14 – SOLAR AND BATTERY SYSTEMS BASED ON HOME ENERGY USE PROFILES (ELDERS’ HOMES)

TABLE 15 – BUILDING SECTOR MEASURE 1: INSTALL AIR SOURCE HEAT PUMP MINI-SPLIT SYSTEMS AT TRIBAL RESIDENCES FOR SPACE HEATING

TABLE 16 – SINGLE HOME SPACE HEATING EMISSIONS SAVINGS ESTIMATES

TABLE 17 – HOME SPACE HEATING EMISSIONS SAVINGS ESTIMATES FOR MULTIPLE SCENARIOS

TABLE 18 – BUILDING SECTOR MEASURE 2: INSTALL AIR SOURCE HEAT PUMP HOT WATER HEATERS AT TRIBAL RESIDENCES FOR HOT WATER HEATING

TABLE 19 – SINGLE HOME WATER HEATING EMISSIONS SAVINGS ESTIMATES

TABLE 20 – HOME WATER HEATING EMISSIONS SAVINGS ESTIMATES FOR MULTIPLE SCENARIOS

TABLE 21 – BUILDING SECTOR MEASURE 3: IMPLEMENT ENERGY STAR BUILDING PERFORMANCE STANDARDS ON NEW RESIDENTIAL CONSTRUCTION

TABLE 22 – YEAR 1 EMISSIONS SAVINGS FOR TEN ENERGY STAR CERTIFIED BUILT HOMES

# 1 EXECUTIVE SUMMARY

The Environmental Protection Agency's (EPA's) Climate Pollution Reduction Grant (CPRG) program provides \$5 billion in grants to states, local governments, tribes, and territories to develop and implement plans for reducing greenhouse gas (GHG) emissions and other harmful air pollution, with funding released in two phases: noncompetitive planning grants and competitive implementation grants.

Under the EPA CPRG planning grants, the San Pasqual Band of Mission Indians was sub-awarded \$400,000 in federal funding in partnership with the La Jolla Band of Luiseño Indians, the primary awardee. Both tribes partnered with the Center for Sustainable Energy, a clean energy non-profit, to develop a priority climate action plan (PCAP) for each tribe and a combined comprehensive climate action plan (CCAP). As part of these activities, the tribes assessed GHG emissions sources across key sectors: electric power, transportation, commercial and residential buildings, industry, agriculture and land management and waste and materials management.

This report summarizes the outcome of the San Pasqual Band of Mission Indians' climate planning activities including development of GHG emissions inventory and the proposed priority climate action measures to reduce GHG emissions. This PCAP first provides context on the San Pasqual Band of Mission Indians tribe, including background on the Reservation, Tribal government, Tribal membership, sustainability goals, past studies, and special considerations. After a thorough literature review and background study, the project team worked diligently to collect extensive data from the tribe, including Tribal government and community propane usage, electricity usage and fleet vehicle data.

The project team used the EPA's Tribal Greenhouse Gas Inventory Tool (TGIT) to input the data gathered and evaluate the tribe's GHG emissions. The GHG inventory and planning activities for the tribe focus primarily on 4 of the 6 sectors identified by the EPA: transportation, electric power, commercial and residential buildings, and waste and materials management. This plan includes a summary of the developed GHG inventory and a discussion of implementation-ready measures the tribe can move forward with to reduce near-term GHG emissions. The measures identified in this plan were informed by the GHG emissions inventory and aim to address the highest emission areas, specifically the transportation, electric power, building and waste sectors.

The project team developed a list of potential measures based on the analysis in the TGIT, and then vetted these potential projects with the community. While implementation measures were assessed within the waste sector, the project team determined that there is not enough available information to determine if the proposed measures, such as implementing educational programs to reduce waste and increase reuse/recycling rates, will reduce GHG emissions on the Reservation. This is the type of project that can be explored in greater detail in the forthcoming CCAP.

In the transportation sector, the project team assessed six potential projects for reducing emissions associated with mobile combustion both specific to San Pasqual's Tribal government operations and the community. Ultimately, the team moved forward with reviewing the estimated GHG emissions reduction impacts of four priority implementation measures: 1) installing publicly accessible electric vehicle charging stations at the Education Center, Employee Parking Lot, and other publicly available spaces; 2)



transitioning older enterprise vehicles to equivalent electric or hybrid vehicles; 3) developing community outreach materials and organizing community events to promote electric vehicle adoption and 4) encouraging a shift of mode of transportation. Note that the third and fourth measures were challenging to quantify in terms of emissions reductions impact, but the project team decided to include them in this report due to the strong community interest. If the San Pasqual Band includes either of these measures in the application for implementation grant funding, the project team will complete additional analysis at that time. Combined, the four transportations sector measures are estimated to reduce the GHG emissions in the transportation sector up to 390 tons of carbon dioxide, 7 pounds of methane and 400 pounds of nitrous oxide annually.

In the electric power sector, the project team assessed five potential projects for reducing emissions. Ultimately, the team moved forward with reviewing the estimated GHG emissions reduction impacts of four priority implementation measures: 1) installing solar and battery storage at the Public Works Building; 2) installing solar and battery storage at the Domestic Water Tank Pump Station; 3) coordinating efforts for solar and storage resiliency project at the Horizon Fuel Center; and 4) install solar on all residences that do not currently have solar panels. Combined, the four measures are estimated to reduce the GHG emissions in the power sector up to 600 tons of carbon dioxide, 2154 pounds of methane and 2616 pounds of nitrous oxide annually.

In the building sector, the project team assessed seven potential projects for reducing emissions. Ultimately, the team moved forward with reviewing the estimated GHG emissions reduction impacts of three priority implementation measures: 1) installing air source heat pump mini-split systems at Tribal residences for space heating; 2) installing air source heat pump hot water heaters at Tribal residences for hot water heating; and 3) implementing Energy Star building performance standards on all new residential construction. Combined, the three measures are estimated to reduce the GHG emissions in the building sector up to 810 tons of carbon dioxide, 2304 pounds of methane and 4320 pounds of nitrous oxide annually.

## 2 INTRODUCTION

### 2.1 Project Overview

The San Pasqual Band of Mission Indians (San Pasqual Band) is a federally recognized and self-governing tribe and one of thirteen bands that make up the Kumeyaay Nation in Southern California. The San Pasqual Band partnered with the La Jolla Band of Luiseño Indians who received \$400,000 under the Environmental Protection Agency's (EPA) Climate Pollution Reduction Grant (CPRG) on August 11, 2023. The San Pasqual Band is a sub awardee to the grant.

The CPRG grant funding will help the San Pasqual Band build capacity to set and achieve ambitious and necessary energy and greenhouse gas (GHG) emissions goals. The San Pasqual Band has a rich history of pursuing extensive clean energy and transportation projects, and the tribe expresses continued interest in expanding their efforts. In partnership with the La Jolla Band of Luiseño Indians, the San Pasqual Band chose to collaborate with the Center for Sustainable Energy (CSE), a national non-profit, to develop a Priority Climate Action Plan (PCAP).

Under the leadership of the San Pasqual Environmental Department, the project team gathered data and established a government and community GHG emissions inventory for 2022. This GHG inventory was then used to help identify sectors and sources of high emissions and inform the identification of priority climate action measures that the tribe can implement within the near-term to reduce their GHG emissions.

The PCAP for the San Pasqual Band expands on the existing energy studies and community plans that have been put in motion, to help the San Pasqual Band achieve its mission of providing a healthy, clean community for its current membership and for future generations. The PCAP will enable the San Pasqual Band to:

1. Improve understanding of current and future GHG emissions.
2. Identify priority strategies to reduce emissions and understand the other potential benefits of those strategies.
3. Engage a variety of stakeholders in an emissions reduction planning process.

#### SAN PASQUAL BAND ENVIRONMENTAL DEPARTMENT

##### VISION STATEMENT

The San Pasqual Tribal Environmental Department's vision is to ensure a clean, safe, and healthy environment for current and future generations of the San Pasqual Tribal community.

##### MISSION STATEMENT

The San Pasqual Tribal Environmental Department mission is to sustain a clean healthy environment, protect and preserve cultural resources and traditions by promoting clean water, environmentally friendly practices, and education for current and future generations of the San Pasqual Tribal Community.

The goals and objectives provided in this PCAP will also inform the Comprehensive Climate Action Plan (CCAP) which will be submitted at the end of the CPRG grant period.

## 2.2 Scope and Purpose

The work completed under this planning focuses on the tribe's priority areas: energy, transportation, and mobility. The priority performance measures identified in the PCAP were developed after extensive review of past work and existing conditions, analysis of GHG emissions, and in close collaboration with Tribal leadership and the broader community. The following outlines the steps to developing the PCAP.

1. On November 1, 2023, the CSE team met with the Director of the Environmental Department to discuss the EPA CPRG planning grant and to develop a baseline of the tribe's needs. During this visit, the CSE team toured the Reservation to become familiar with the land and establish an understanding of the enterprises, practices, and areas of interest for development.
2. The project team collected existing studies and reports and conducted a literature review of Tribal planning documents and industry best practices in GHG inventory development. The findings of this literature review are captured in Section 3.
3. The project team worked closely with the Environmental Department to collect a variety of Reservation data both at the government and community level across the sectors identified by the EPA in the Tribal Greenhouse Gas Inventory Tool (TGIT).
4. Using the TGIT, the project team analyzed the datasets and compiled a comprehensive list of projects that could reduce emissions within the highest emission source categories.
5. The project team first presented findings to the Director of the Environmental Department and used this conversation as an opportunity to narrow down the list to projects of high interest.
6. After refining the list of potential performance measures, on February 22, 2024, the project team lead an outreach event to gather community feedback on recommended projects and gather further projects of interest from Reservation residents.
7. The team used input from the community event and additional input from the Environmental Department Director to determine two to three primary projects in each emissions sector that can be pursued in the short term via the implementation phase of the EPA CPRG.
8. The project team conducted initial emission reduction assessments for each selected priority project to establish estimated emissions reductions associated with each measure. The recommended priority measures are explored in detail in Section 4.4 GHG Reduction Priority Implementation-Ready Measures.

## 2.3 Authority to Implement

As a federally recognized tribe, the San Pasqual Band and its Business Committee have the authority to implement the projects recommended in this PCAP. The San Pasqual Reservation has its own procedures to develop projects on land within the Reservation's jurisdiction that differ from typical county, city or state permitting regulations. If the recommended projects are approved by the Business Committee or are voted on during a general meeting, they can be implemented on the Reservation.

### 3 TRIBAL BACKGROUND AND GOALS

#### 3.1 San Pasqual Band of Mission Indians

The San Pasqual Band of Mission Indians (San Pasqual Band) is a federally recognized and self-governing Tribe, comprising one of thirteen bands that make up the Kumeyaay Nation in Southern California. Surrounded by steep slopes of rocky and arid terrain, the Reservation is remote, mountainous and sits adjacent to the headwaters of the San Luis Rey Watershed. The San Pasqual Reservation is located in northeastern San Diego County adjoining the rural community of Valley Center, CA - 40 miles north of the City of San Diego and 12 miles east of the City of Escondido. The Reservation encompasses a total of 3,446 acres of Trust and Fee land and is considered a “checkerboard” Reservation - meaning the Reservation does not consist of one continuous land area, but rather is made up of five non-contiguous sections of land which have been sold and purchased in segments over time. While ancestors of the San Pasqual Band lived for thousands of years in the valley carved by the Santa Ysabel Creek where modern Highway 78 now winds, the Reservation was formally established on July 1, 1910 via Executive Order.<sup>1</sup> Additional land was annexed to enlarge the Reservation in 1972. The Reservation continues to develop with goals of ensuring a clean, safe, and healthy environment for current and future generations of the San Pasqual Tribal community while honoring culture and traditions of the past.<sup>23</sup>

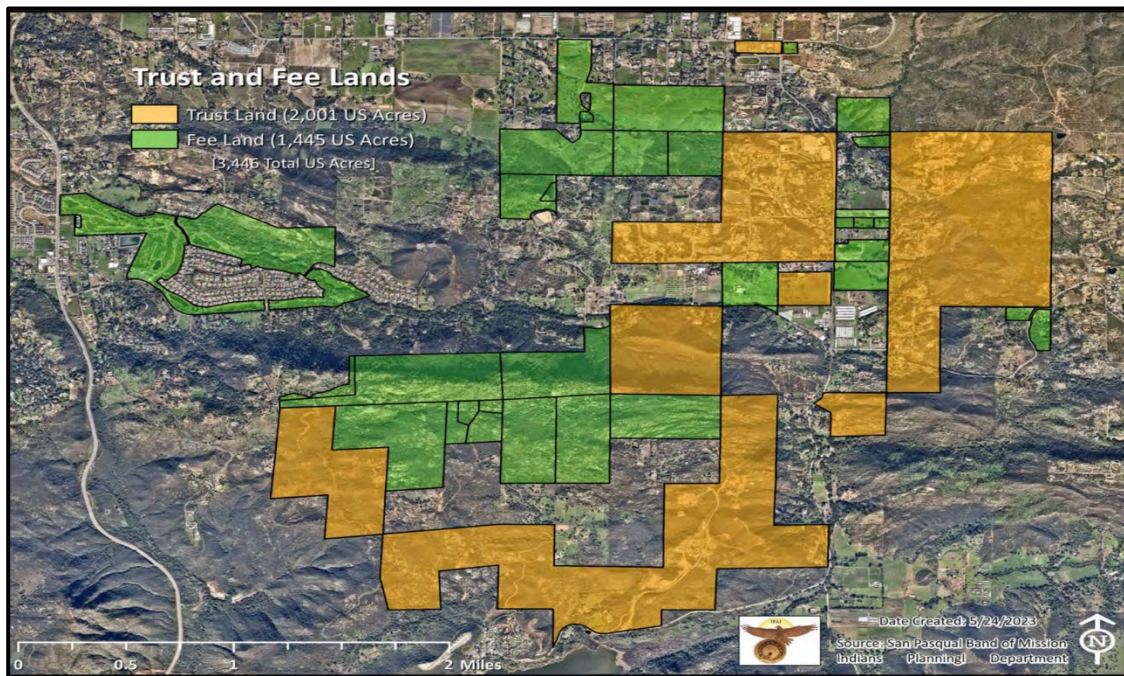


FIGURE 1 – MAP OF SAN PASQUAL BAND RESERVATION AS OF 5/24/2023

<sup>1</sup> <https://www.sanpasqualbandofmissionindians.org/about/history>

<sup>2</sup> <https://www.sanpasqualbandofmissionindians.org/about>

<sup>3</sup> San Pasqual 2016 Strategic Energy Plan

### 3.1.1 TRIBAL MEMBERSHIP AND RESIDENCES

As of 2023, Tribal membership consists of approximately 152 enrolled Tribal members and over 1,600 “lineal descendants”, or children and grandchildren of enrolled Tribal members. The Reservation is home to approximately 2,100 total residents across three non-continuous districts: A, B, and C. The San Pasqual Reservation contains 450 residential units varying in size and construction type, and all residential homes are in one of the three districts.

### 3.1.2 BUSINESS COUNCIL AND DEPARTMENTS

The Tribal government structure is comprised of a five-member Tribal Council also referred to as the Business Committee that are elected by General Tribe Members. The Business Committee consists of a Chairman, Vice Chair, Secretary/Treasurer, and two delegates. Elections for the Business Committee are held every two years, and the Business Committee Chair has signing authority for the tribe. The Business Committee takes direction from General Tribe Members, known as the General Council via survey, referendum, quarterly meetings, and public hearings.<sup>4</sup> Under the leadership of the Chairman, there are 12 governmental departments that are tasked with ensuring the security, economic health and environmental wellbeing for current and future generations of the Tribal community. Departments include Education, Environmental, Fire, Housing, Domestic Water, Road Maintenance, Law Enforcement, Finance, Human Resources, Tribal Administration, Planning, and Gaming. The tribe maintains a set of qualified staff for the Administrative, Financial, Environmental, Housing, and Education Departments. The tribe also operates a Public Water System serving the Tribal communities in Districts A and B. Fire protection is provided by the San Pasqual Band Fire Department, and Public Safety is provided by Tribal Law enforcement.

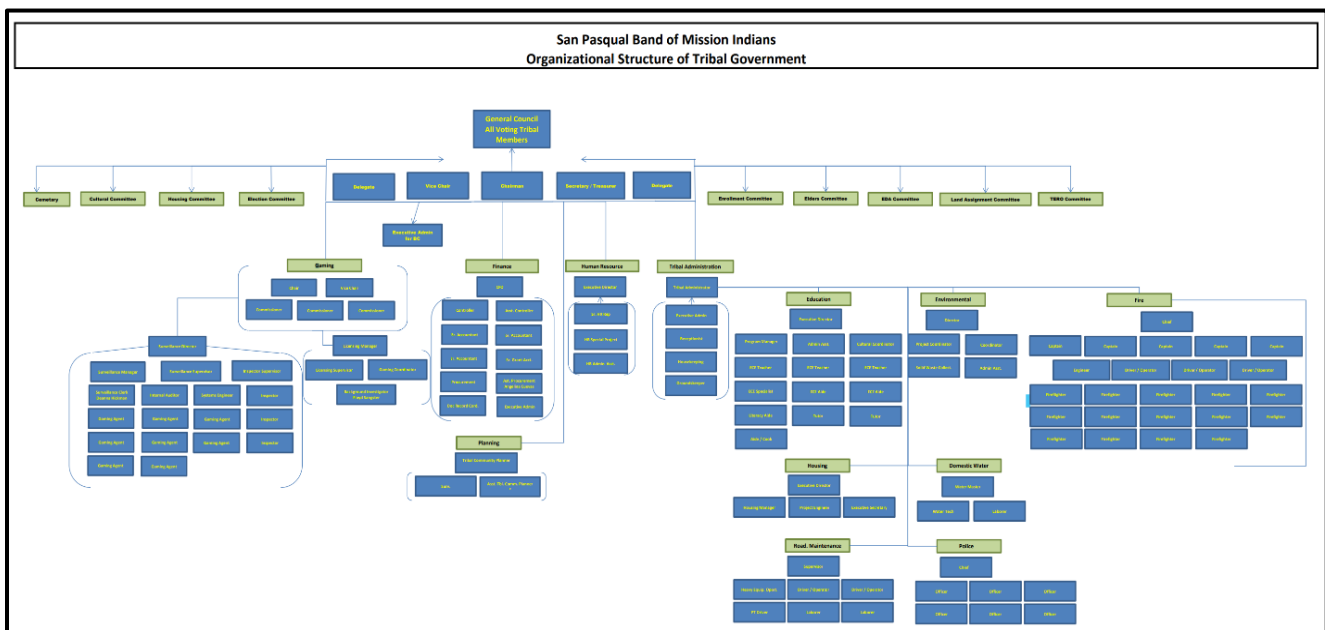


FIGURE 2 – ADMINISTRATIVE STRUCTURE OF SAN PASQUAL BAND

<sup>4</sup> San Pasqual Band of Mission Indians: Community Choice Aggregation Feasibility Report 2023

In tandem with these departments, there are nine committees that inform and support the work of the Business Committee and include: Cemetery, Cultural, Housing, Election, Enrollment, Elders, EDA, Land Assignment and TERO. Figure 2 illustrates the administrative structure of the San Pasqual Reservation.

### 3.1.3 TRIBAL-OWNED BUILDINGS

The Reservation includes a mixture of buildings comprised of residential units, Tribal government buildings, a golf course, and the Valley View Casino - the largest building on the Reservation. The four primary Tribal government buildings: Administration, Firehouse, Housing, Security and Education, are all located off Kumeyaay Way. The Valley View Casino is located roughly a mile North on the adjacent Lake Wohlford Road. The golf course, owned by the tribe, is on a separate piece of land about 4.5 miles East of the four main tribe buildings.

TABLE 1: SAN PASQUAL BAND TRIBALLY OWNED BUILDINGS AND SQUARE FOOTAGE

<b>Building Name</b>	<b>Square Footage</b>
Administration/Tribal Hall	24,552.31
Fire Department	585.75
Housing/Police	3,578.08
Education	10,421.59
Cultural Center	5,490.98
Spiritual House	4,731.99
Environmental	2,257.52
Elders	1,651.49
Domestic Violence	1,641.53

## 3.2 Tribal Sustainability Goals and Past Studies

The San Pasqual Band has a long history and vision of adopting clean energy technology in efforts to reduce impacts on the environment. Created in 2016 to maintain the vitality of the Reservation’s land, the San Pasqual Band’s Environmental Department leads clean energy and sustainability development efforts on the Reservation. The department maintains a staff of five people, including the Environmental Director, Environmental Manager, Utility Manager, Clean Water Coordinator, and Transfer Station Operator. These staff members specialize in a range of activities related to planning, operations, and management of electric systems and solid waste. Department staff extensively collaborate with various San Pasqual Band’s departments including the Planning Department, and Public Works Department to develop and strategically implement initiatives that support the tribe’s energy goals and objectives. Under the leadership of John Flores, the Environmental Director, the San Pasqual Band’s Environmental Department strives to fulfill its mission while upholding the following values of the community:<sup>5</sup>

- Self-Sustaining (Renewable Energy, Resource Conservation)
- Awareness, Transparency, Outreach

<sup>5</sup> San Pasqual Band of Mission Indians Energy & Sustainability Activities Report 2022

- Opportunities for Community, Training, Work, Resources
- Economically Productive
- Clean Water
- Air Quality
- Human and Environmental Health
- Respect for Land

The Environmental Department’s strategic goals and objectives were established in the 2016 San Pasqual Band’s Strategic Energy and Resiliency Plan. Aligning with the tribe’s longstanding commitment to the land and the community’s wellbeing, the 2016 plan established the following goals:

1. Become energy independent by producing enough clean energy to offset all electricity consumption on the San Pasqual Reservation.
2. Implement efficiency and conservation measures that reduce the tribe’s annual energy consumption by 5% annually, to reach a goal of reducing energy consumption by 25% compared to a 2015 baseline.
3. Deploy resilient energy systems to ensure continuity of services that are critical to the health, safety, and welfare of San Pasqual Band Tribal members and residents.

These values and goals stand as the foundation of the tribe’s commitment to adopting green energy and decreasing their GHG emissions as the Reservation continues to develop and guide the measures explored and recommended in this PCAP.

### **3.2.1 SAN PASQUAL BAND PAST STUDIES**

There have been various environmental reports commissioned by the tribe over the past decade that address topics from hazard mitigation, resiliency planning, and energy transition strategies to reduce GHG emissions. These reports were reviewed to establish background and baseline information for the PCAP analysis. Dating back to 2011, when the San Pasqual Band commissioned a multi-hazard mitigation plan, the tribe identified a set of energy-related objectives that would improve the Reservation’s response to increasing environmental concerns. These objectives included strengthening energy resiliency for critical services and providing autonomous energy systems for a public cooling center. These energy-focused strategies inspired focus on streamlining the Reservation’s resource efficiency. Between 2012 to 2023, further reports have been commissioned and include a level 1 & 2 energy audit, San Pasqual Band Strategic Energy and Resiliency Plans, various Community Solar Assessments, Water Conservation studies, and an Energy & Sustainability Activities Report. A selective list of the San Pasqual Band’s resource efficiency reports dating from 2011 can be seen in the table below. No reports dated before 2011 were included in the literature review.

TABLE 2 – SAN PASQUAL BAND ENVIRONMENTAL REPORTS LIST

Report Name	Impact
San Pasqual Band Multi-Hazard Mitigation Plan 2011	Identified risks and methods to mitigate damage caused by natural and human caused disasters. Recommended energy-related objectives including - strengthening energy resiliency for critical services generally; and providing autonomous energy systems for a public cooling center.
San Pasqual Band Energy Audit 2012 (Energy Efficiency)	Investigated energy efficiency strategies and the application of clean energy technologies to reduce the Reservations collective energy demand.
San Pasqual Band Energy Audit 2013 Level 2 (Water Systems)	Identified water and/or energy conservation opportunities related to the pumping and treatment of water on the Reservation.
San Pasqual Band Strategic Energy and Resiliency Plan 2016	Established the tribe’s strategic energy vision and goals and identified a series of projects and programs that support its goals for energy resiliency and sustainability, including residential solar, community solar, utility-scale solar, microgrids, and wind generation.
San Pasqual Band Strategic Energy and Resiliency Plan 2018	Provided an updated overview of energy projects developed on the Reservation to date and proposed paths to achieving the San Pasqual Band Environmental Department’s vision by 2021.
San Pasqual Band Community Feasibility Study and Enabling Technologies Assessment 2017	Discussed the technical and financial feasibility of installing a community a solar photovoltaic system to generate power for majority of residents and non-residential accounts at the San Pasqual Band Reservation. Evaluated the potential for energy efficiency opportunities in four Tribal government facilities.
San Pasqual Band Multi-Hazard Mitigation Plan 2019	Provided a revised mitigation plan that identified more modern risks and improved methods to mitigate damage caused by natural and human caused disasters. Recommendations included energy and critical back-up recommendations for natural disasters.
San Pasqual Band Pollution Prevention Assessment Report 2020 (TribalP2Action)	Provided an overview of planning, assessment, and action plan development process for pollution prevention (P2) for San Pasqual Band businesses and organizations.
San Pasqual Band Energy & Sustainability Activities Report 2022	Summarized and updated the clean energy and climate change resilience activities of the San Pasqual Band Environmental Department. Included progress on ongoing projects and identified projects and goals for the future.



Report Name	Impact
San Pasqual Band Community Choice Aggregation for Tribal Nations 2023	Outlined the San Pasqual Band’s interest in creating a Tribal community choice aggregation (CCA) on the Reservation. Identified benefits and challenges to the tribe in relation to forming a CCA including financial, regulatory and stakeholder obstacles.

### 3.2.2 SAN PASQUAL BAND SUSTAINABILITY PROJECTS

In response to the strategies identified in these reports, the San Pasqual Band Environmental Department continues to make incredible efforts to pursue funding, partnerships, and opportunities to implement projects that that promote sustainable development and reduce Tribal GHG emissions. Aligning with assessment results, previously identified opportunities are pursued or discarded based on project viability. For example, according to studies, wind resources at the San Pasqual Band Reservation are insufficient to support economically viable wind generation development. Alternatively, Community Solar Energy options represented a more promising opportunity for reaching sustainability goals and cost savings. Accordingly, the San Pasqual Band Environmental Department has deferred further development of any wind power currently, instead focusing efforts on centralized community solar.<sup>6</sup> Through the work of the San Pasqual Band Environmental Department and other agencies, the San Pasqual Band since 2010 has pursued the following projects:

TABLE 3 – SAN PASQUAL BAND SUSTAINABILITY PROJECT LIST

Project/Program	Next Steps	Implementation Timeline
Government Complex Microgrid	Manage project completion including installation and integration of LP generator	Completed 2023
Community Solar Garden	Seek additional funding and/or revise project to meet budget limitations	Ongoing
Fuel Station Solar Microgrid	Pending DOE FOA, seeking grant for the partnering resilient solar and storage system	Ongoing
Other Tribal Solar and Storage Initiatives	Continue seeking solar PV and battery storage opportunities at San Pasqual Band facilities, notably to make use of new federal incentives	Ongoing
Residential Solar and Storage Opportunities	Pending inputs from partners, considering opportunities to encourage onsite residential solar and storage systems in context of Community Solar Garden plans and status.	Ongoing
Golf Course Conservation Projects	Seek funding for feasibility analysis of opportunities for identified water and energy saving opportunities	Ongoing

<sup>6</sup> San Pasqual Band of Mission Indians Energy & Sustainability Activities Report 2022

Project/Program	Next Steps	Implementation Timeline
Building Energy Conservation Initiatives	Review current options with SDGE contractor; continue upgrading lighting and exploring initiatives	Ongoing
Fleet Electrification	Acquire 4-6 electric fleet vehicles	Completed 2023
Environmental Department EV Chargers	Execute contract and install EV chargers at Environmental Department buildings	Completed 2023
Government Center V2B	Install additional Gridscape vehicle-to-building EV charging system	Ongoing
Government Center CalEVIP project	Install additional EV chargers at Government Center	Completed 2023
Woods Valley Golf Course CalEVIP Project	Install EV chargers at Woods Valley Golf Course	Ongoing
Baseball Park Power Your Drive Project	Install EV chargers at Baseball Park	Ongoing
Community Choice Aggregation Study	Complete assessment of CCA potential	Completed 2023
Service Options Assessments	Continue assessing options for switching SDGE rates, enrolling for Direct Access, and WAPA allocation	Ongoing
Tribal Utility Authority	Complete assessment of Tribal utility authority formation under current BIA grant scope; seek additional funding for implementation	Ongoing
Inter-Tribal Initiatives	Continue participating in inter-Tribal and inter-agency initiatives, focusing on those that support San Pasqual Band goals, and those that may result in projects benefiting San Pasqual Band energy customers and job seekers.	Ongoing

As the San Pasqual Band Environmental Department continues to pursue the efficiency and affordability of sustainability projects, they have noted that ongoing activities will need continuous efforts. These efforts include continued execution of multiple solar generation and EV charging projects that already have received funding; ongoing assessments of energy efficiency and conservation improvement opportunities at all San Pasqual Band-owned facilities; pursuit of grant funding to support new and ongoing projects; and assessment and development of organizational improvements and potential alternative approaches to realizing the tribe’s energy goals<sup>7</sup>. The tribe continues to pursue grant opportunities to implement projects in efforts to realize the tribe’s energy and sustainability goals.

<sup>7</sup> San Pasqual Band of Mission Indians Energy & Sustainability Activities Report 2022



FIGURE 3 –SAN PASQUAL BAND TRIBAL HALL SOLAR CARPORT AND EV CHARGER PROJECTS

### 3.3 Special Considerations for the San Pasqual Reservation

As any community, the San Pasqual Band must work to address environmental, community or culturally specific challenges as they arise. These challenges may include funding availability, utility relations, and development restrictions. Due to its location in Southern California, the tribe must also address a variety of environmental factors that are specific to the topography of the region. These challenges will influence aspects of the San Pasqual Band PCAP and are expanded upon below.

#### 3.3.1 ENVIRONMENTAL FACTORS

Being in Southern California, the San Pasqual Band Reservation is susceptible to a variety of natural disasters such as severe weather, high winds, wildfires, and earthquakes.<sup>8</sup> The Reservation is located in an earthquake hazard zone as the Elsinore Fault Zone runs adjacent to the Reservation. The dry climate and low-lying vegetation also make the Reservation susceptible to wildfires. In tandem with the high Santa Ana Winds and the steep slopes on the

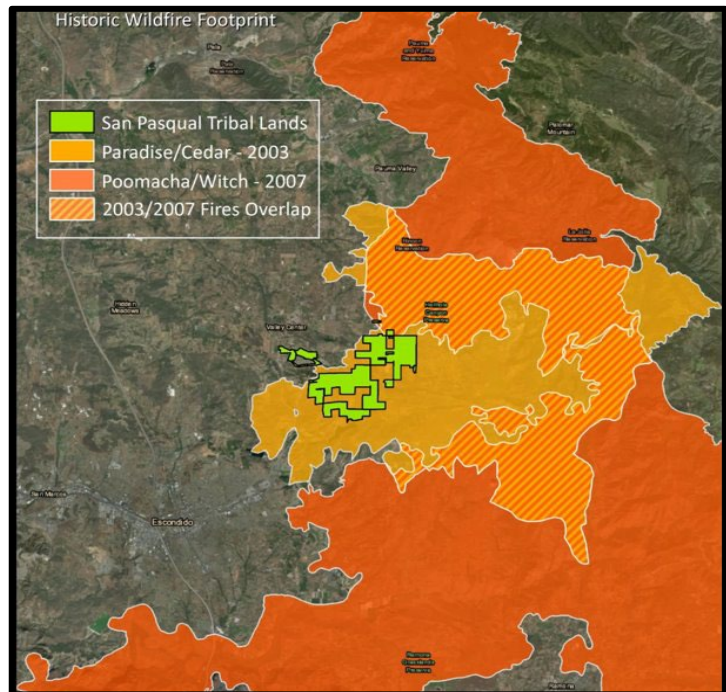


FIGURE 4 – MAP OF SAN PASQUAL BAND RESERVATION’S HISTORIC WILDFIRE FOOTPRINT

<sup>8</sup> San Pasqual Band of Mission Indians Microgrid Presentation - May 2023

Reservation, wildfires spread quickly. The extensive damage caused by the 2003 Paradise/Cedar wildfires, the following 2007 Poomacha Witch wildfires, as well as the disastrous impacts of the Winter Storms of 2017 respectively convey the need for further adoption of resiliency strategies to address crises and maintain Reservation disaster response.<sup>9</sup>

Environmental threats also directly result in localized physical damage to utility distribution systems and can instigate San Diego Gas and Electric (SDGE) Public Safety Power Shut-off events (PSPS). With residential units spread throughout the semi-mountainous terrain, there are few main paved roads that connect different areas of the land. Most of the smaller streets are dirt roads that wrap around steep rock slopes and valleys. Due to the remote location of the Reservation, blackouts occur semi-frequently and may last for multiple days at a time before utility infrastructure and powerlines are repaired.

### **3.3.2 UTILITY CHALLENGES AND REGULATORY RESTRICTIONS**

The Reservation relies upon electricity from the regional Investor-Owned Utility (IOU) SDGE. The tribe does not have authority to set energy rates or directly provide utility level electricity service to their members. Electrical service is provided by SDG&E through overhead lines that traverse the terrain to residents and commercial accounts. SDG&E does not currently provide natural gas to this area as it would be very costly to install the required infrastructure in these remote areas. In 2016, it was documented that the non-residential buildings and many residents use propane as their primary heating fuel, with the remaining homes using electricity to meet their heating needs.<sup>10</sup> The remote location of the Reservation and steep surrounding slopes limit prospective areas for development on the Reservation.

In tandem with limited utility reach, Tribal Nation governments are experiencing energy related economic hardship due to continuously increasing electric power costs.<sup>11</sup> As energy costs continue to rise, the San Pasqual Band Environmental Department has expressed interest in adopting projects that offset reliance on 3<sup>rd</sup> party utility services such as integrating large scale solar generation or even forming a Tribally owned utility. Following conversations with multiple tribes in 2016 though, the San Pasqual Band has acknowledged that IOUs are often resistant to utility-scale energy projects and can create multiple roadblocks such as mega-watt limitations per installation.<sup>12</sup> Working with SDGE while pursuing energy independence projects may present challenges as larger scale Tribal projects are introduced.

In efforts to achieve energy independence, the San Pasqual Band has considered pursuing the creation of a Community Choice Aggregation (CCA). Energy resource regulation is primarily facilitated under state law and may directly conflict with Tribal energy matters. Integrating CCA into the Reservation has the potential to provide greater Tribal sovereignty in relation to their energy decisions and choices. Under current state policies, Tribal nations are not explicitly considered as eligible governments in forming and executing a CCA. The San Pasqual Band Environmental Department has noted that the Reservation as a sovereign entity must often navigate and at times seek to amend state level energy regulations as they continue to

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<sup>9</sup> San Pasqual Multi-Hazard Mitigation Plan 2019

<sup>10</sup> San Pasqual Strategic Energy and Resiliency Plan 2016

<sup>11</sup> San Pasqual Band of Mission Indians: Community Choice Aggregation Feasibility Report 2023

<sup>12</sup> San Pasqual Strategic Energy and Resiliency Plan 2016

pursue larger and more complex sustainability projects.<sup>13</sup> The tribe must actively explore various approaches to energy sovereignty, planning, management, and resilience while also navigating hinderances to Tribal sovereignty. The San Pasqual Band Environmental Department has identified regulatory hurdles as one of the ongoing challenges to achieving energy independence.

### **3.3.3 FINANCIAL CONSTRAINTS**

Financial barriers play a large role in how and whether sustainability projects can be pursued in a timely manner. Distributed Energy Resources are still costly, and pursuit of larger projects often require extensive upfront equipment costs that are challenging to fund without grants, partnerships, or federal assistance. Furthermore, the introduction of more complex projects that require maintenance may be financially cost prohibitive as specialized full-time staffing will be required on the Reservation. The San Pasqual Band Environmental Department anticipates needing continued collaboration with other tribes, Tribal Organizations, and US. Federal Agencies to create funding opportunities to support clean energy developments on the Reservation.

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<sup>13</sup> San Pasqual Band of Mission Indians: Community Choice Aggregation Feasibility Report 2023

## 4 PCAP ELEMENTS

### 4.1 Data Collection

Data collection for the GHG emissions inventory was the most involved and most challenging portion of the PCAP development. The program team selected to focus on 2022 for establishing the tribe's GHG inventory because it was the most recent calendar year with minimal impacts due to COVID-19 and ensured the most comprehensive data set compared to years prior.

For the GHG emissions assessment to be most effective in identifying the highest GHG emitters and establishing impactful reduction measures, the data used in the emissions inventory analysis needed to be as detailed and accurate as possible. Accordingly, the project team and the San Pasqual Band Environmental Department worked diligently to collect a wide range of data. The following is a list of all the data requested from San Pasqual during the data collection period:

- Tribal population
- Tribal government departments and number of employees
- Inventory of Tribal government buildings and building characteristics
- 2022 propane consumption for Tribal government buildings
- 2022 residential propane consumption
- Gasoline and diesel consumption for backup generators
- Inventory of existing on-site generation
- Sources of stationary combustion
- Vehicle miles travelled for Tribal-owned vehicles
- Fleet data for Tribal-owned vehicles
- Inventory of heavy-duty equipment
- Employee commute information
- 2022 electricity consumption for all tribe-owned buildings
- Sample of residential electricity consumption data
- Wastewater treatment plant details

Much of the requested information was not readily available to the project team. The Environmental Department's data collection involved coordination across multiple entities within the tribe, and as such this process took over four months. For example, as part of the Tribal fleet analysis, the team needed odometer readings for each government-owned vehicle to estimate the annual vehicle miles travelled. Collecting information proved challenging for the department and the project team as data was received in sections and often needed follow-up to confirm data parameters or Reservation circumstances.

### 4.2 Greenhouse Gas Inventory

#### 4.2.1 TRIBAL GREENHOUSE GAS INVENTORY TOOL

The team used the EPA's Tribal Greenhouse Gas Inventory Tool (TGIT) to develop a 2022 GHG emissions inventory for the San Pasqual Band, both at the Tribal government level and broader community level. The TGIT is a spreadsheet-based tool developed by the EPA to help tribes in developing a relatively quick

and simple GHG inventory across multiple sectors including residential, commercial, transportation and waste and water management. To start, the tool is pre-programmed to include default emissions factors and assumptions to help guide the user and calculate emissions with limited community-specific information. As much as possible, the program team substituted the placeholder default values with community-specific information. The program team completed a TGIT for Tribal operations and a TGIT for community emissions.

#### 4.2.2 GHG INVENTORY RESULTS

Most inputs to the TGIT were based on actual measured or recorded data and supplemented by industry best practice resources or estimates provided by trusted Tribal employees. Emissions were identified for 8 different Tribal Departments that served about 2,100 members living on the Reservation during the 2022 baseline year. These emissions were calculated using the TGIT default CAMX eGRID subregion for all Scope 1, 2 and 3 emissions sources. Specific resources and methodologies are provided in the supporting documents for this PCAP.

Propane consumption was estimated using values provided by the main LPG supplier (Fallbrook Propane) for the Reservation. The total amount delivered to Tribal buildings and residences was given and then broken out between Tribal Operations and Community in the corresponding TGITs. Fallbrook Propane accounts for 85% of all residential deliveries, which allowed us to estimate the remaining homes using various fuel providers. The average consumption per home was compared to the EIA's Residential Energy Consumption Survey (RECS)<sup>14</sup> data for a similar climate zone and was considered appropriate, based on the average use per home. Electric utility interval data was provided by SDG&E for all tribe owned buildings and analyzed for annual consumption before being entered into the TGIT. Residential electric energy consumption was estimated using a sample set of 22 homes on the Reservation that provided monthly consumption from a prior energy assessment study. This annual kWh estimate was used for all 415 homes on the Reservation. Of these 415 homes, 93 have solar PV and/or battery storage installed and were discounted 25% of grid consumption based on NREL estimates<sup>15</sup> for energy offset by on site renewables.

Mobile combustion estimates for tribe owned vehicles were derived from the provided inventory containing vehicle make, model, model year and current odometer readings. Estimated light-duty Vehicle Miles Traveled (VMT) for 2022 was calculated by dividing odometer readings by vehicle age (using model year). Where odometer readings were not available, we assumed the same VMT as analogous vehicles found in the fleet. Fuel consumption was then calculated by dividing annual VMT estimates with vehicle-specific published miles-per-gallon (MPG) or miles-per-gallon equivalents (MPGe) for currently owned EVs. For heavy equipment that runs by hours of operation, we received yearly hours used by the tribe and looked up equipment specific fuel usage estimates per hour of operation. VMT and fuel usage were input into the TGIT in bins by department, model year, and fuel type. To verify results from the TGIT, we calculated

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<sup>14</sup> <https://www.eia.gov/consumption/residential/>

<sup>15</sup> <https://www.nrel.gov/docs/fy09osti/43844.pdf>

MT CO2e by multiplying the estimated fuel consumption for each vehicle by Lbs. of CO2e per gallon.<sup>16</sup> These estimates were within 1% of estimates derived from the TGIT tool.

Residential based light-duty VMT and fuel consumption was estimated using vehicle registration data acquired from the CA Department of Motor Vehicles (DMV) by fuel type, model year and zip code.<sup>17</sup> The Tribal territory does not fit neatly into each zip code. To estimate vehicle ownership within the Tribal area, we identified the Zip Code Tabulation Area (ZCTA) that overlapped most with Tribal boundaries. We calculated the proportion of the ZCTA population belonging to each tribe using the ZCTA data. We then multiplied this proportion by the DMV counts for each ZCTA to estimate Tribal vehicles. This provided estimates of vehicles by type, fuel type and model year for each tribe, consistent with expected ownership rates. We applied CA-specific VMT estimates from the Federal Highway Administration<sup>18</sup> to each vehicle to estimate total annual VMT. Fuel consumption estimates were created by dividing VMT by average MY MPG/MPGe from fuel economy.gov.<sup>19</sup> For DMV records that did not specify model year, but only indicated they were older than 2009, we applied the average fuel economy for vehicles between 1976-2008 using Real World MPG.<sup>20</sup> Results were entered into the TGIT by vehicle type and model year. To verify results from the TGIT, we applied the same method utilized on the fleet vehicles to calculate MT CO2e. These estimates were within less than .05% of estimates derived from the TGIT tool. Employee commute details were also estimated and showed that the 131 employees' preferred method of transport was in a single occupant vehicle on their average commute of 28 miles to the Reservation.

All homes on the Reservation utilize a septic system as well as most of the Tribal buildings and enterprises. An existing Orenco AdvanTex wastewater treatment system serves several Tribal offices located near the Administration Building. These anaerobic systems were captured in the TGIT. It was noted that about 60% of total water consumption for the Reservation is imported and the remaining amount is pumped from local wells. Imported water values were provided for specific departments in a Tribal Utilities report and entered into the TGIT. Tree canopy cover, or forestry, was calculated using USDA geodata to estimate that 13% of the Reservation is under tree cover, sequestering a portion of carbon in the atmosphere. All other emissions sources represented in the TGIT either were not applicable or had insufficient data to inventory. These omitted sources were considered minimal and would not have a large impact on the total emissions identified and inventoried within this report.

Based on the provided and analyzed data, CSE was able to conclude that the highest emissions on the San Pasqual Band Reservation predominantly came from four emission sources:

- Mobile combustion
- Stationary combustion
- Electricity consumption

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<sup>16</sup> <https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle>. Grams of CO2 per gallon for both gas and diesel vehicles was converted to lbs of CO2e.

<sup>17</sup> <https://data.ca.gov/dataset/vehicle-fuel-type-count-by-zip-code>

<sup>18</sup> <https://www.policygenius.com/auto-insurance/average-miles-driven-by-state/>

<sup>19</sup> <https://www.fueleconomy.gov/feg/download.shtml>

<sup>20</sup> The 2023 EPA Automotive Trends Report. <https://www.epa.gov/system/files/documents/2023-12/420r23033.pdf>



- Wastewater treatment

Mobile combustion was the highest GHG emission source and accounted for 83% of produced emissions with electricity consumption at 9% being a very far second. The remainder of emission source categories were stationary combustion at 2%, and wastewater treatment at 5%.

Note, while the waste, water, and sustainable materials sector was explored for potential implementation measures, there are no proposed measures in this category that the tribe plans to move forward with in the near-term implementation phase. While project proposed in this sector may be able to help reduce GHG emissions on the Reservation, the project team determined that there is not sufficient data at this time to understand and estimate the emissions reduction impacts of implementing these measures. Therefore, they were not explored further at this time, but will be taken into consideration in the development of the CCAP.

## 4.3 Community Engagement

### 4.3.1 ENVIRONMENTAL DEPARTMENT MEETING

The project team conducted an initial meeting with the Environmental Department on November 1, 2023 to share information about the grant and better understand the tribe's goals and priorities. During this initial meeting, the Environmental Director, John Flores, led a Reservation tour and provided an overview of the Reservation's residential areas, government buildings, existing energy projects, and the Reservation's enterprises. In the following months, the project team collaborated with the Environmental Department to begin the process of collecting and analyzing data.

On February 16, 2024, the project team once again met with the Environmental Director after initial GHG emissions calculations were completed to help inform a list of potential emission reduction measures. During this meeting, the Environmental Director was provided information on the progress of the PCAP and the results of the team's data analysis. With the identification of four sectors (1) Mobile Combustion, (2) Stationary combustion, (3) Electricity consumption, and (4) Wastewater treatment, as being the primary emitters, the Environmental Director assisted the team in identifying priorities in the list of potential implementation measures. The Environmental Director additionally recommended further projects of interest to the tribe that were not initially flagged by the project team, including hosting electric vehicle community outreach events, adding PV and storage systems at the local gas station, and integrating electric tools into the Reservation's agricultural practices. During this meeting, the Environmental Director also assisted with the initial planning of a community outreach event for general Tribal members to provide their feedback on the grant and proposed projects.

### 4.3.2. GENERAL MEMBERSHIP COMMUNITY EVENT

On February 22, 2024, from 12:00PM to 2:00PM, the project team hosted a “Lunch and Discussion” event at the Tribal Hall on the San Pasqual Band Reservation. CSE and the Environmental Department collaborated to circulate flyers (Appendix A) in tandem with water bill distribution, advertise the event on the Tribal website, Tribal social media and text chats, and relay information via word of mouth in efforts to promote event attendance. At the height of the event, there were 19 attendees with approximately 12 attendees staying for the full duration of the event. The event began with a 20-minute presentation from members of the project team who overviewed the EPA CPRG program, and then explained the work that had been completed on the PCAP portion of the grant. This community event was intended to garner community feedback on priority implementation measures. After providing the project background, the remainder of the presentation and the following open floor discussion was focused on the San Pasqual Band’s specific GHG inventory and potential GHG emissions reduction measures.

During the community meeting, the project team circulated copies of a feedback form to the participants. This document, included in Appendix B, listed out all potential priority implementation-ready measures identified during the GHG emissions inventory assessment. The participants had an opportunity to mark each measure as important, neutral, or cross out measures that they did not find to be important. They could also add feedback and comments to elaborate on project ideas or propose additional ideas. The project team received 9 feedback



FIGURE 5 – TRIBAL HALL COMMUNITY EVENT PHOTO 1

forms back from community members and used these forms as a base to determine which community projects to look further into and recommend as priority measures. The open-floor discussion gave the project team a better understanding of projects of interest for general tribe members in comparison to the Environmental Department. General tribe members had limited overlap with the interests with the environmental department but did align on projects that would expand PV and storage technologies on the Reservation and improve building heating and cooling. The Director of the Environmental Department noted that the community had a lot of experience with PV and storage systems through other programs



FIGURE 5 – TRIBAL HALL COMMUNITY EVENT PHOTO 2

and thus members were very comfortable with the idea of installing further solar and energy storage systems. Members further expressed interest in alternative travel options such as adopting e-bikes, e-scooters, public shuttles and walking programs but noted that there were currently no sidewalks or pathways for individuals to safely wait or traverse across the Reservation.

The CSE project team learned that a large percentage of Reservation residents were elderly and were

predominantly interested in residential projects such as heating and cooling systems that would impact their home lives. In comparison, the Environmental Department’s focus was on developing broader community level projects such as charging infrastructure and microgrids. Despite heavy interest from the Environmental Department, community members did express direct hesitation with adopting electric vehicles in residential areas and charging stations due to an ongoing history of blackouts in the area and concerns over the ability of electric vehicles to meet individual travel needs. The Environmental Director noted that having community outreach events may be needed to build community comfort with electric vehicles. He further noted that continuing the Environmental Department’s adoption of electric vehicles could stand as an example for the community to see the feasibility of electric vehicles on the Reservation.

Community members additionally emphasized the desire for the Reservation to be self-sustaining and less reliant on the local utility electric SDGE for their energy needs. The tribe’s relatively smaller youth population additionally conveyed interest in educational programs to expand energy and environmental understanding on the Reservation. The project team further noted recommendations that included wind turbines, recycling and composting programs, and community shuttles from community members but acknowledge that these projects would require further data analysis and feasibility studies to determine emission reduction impacts. These ideas may be explored in the upcoming CCAP.

#### **4.4 GHG Reduction Priority Implementation-Ready Measures**

With the identification of the highest emission sources on the San Pasqual Reservation, CSE worked with the San Pasqual Band Environmental Department, and Community members to develop a list of high-priority projects. These projects are specifically targeted to lower emissions produced by the highest emission sources identified by the TGIT.

##### **4.4.1 TRANSPORTATION**

The program team reviewed six potential projects within the transportation sector:

- Install public electric vehicle charging stations at the Education Center, Employee Parking Lot and other publicly accessible spaces.
- Provide community outreach materials and host informational events on electric vehicle adoption for Tribal measures.
- Transition older Tribal enterprise vehicles to comparable electric or hybrid vehicles.
- Encourage a shift from private vehicles to walking, biking, and public transportation (ex: bike share programs, bike storage facilities, low-speed electric bicycle subsidies, etc.)
- Develop a pilot incentive program to encourage and assist members of the community to purchase zero-emission vehicles
- Establish a shuttle system between Tribal enterprises to reduce private care use on the Reservation.

Of the potential projects discussed, two were of most interest to the Tribal community participants. These projects included providing community outreach materials and encouraging a shift from private vehicle usage to alternative modes of transportation. While it was challenging for the project team to provide reliable GHG emission reduction estimates, these two measures were still included in the PCAP due to the strong interest from the community. In addition to these two measures which received strong community support, the Director of the Environmental Department indicated that transitioning the enterprise/Tribal-owned vehicle fleet to electric or hybrid vehicles and installing electric vehicle charging stations at the Education Center, Employee Parking Lot and other publicly available spaces are both high priority projects for the San Pasqual Band.

Accordingly, the project team moved forward with assessing these four projects as potential implementation-ready measures that can help reduce GHG emissions in the transportation sector in the short term.

**TABLE 4 – TRANSPORTATION SECTOR MEASURE 1: ELECTRIC VEHICLE INFRASTRUCTURE**

<b>Transportation Sector</b> <b>Measure 1:</b> Install public electric vehicle charging stations at the Education Center, Employee Parking Lot and other publicly accessible spaces.	<b>Implementing Agency</b>	San Pasqual Band of Mission Indians Environmental Department
	<b>Implementation Milestones</b>	Assessment of electric vehicle infrastructure needs to support vehicle electrification, completed siting analysis, procurement of charging equipment, installation of equipment on the sites and interconnection with and permission to operate from SDGE.
	<b>Geographic Location(s)</b>	Education Center Employee Parking Lot Other publicly available spaces
	<b>Funding Sources</b>	EPA CPRG Implementation Grant CALeVIP (If applicable)
	<b>Metrics Tracking</b>	Published project overview, 2 status updates, and final report tracking construction progress

	<b>Cost</b>	To be determined during Implementation Grant application development
	<b>Annual Estimated Emission Reductions</b>	Up to 364.27 tons carbon dioxide
	<b>Implementation Authority</b>	San Pasqual Band of Mission Indians Business Committee

Little research exists on the impacts on EV adoption per charging station installed. This is a common question in EV circles about whether EV charging leads to EV adoption or vice versa. However, if we assume that the availability of public charging would have some impact on Tribal member’s ability to adopt an EV, we can also assume that some of the residential fleet may electrify as a result of installing charging equipment. Since there is uncertainty about how much EV adoption may occur because of charging installation, the project team chose to review emissions reductions assuming no more than 5% of Tribal residents may go electric (equivalent to ~95 vehicles in the case of San Pasqual based on residential fleet estimates). Therefore, it is estimated that between 0 and 364 MT CO2 could be reduced as a result of installing chargers. In addition, while not quantified for this report, EV chargers installed on Tribal lands may have additional benefit of facilitating more electric vehicle travel for people driving through Tribal lands or using the tribe’s enterprises.

While electrification of the government-owned fleet was not of particular importance to the broader San Pasqual Band community, this measure is a significant goal for the Tribal government. Therefore, it was included in the implementation measures reviewed further. Analysis of the fleet preliminarily identified 13 vehicles that, based on current model being utilized, have an analogous EV available for replacement. These vehicles were either light duty pickup trucks or Vans. For Light duty pickup trucks, a Ford F-150 Lightning is considered as a replacement and for vans a Lightning ZEV3 Transit Passenger Van is considered as a replacement. The project team then created updated fuel consumption estimates using the MPGe for these vehicles and dividing by annual VMT estimates for these vehicles. The team then calculated emissions savings using the TGIT tool.

Initial estimates assume 24.56 tons carbon dioxide, 6.78 lbs. methane, 399.97 lbs. nitrous oxide could be reduced by replacing these vehicles. Note that further reductions may be possible depending on the process of finalizing which vehicles would get replaced.

**TABLE 5 – TRANSPORTATION SECTOR MEASURE 2: TRIBAL-OWNED VEHICLE FLEET ELECTRIFICATION**

<b>Transportation Sector Measure 2:</b> Transition older enterprise vehicles to electric vehicles.	<b>Implementing Agency</b>	San Pasqual Band of Mission Indians Environmental Department
	<b>Implementation Milestones</b>	Determination of best vehicles to replace and/or cycle, including department level analysis of what vehicles may move to other departments. Determine the most appropriate EV to replace identified vehicles

		based on use of the previous vehicle. Complete charger installations. Train staff on EV use.
	<b>Geographic Location</b>	All Tribal departments
	<b>Funding Sources</b>	EPA CPRG Implementation Grant
	<b>Metrics Tracking</b>	Published project overview, 2 status updates.
	<b>Cost</b>	To be determined during Implementation Grant application
	<b>Annual Estimated Emission Reductions</b>	24.56 tons carbon dioxide, 6.78 lbs. methane, 399.97 lbs. nitrous oxide
	<b>Implementation Authority</b>	San Pasqual Band of Mission Indians Business Committee

Education and outreach to the community regarding EVs is a critical activity to accelerate adoption. These events can provide information, answer questions/concerns of prospective buyers, and even give them opportunities to drive EVs. While these activities are critical, quantifying the impact of these events is difficult and time-consuming to predict quantitatively in terms of direct GHG emissions reductions. Therefore, while this measure is included in this PCAP and the tribe is interested in pursuing it during the implementation phase, the project team was not able to quantify emissions from this activity.

**TABLE 6 – TRANSPORTATION SECTOR MEASURE 3: COMMUNITY OUTREACH MATERIALS AND EVENTS**

<b>Transportation Sector Measure 3:</b> Develop community outreach materials and organizing community events to promote electric vehicle adoption	<b>Implementing Agency</b>	San Pasqual Band of Mission Indians Environmental Department
	<b>Implementation Milestones</b>	Collateral/training material development.
	<b>Geographic Location</b>	Tribe wide
	<b>Funding Sources</b>	EPA CPRG Implementation Grant
	<b>Metrics Tracking</b>	Event/outreach attendance, increased interest in EVs
	<b>Cost</b>	To be determined during Implementation Grant application
	<b>Annual Estimated Emission Reductions</b>	n/a
	<b>Implementation Authority</b>	San Pasqual Band of Mission Indians Business Committee

In a similar vein to the discussion around the transportation sector measure regarding the emissions reduction impact of education and outreach, the project team did not have enough information at the time of writing this report to reliably estimate GHG emission reductions from implementing a transportation mode shift on the Reservation. Before attempting to quantify emissions from encouragement of a shift to other modes of transportation, the project team will first need to identify what solutions are reasonable and feasible. Walking paths, eBikes, and public transit options all have differing levels of emissions benefits based on method and usage. The project team plans to quantify

emission reductions when specific programs or projects are identified as part of the implementation grant funding application. One potential project would be repurposing the abandoned Escondido Canal that runs through the Reservation along Canal Road. The tribe expressed interest in adapting the canal into a walking and biking trail that can be used for recreation and for getting around the Reservation. This project could provide a healthier alternative to vehicle travel and help displace on-site VMT.

TABLE 7 – TRANSPORTATION SECTOR MEASURE 4: ENCOURAGE A SHIFT IN PRIMARY MODE OF TRANSPORTATION

<b>Transportation Sector</b> <b>Measure 4:</b> Encourage a Shift of Mode of Transportation on Reservation	<b>Implementing Agency</b>	San Pasqual Band of Mission Indians Environmental Department
	<b>Implementation Milestones</b>	Program identification and design
	<b>Geographic Location</b>	Tribe wide
	<b>Funding Sources</b>	EPA CPRG Implementation Grant
	<b>Metrics Tracking</b>	Alternate method usage tracking
	<b>Cost</b>	To be determined during Implementation Grant application
	<b>Annual Estimated Emission Reductions</b>	n/a
	<b>Implementation Authority</b>	San Pasqual Band of Mission Indians Business Committee

#### 4.4.2 ELECTRIC POWER

The program team reviewed five potential projects within the electric power sector to reduce GHG emissions:

- Install solar and battery storage on government facilities, such as the Public Works building and the Domestic Water Tank Pump.
- Install solar and battery storage at the Horizon Fuel Center to maintain power during outages or emergencies.
- Deploy residential solar and battery storage technologies to reduce power losses, reduce peak demand from the grid, and lower electricity costs on Tribal members’ homes.
- Develop resources so Tribal members can reach out to the Environment Department to learn about available incentive programs, tax credits and rebates they may be eligible for.
- Develop community-scale renewable energy generation, microgrids, or vehicle-grid infrastructure.

During the community outreach event, the project team heard Reservation residents express interest in wind farms in tandem with solar. Once explained that large turbines may not be feasible due to adequate wind resource and environmental concerns, a recommendation was received to do an environmental impact on native plants, animals, adaption and hydrology.

Of the potential projects discussed, four specific measures were of most interest to the Tribal community participants. These projects included installing solar and battery storage on two priority government owned facilities, the Public Works office building and a domestic water pump station serving the community. The second being to coordinate existing efforts for a solar and storage resiliency project at the Horizon Fuel Center. In addition to these systems, a community solar and storage project received strong support from Tribal members and the Environmental Department. However, while assessing these potential projects further, the project team found that installing community solar with distributed generation credits would have limited financial and GHG emissions impacts in comparison to deploying solar at all or a portion of all the Tribal residences on the Reservation. Other hurdles for siting a community solar project would be physically interconnecting homes and Tribal buildings to the system under strict utility safety regulations, gaining right-of-way for running transmission cables and the installation cost to run said cables and installing supporting electrical infrastructure. Instead of further investigating the potential for community solar, the team completed an analysis of residential solar and storage deployment. It is important to note that the deployment of paired solar and storage systems at each residence will still allow the homes to island from the grid during a planned or unplanned outage.

Accordingly, the project team moved forward with these four measures as potential implementation-ready projects that can help reduce GHG emissions in the power sector in the near-term. The following emissions results were calculated using the MTCO<sub>2e</sub> values found in the EPA’s Tribal Government Inventory Tool based on electric kWh or gallons of LPG saved. Electric savings for Power Sector Measures 1 through 4 were modeled using NREL’s REopt Lite<sup>21</sup> optimization tool and LPG propane savings were estimated using the RECS in Building Sector Measure 1 and 2. Energy Star Certified homes’ savings were estimated using values claimed by the EPA<sup>22</sup> for Building Sector Measure 3.

TABLE 8 – POWER SECTOR MEASURE 1: SOLAR AND STORAGE AT THE PUBLIC WORKS BUILDING

<b>Power Sector Measure 1:</b> Install solar and battery storage at the Public Works Building	<b>Implementing Agency</b>	San Pasqual Band of Mission Indians Environmental Department
	<b>Implementation Milestones</b>	Purchase of material, construction start, construction end, interconnection agreement signed
	<b>Geographic Location</b>	16180 Kumeyaay Way, Valley Center CA 92082
	<b>Funding Sources</b>	EPA CPRG Implementation Grant
	<b>Metrics Tracking</b>	Published project overview, 2 status updates, and final report tracking construction progress
	<b>Cost</b>	To be determined during Implementation Grant application
	<b>Annual Estimated Emission Reductions</b>	5.06 tons carbon dioxide, 18.3 lbs. methane, 22.3 lbs. nitrous oxide
	<b>Implementation Authority</b>	San Pasqual Band of Mission Indians Business Committee

<sup>21</sup> <https://reopt.nrel.gov/tool/>

<sup>22</sup> <https://www.energystar.gov/about/how-energy-star-protects-environment/energy-efficiency>



The Public Works building was identified as an optimal candidate for solar PV and battery energy storage as a focus on resiliency due to local power outages. The building serves as an important resource to the Reservation by housing staff, equipment and operations for public safety and community utilities and infrastructure. An 18 kW<sup>23</sup> solar PV system paired with a 23 kW / 81 kWh battery storage system was sized with energy resiliency set as the goal of REopt Lite’s optimization model. This system will be able to provide 86% of annual electricity from renewable sources and support up to 75% of the facility’s load through a 48-hour long power outage utilizing solar PV and battery storage. Utility 15-min interval data was used to model both buildings and it should be noted that there is no available roof space for installing solar PV and solar car ports must be utilized.

**TABLE 9 – POWER SECTOR MEASURE 2: SOLAR AND STORAGE AT THE DOMESTIC WATER TANK PUMP STATION**

<b>Power Sector</b> <b>Measure 2:</b> Install solar and battery storage at the Domestic Water Tank Pump Station	<b>Implementing Agency</b>	San Pasqual Band of Mission Indians Environmental Department
	<b>Implementation Milestones</b>	Purchase of material, construction start, construction end, interconnection agreement signed
	<b>Geographic Location</b>	17060 Canal Rd Valley Center CA 92082
	<b>Funding Sources</b>	EPA CPRG Implementation Grant
	<b>Metrics Tracking</b>	Published project overview, 2 status updates, and final report tracking construction progress
	<b>Cost</b>	To be determined during Implementation Grant application
	<b>Annual Estimated Emission Reductions</b>	4.38 tons carbon dioxide, 15.9 lbs. methane, 19.2 lbs. nitrous oxide
	<b>Implementation Authority</b>	San Pasqual Band of Mission Indians Business Committee

The Reservation is partially served by a domestic storage water tank located on Canal Road serving 150 homes in District A. During local power outages, this tank is not available as a resource for the community and this pumphouse is also one of the highest electric energy consumers of all tribe owned buildings. A 14 kW solar PV system paired with a 6 kW / 46 kWh battery storage system was sized with energy resiliency set as the goal of REopt Lite’s optimization model. This system will be able to provide 90% of annual electric from renewable sources and support up to 100% of the facility’s load through a 48-hour long power outage utilizing solar PV and battery storage. Utility 15-min interval data was used to model both buildings and it should be noted that there is no available roof space for installing solar PV and ground mount solar must be utilized.

**TABLE 10 – POWER SECTOR MEASURE 3: COORDINATE EFFORTS FOR SOLAR AND STORAGE RESILIENCY PROJECT AT THE HORIZON FUEL CENTER**

<sup>23</sup> System sizes are estimated using NREL’s REopt Lite modeling tool and are subject to final design engineer’s approval

<b>Power Sector</b> <b>Measure 3:</b> Coordinate efforts for solar and storage resiliency project at the Horizon Fuel Center	<b>Implementing Agency</b>	San Pasqual Band of Mission Indians Environmental Department
	<b>Implementation Milestones</b>	Purchase of material, construction start, construction end, interconnection agreement signed
	<b>Geographic Location</b>	31267 Valley Center Rd, Valley Center, CA 92082
	<b>Funding Sources</b>	\$450k existing Tribal funds from DOE grant plus \$450k Tribal match; remaining cost paid by EPA CPRG Implementation Grant
	<b>Metrics Tracking</b>	Published project overview, 2 status updates, and final report tracking construction progress
	<b>Cost</b>	To be determined during Implementation Grant application
	<b>Annual Estimated Emission Reductions</b>	102.4 tons carbon dioxide, 368.7 lbs. methane, 450.3 lbs. nitrous oxides
	<b>Implementation Authority</b>	San Pasqual Band of Mission Indians Business Committee

The Horizon Fuel Center is a combination fueling station, convenience store and dine-in restaurant located on Valley Center Road, Valley Center. It is the most electric consuming building that is part of this inventory, using 487,391 kWh in the baseline year of 2022. This Tribal enterprise serves the community and visitors to the Reservation as an important fueling station and rest area and is a source of income for the Reservation. Efforts for planning, financing, and installing a solar PV and battery storage system are already in process between the Tribal Environmental Department, Industria Power and X Utility, where about \$450,000 from the Department of Energy has already been identified as a partial funding source. Our analysis for this site suggested installing a 295-kW solar PV system paired with a 112 kW / 763 kWh battery storage system sized with energy resiliency set as the goal of REopt Lite’s optimization model. This system will be able to provide 88% of annual electricity from renewable sources and support up to 50% of critical loads, such as fuel pumps and refrigeration, through a 48-hour long power outage utilizing solar PV and battery storage. Utility 15-min interval data was used to model this building. It should be noted that there is adequate roof space for installing up to 85 kW of solar PV and the remaining 210 kW would be installed as car port solar PV, providing shaded parking for guests.

TABLE 11 – POWER SECTOR MEASURE 4: SOLAR DEPLOYMENT ON TRIBAL RESIDENCES

<b>Power Sector</b> <b>Measure 3:</b> Install solar and battery storage on residences.	<b>Implementing Agency</b>	San Pasqual Band of Mission Indians Environmental Department
	<b>Implementation Milestones</b>	Purchase of material, construction start, construction end, interconnection agreement signed
	<b>Geographic Location</b>	Homes located on the Reservation, Valley Center CA 92082
	<b>Funding Sources</b>	EPA CPRG Implementation Grant
	<b>Metrics Tracking</b>	Published project overview, 2 status updates, and final report tracking construction progress

<b>Cost</b>	To be determined during Implementation Grant application
<b>Annual Estimated Emission Reductions</b>	487.9 tons carbon dioxide, 1,769.5 lbs. methane, 2,147.0 lbs. nitrous oxide
<b>Implementation Authority</b>	San Pasqual Band of Mission Indians Business Committee

One solution is to provide each of the 322 homes on the Reservation, that don't currently have solar PV or battery storage, with a paired system to add on-site generation and the ability to have backup power during an outage. Three unique monthly energy use profiles were created to represent a high, medium, and low energy use homes. Below are the estimated annual electric energy and emissions offset, and the solar PV and battery storage system size as modeled by REopt Lite for a single home.

TABLE 12 – SOLAR AND BATTERY SYSTEMS BASED ON HOME ENERGY USE PROFILES

Energy Use Profile	High	Medium	Low
Annual kWh Offset	8,610	6,344	3,957
PV System Size (kW)	6	4	3
BESS System Size (kW/kWh)	3 / 17	2 / 13	1 / 8
<b>Annual Offset CO2 (MTCO2e)</b>	<b>2.08</b>	<b>1.53</b>	<b>0.95</b>
Annual Offset CH4 (MTCO2e)	0.0034	0.0025	0.0016
Annual Offset N2O (MTCO2e)	0.0041	0.0031	0.0019

The values above were then multiplied by 107 homes for each category, 322 in total, to represent an even distribution of high, medium and low energy use homes on the Reservation. The three unique energy profiles were estimated using an average from sample monthly energy data for 22 homes on the Reservation. The table below represents the total installed solar PV and battery storage capacity as well as the expected energy and emissions savings.

TABLE 13 – SOLAR AND BATTERY SYSTEMS BASED ON HOME ENERGY USE PROFILES (ALL HOMES)

<b>All Home Retrofit Scenario Summary (322 Homes)</b>	
Annual kWh Offset	2,023,477
PV System Capacity (kW)	1,391
BESS System Capacity (kW/kWh)	642 / 4,056
Annual Offset CO2 (MTCO2e)	487.92
Annual Offset CH4 (MTCO2e)	0.8025
Annual Offset N2O (MTCO2e)	0.9737

Our second recommendation to retrofitting 322 homes on the Reservation is to address homes where elders reside due to the fact that this community is more vulnerable to health concerns during power outages. It's estimated that about 75% of the homes are occupied by at least one elder, which totals about 240 homes. The table below represents the total energy and emissions saved when 80 homes of each

energy profile are retrofitted with an appropriate sized solar PV and battery storage system, as outline in Table 12 above.

TABLE 14 – SOLAR AND BATTERY SYSTEMS BASED ON HOME ENERGY USE PROFILES (ELDERS’ HOMES)

<b>Elders’ Home Retrofit Scenario Summary (240 Homes)</b>	
Annual kWh Offset	1,512,880
PV System Capacity (kW)	1040
BESS System Capacity (kW/kWh)	480 / 3040
Annual Offset CO2	364.8
Annual Offset CH4	0.6
Annual Offset N2O	0.728

### 4.4.3 BUILDINGS

The program team reviewed seven potential projects within the building sector to reduce GHG emissions:

- Implement end-use energy efficiency measures in existing government-owned buildings, such as LED lighting.
- Develop an incentive to encourage Tribal members to purchase certified energy-efficient appliances, heating and cooling equipment, lighting, and building products to replace inefficient products.
- Establish policies to promote electrification of government-owned, commercial, and residential buildings, including converting from propane water heaters to efficient heat pump hot water heaters.
- Establish policies to accelerate the incorporation of efficient electric technologies and electric vehicle charging at new single-family, multi-unit, or affordable residential buildings.
- Implement building energy performance management for government-owned buildings and other energy consuming resources, such as water pumps.
- Implement benchmarking, energy efficiency portfolio standards and building performance standards.
- Promote recovery and destruction of high-global warming potential (GWP) hydrofluorocarbons (HFCs) used in existing appliances, air conditioning systems, and commercial chillers.

Of the potential projects discussed, three were of most interest to the Tribal community participants. These projects included installing air source heat pumps for space heating at residences, installing air source heat pumps for hot water heating at residences, and developing an Energy Start Building Performance for all new residential construction. Accordingly, the project team moved forward with assessing these three projects as potential implementation-ready measures that can help reduce GHG emissions in the building sector in the short term.

TABLE 15 – BUILDING SECTOR MEASURE 1: INSTALL AIR SOURCE HEAT PUMP MINI-SPLIT SYSTEMS AT TRIBAL RESIDENCES FOR SPACE HEATING

<b>Building Sector</b> <b>Measure 1:</b> Install air source heat pump mini-split systems for space heating at Tribal residences	<b>Implementing Agency</b>	San Pasqual Band of Mission Indians Environmental Department
	<b>Implementation Milestones</b>	Purchase of material, construction start, 50% homes retrofitted, construction end
	<b>Geographic Location</b>	Homes located on the Reservation, Valley Center, CA 92082
	<b>Funding Sources</b>	EPA CPRG Implementation Grant
	<b>Metrics Tracking</b>	Published project overview, 2 status updates, and final report tracking construction progress
	<b>Cost</b>	To be determined during Implementation Grant application
	<b>Annual Estimated Emission Reductions</b>	395.9 tons carbon dioxide, 1,098.1 lbs. methane, 2,104.7 lbs. nitrous oxide
	<b>Implementation Authority</b>	San Pasqual Band of Mission Indians Business Committee

Currently Tribal residence homes are being heated by LPG propane space heating sources that can be converted to efficient electric air source heat pump mini-split systems that would also provide cooling. This would consider a fuel switch from burning LPG propane in the home, and using systems like hot-water baseboard heating, to an electric powered heating system using an indoor fan coil and an outdoor compressor unit. These mini-split systems can provide very efficient heating and cooling by using the ambient air as a heat sink when conditioning a space and they offer better zone control over central home heating systems. Below are the estimated space heating savings for a single home on the Reservation using RECS data to calculate annual fuel consumption reduction in a *mixed-dry and hot-dry* climate zone. These values are for scalability purposes and the main intention is to install these systems on all 415 Tribal residences.

TABLE 16 – SINGLE HOME SPACE HEATING EMISSIONS SAVINGS ESTIMATES

Space Heating Emissions Savings	Single Home
Annual Savings (MMBtu)	14.5
Annual Propane Savings (Gal)	158.4
Annual Offset CO2(MTCO2e)	0.9540
Annual Offset CH4 (MTCO2e)	0.0012
Annual Offset N2O (MTCO2e)	0.0023

The values above were multiplied by 415 homes to represent the total LPG propane emissions savings for the community if all homes were to be retrofitted with an air source heat pump. It should be noted that the emissions savings is representative of the LPG fuel savings only and that it assumes all-electric would be provided by newly installed solar PV and battery storage as detailed in Power Sector Measure 3: Solar Deployment on Tribal Residences. Below is a table showing the results of this analysis for several scenarios, including our intended measure covering all 415 homes, as well as a portion of the homes on the Reservation.

TABLE 17 – HOME SPACE HEATING EMISSIONS SAVINGS ESTIMATES FOR MULTIPLE SCENARIOS

Space Heating Emissions Savings	50 Homes	100 Homes	200 Homes	415 Homes
Annual Savings (MMBtu)	725.0	1,450.0	2,900.0	6,017.5
Annual Propane Savings (Gal)	7,919.4	15,838.9	31,677.7	65,731.3
Annual Offset CO2 (MTCO2e)	47.7	95.4	190.8	395.9
Annual Offset CH4 (MTCO2e)	0.0600	0.1200	0.2400	0.4980
Annual Offset N2O (MTCO2e)	0.1150	0.2300	0.4600	0.9545

If Power Sector Measure 3 is not implemented and onsite renewable energy is not the main power source for these systems, this measure would still yield an emissions savings based on the benefit of using grid electric energy over the burning of onsite LPG propane in the home.

TABLE 18 – BUILDING SECTOR MEASURE 2: INSTALL AIR SOURCE HEAT PUMP HOT WATER HEATERS AT TRIBAL RESIDENCES FOR HOT WATER HEATING

<b>Building Sector Measure 2:</b> Install air source heat pump hot water heaters at Tribal residences	<b>Implementing Agency</b>	San Pasqual Band of Mission Indians Environmental Department
	<b>Implementation Milestones</b>	Purchase of material, construction start, 50% homes retrofitted, construction end
	<b>Geographic Location</b>	Homes located on the Reservation, Valley Center, CA 92082
	<b>Funding Sources</b>	EPA CPRG Implementation Grant
	<b>Metrics Tracking</b>	Published project overview, 2 status updates, and final report tracking construction progress
	<b>Cost</b>	To be determined during Implementation Grant application
	<b>Annual Estimated Emission Reductions</b>	409.6 tons carbon dioxide, 1,189.6 lbs. methane, 2,196.2 lbs. nitrous oxide
	<b>Implementation Authority</b>	San Pasqual Band of Mission Indians Business Committee

Currently Tribal residence homes are using LPG propane fueled hot water heaters to heat domestic hot water that can be converted to an air source heat pump hot water heater. This would consider a fuel switch from burning LPG propane in the home to an electric powered heat pump boiler. These systems can provide very efficient water heating by using ambient air as a heat sink when heating a tank of water for domestic use. Below are the estimated hot water heating savings for a single home on the Reservation using RECS data to calculate annual fuel consumption reduction in a *mixed-dry and hot-dry* climate zone. These values are for scalability purposes and the main intention is to install these systems on all 415 Tribal residences.

TABLE 19 – SINGLE HOME WATER HEATING EMISSIONS SAVINGS ESTIMATES

<b>Water Heating Emissions Savings</b>	<b>Single Home</b>
Annual Savings (MMBtu)	15.0
Annual Propane Savings (Gal)	163.9
Annual Offset CO2 (MTCO2e)	0.9871
Annual Offset CH4 (MTCO2e)	0.0013
Annual Offset N2O (MTCO2e)	0.0024

The values above were multiplied by 415 homes to represent the total LPG propane emissions savings for the community if all homes were to be retrofitted with an air source heat pump hot water heater. It should be noted that the emissions savings is representative of the LPG fuel savings only and that it assumes all electricity would be provided by newly installed solar PV and battery storage as detailed in Power Sector Measure 3: Solar Deployment on Tribal Residences. Below is a table showing the results of this analysis for several scenarios, including our intended measure covering all 415 homes, as well as a portion of the homes on the Reservation.

**TABLE 20 – HOME WATER HEATING EMISSIONS SAVINGS ESTIMATES FOR MULTIPLE SCENARIOS**

<b>Water Heater Emissions Savings</b>	<b>50 Homes</b>	<b>100 Homes</b>	<b>200 Homes</b>	<b>415 Homes</b>
Annual Savings (MMBtu)	750.0	1,500.0	3,000.0	6,225.0
Annual Propane Savings (Gal)	8,192.5	16,385.0	32,770.1	67,997.9
Annual Offset CO2 (MTCO2e)	49.4	98.7	197.4	409.6
Annual Offset CH4 (MTCO2e)	0.0650	0.1300	0.2600	0.5395
Annual Offset N2O (MTCO2e)	0.1200	0.2400	0.4800	0.9960

If Power Sector Measure 3 is not implemented and onsite renewable energy is not the main power source for these systems, this measure would still yield an emissions savings based on the benefit of using grid electric energy over the burning of onsite LPG propane in the home.

**TABLE 21 – BUILDING SECTOR MEASURE 3: IMPLEMENT ENERGY STAR BUILDING PERFORMANCE STANDARDS ON NEW RESIDENTIAL CONSTRUCTION**

<b>Building Sector</b> <b>Measure 3:</b> Implement Energy Star Building Performance Standards on all new residential construction.	<b>Implementing Agency</b>	San Pasqual Band of Mission Indians Environmental Department
	<b>Implementation Milestones</b>	Purchase of material, construction start, 50% homes retrofitted, construction end
	<b>Geographic Location</b>	Homes located on the Reservation, Valley Center, CA 92082
	<b>Funding Sources</b>	EPA CPRG Implementation Grant
	<b>Metrics Tracking</b>	Published project overview, 2 status updates, and final report tracking construction progress
	<b>Cost</b>	To be determined during Implementation Grant application

<b>Annual Estimated Emission Reductions</b>	4.7 tons carbon dioxide, 17.0 lbs. methane, 20.7 lbs. nitrous oxide
<b>Implementation Authority</b>	San Pasqual Band of Mission Indians Business Committee

The tribe has historically grown by about 10 new homes being constructed per year and that growth rate is expected to continue for the foreseeable future. Considering there are no existing energy efficiency goals beyond standard building codes that the tribe must adhere to, it would be beneficial for the Reservation to adopt a minimum standard of efficiency for all new homes being built. Energy Star Certified<sup>24</sup> homes create a standard that is stated to be “at least 10% more energy efficient than homes built to code and can achieve a 20% improvement on average while providing homeowners with better quality, performance and comfort.” These homes would require specific minimum efficiency ratings for things like Energy Star appliances and other energy consuming systems. The table below is representative of ten homes being built in Year 1 to this code and the associated emissions savings. The electric savings were deemed from the RECS estimation for a typical home in a mixed-dry and hot-dry climate zone.

**TABLE 22 – YEAR 1 EMISSIONS SAVINGS FOR TEN ENERGY STAR CERTIFIED BUILT HOMES**

<b>Emissions Savings Summary</b>	<b>Year 1</b>
Avg # of Homes Built per Year	10
Estimated Savings per Year (kWh)	19,553
Annual Offset CO2	4.72
Annual Offset CH4	0.0077
Annual Offset N2O	0.0094

#### **4.4.4 WASTE, WATER, AND SUSTAINABLE MATERIALS**

The project team assessed four potential projects:

- Develop community composting to divert food/yard waste, reduce GHG emissions and increase beneficial use of organic waste.
- Create educational programs to reduce waste and increase reuse or recycling rates.
- Install renewable energy and energy efficiency measures at water pumping stations and wastewater treatment facilities.
- Restore degraded lands and forested lands to capture and store carbon dioxide (carbon sequestration).

While these projects were of varied interest to the community for reducing GHG emissions, the project team determined that they were not feasible to implement in the short term and would require further study to determine potential GHG emission reduction estimates. Accordingly, the team did not do any further analysis of these projects at this time but may explore one or more in further detail during the development of the CCAP.

<sup>24</sup> <https://www.energystar.gov/about/how-energy-star-protects-environment/energy-efficiency>



## 5 NEXT STEPS

### 5.1 Pursuit of Funding for Priority Climate Action Measures

The San Pasqual Band has working relationships with Grid Alternatives, Gridscapes, and a variety of other organizations that provide grant funding for clean energy and related projects. While these programs exist, the tribe has noted that it is at times challenging to participate. Additional funding can be available but is limited and may not be consistent to complete full projects.

As noted in the priority measures sections throughout Section 4.4, the San Pasqual Band will rely on the EPA CPRG implementation grant funding to support the implementation of these identified PCAP measures. The San Pasqual Band plans to submit grant applications for EPA CPRG implementation funding competition, both in the general competition due April 1st and the set aside tribe and territory funding due May 1st. The project team will make an effort to layer the implementation grant funding with other available funding and programs where possible.

### 5.2 Development of a Comprehensive Climate Action Plan

The CCAP will build upon the work completed through the development of the PCAP by developing business-as-usual and future emissions scenarios, setting GHG reduction targets with additional stakeholder input, and developing a workforce plan to support the achievement of CCAP activities and goals.

There were a handful of projects and measures that were identified in the PCAP process that were not able to be explored in great enough detail to pursue in the PCAP stage for implementation. The program team intends to review as many of these potential projects as necessary in further detail during the development of the CCAP.

## 6 APPENDICES


### Appendix A: San Pasqual Community Event Flyer

**LUNCH & DIALOGUE:**

# Creating a Community Climate Action Plan





*Learn how new grant funding can help build a sustainable future for the San Pasqual Band of Mission Indians!*

**Thursday, February 22**  
12:00–2:00 p.m.  
San Pasqual Tribal Hall  
16400 Kumeyaay Way • Valley Center, CA 92082

  
Complimentary lunch provided




*The tribe is seeking community participation in determining priorities, ideas and projects to reduce greenhouse gases and address climate change.*

**Tribal members** are encouraged to join this community meeting to discuss measures to:

-   
Decrease energy use and lower energy bills
-   
Access funding for clean energy projects for our tribe
-   
Improve tribal quality of life
-   
Create a healthy environment for future generations

**We look forward to hearing your ideas!**

For more information, contact Melissa Cintron at the Center for Sustainable Energy [melissa.cintron@energycenter.org](mailto:melissa.cintron@energycenter.org)

This project is funded through the U.S. Environmental Protection Agency Climate Pollution Reduction Grant.  
CSE-EPACPRG-022024

## Appendix B: San Pasqual Community Project Feedback Form

# Climate Pollution Reduction Grant

## San Pasqual Community Project Feedback

### Transportation Sector

	Install electric vehicle charging stations at the Education Center, Employee Parking Lot and other publicly accessible spaces.
	Provide community outreach materials and host informational events on electric vehicle adoption for tribal members.
	Transition older tribal enterprise vehicles to comparable electric vehicles.
	Encourage shift from private vehicles to walking, biking, and public transportation (ex: bike share programs, bike storage facilities, low-speed electric bicycle subsidies).
	Develop a pilot incentive program to encourage and assist members of the community purchasing zero-emission vehicles.
	Establish a shuttle system between tribal enterprises to reduce private car use on the reservation.

### Electric Power Sector

	Install solar and battery storage on government facilities, such as the Public Works building.
	Install solar and battery storage at the gas station to maintain power during outages or emergencies.
	Deploy residential solar and battery storage technologies to reduce power losses, reduce peak demand, and lower electricity costs on tribal members' homes.
	Develop resources so tribal members can reach out to the Environmental Protection Office to learn about available incentive programs, tax credits and rebates they may be eligible for.
	Develop community-scale renewable energy generation, microgrids, or vehicle-grid infrastructure.

### Buildings Sector

	Implement end-use energy efficiency measures in existing government-owned buildings, such as LED lighting.
	Develop an incentive program to encourage tribal members to purchase certified energy-efficient appliances, heating and cooling equipment, lighting, and building products to replace inefficient products.
	Establish policies to promote electrification of government-owned, commercial, and residential buildings, including converting from propane water heaters to efficient heat pump hot water heaters.
	Establish policies to accelerate the incorporation of efficient electric technologies at new single-family or multi-unit residential buildings.

	Implement building energy performance management for government-owned buildings and other energy consuming resources, such as water pumps.
	Implement new benchmarking, energy efficiency portfolio standards and building performance standards for government-owned buildings.
	Promote recovery and destruction of high-global warming potential (GWP) hydrofluorocarbons (HFCs) used in existing appliances, air conditioning systems, and commercial chillers.

**Waste & Water Management and Carbon Removal**

	Develop community composting to divert food/yard waste, reduce GHG emissions, and increase beneficial use of organic waste.
	Create educational programs to reduce waste and increase reuse or recycling rates.
	Install renewable energy and energy efficiency measures at anticipated wastewater treatment facilities.
	Restore degraded lands and forested lands to capture and store carbon dioxide (carbon sequestration).

**Additional Community Recommended Projects**

1.	
2.	
3.	
4.	
5.	