San Diego Tribal Collaborative
Climate Pollution Reduction Grant
Priority Climate Action Plan

Pala Band of Mission Indians

Jamul Indian Village of California

Viejas Band of Kumeyaay Indians

La Posta Band of Mission Indians

Prepared by

Blue Tomorrow, LLC

Last Revised: March 1, 2024

TABLE OF CONTENTS

TABLES

MAPS

FIGURES

1.0 INTRODUCTION

San Diego Tribal Collaborative

The San Diego Tribal Collaborative (SDTC) is a consortium of four Tribal governments in San Diego County that are coordinating efforts through the Climate Pollution Reduction Grant (CPRG) program. The four partner Tribes in the SDTC are: Pala Band of Mission Indians (SDTC Lead Organization), Jamul Indian Village of California, Viejas Band of Kumeyaay Indians, and La Posta Band of Mission Indians (Map 1).

CPRG Overview

The CPRG program supports the development of strategic plans for reducing greenhouse gas (GHG) emissions and implementation of projects that reduce GHGs and associated co-pollutants. The initial planning phase includes the development of a Priority Climate Action Plan (PCAP) and Comprehensive Climate Action Plan (CCAP). This document serves as the SDTC PCAP and contains the required elements including: GHG emissions inventories, quantified emissions reduction measures, benefits analysis, and review of authority to implement.

PCAP Overview

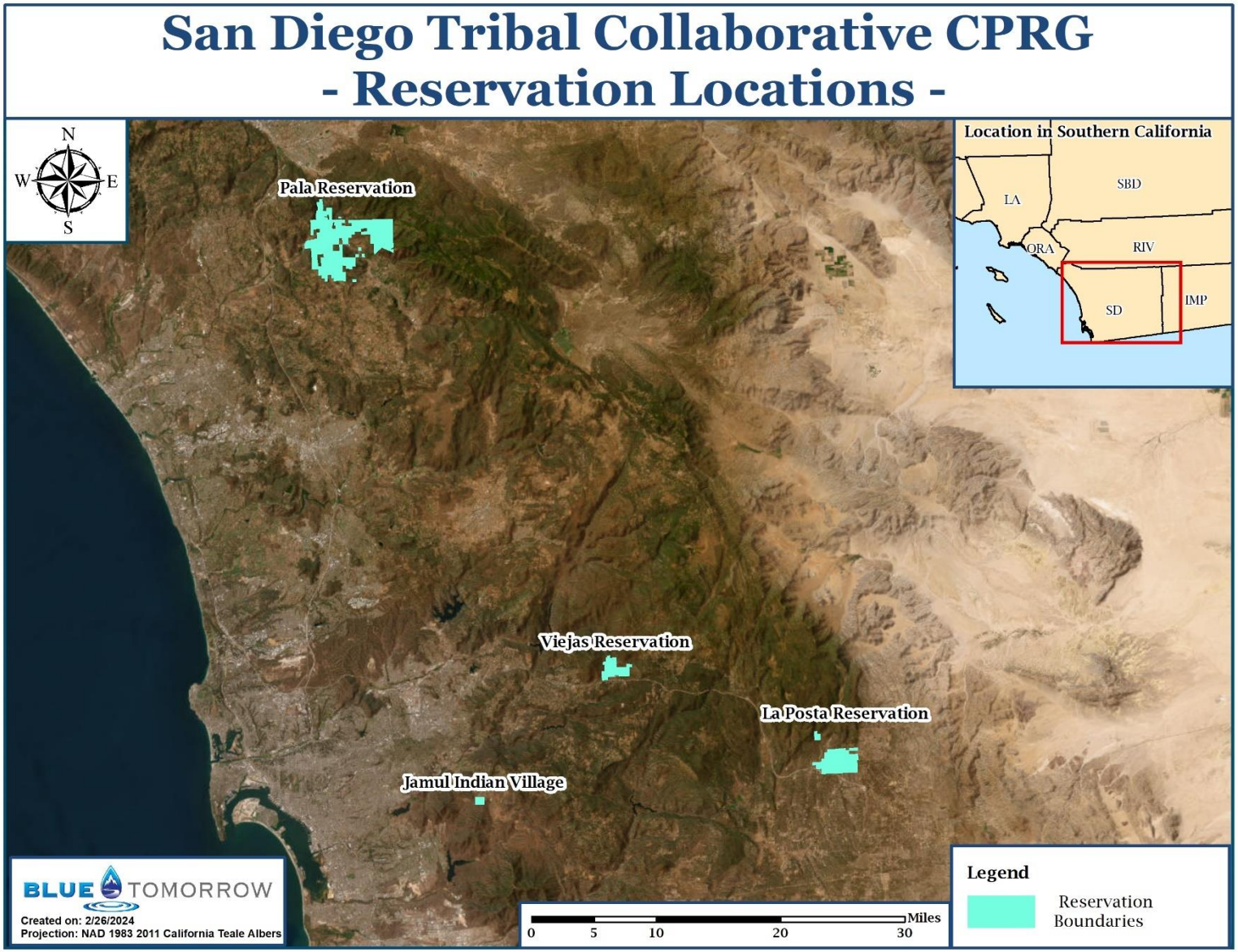
The SDTC PCAP is focused on an initial GHG inventory for the base year of 2022. For this inventory, data was collected from the Tribes in accordance with the Quality Assurance Project Plan (QAPP). Where available, data from the Reservations included electricity use, point sources, non-point sources, on-road and non-road mobile sources, solid waste generation, agriculture, land management, water, and wastewater processing. If site specific data was unavailable, emissions estimates were made using national or regional databases and downscaled based on Reservation characteristics.

Emissions reduction measures were identified and prioritized by each Tribe to form a strategic plan to reduce GHG emissions. In determining these measures, the Tribes considered CPRG program alignment, existing or planned projects, funding and cost considerations, and time constraints for implementation. Emissions reduction estimates were calculated where feasible and are included in the PCAP.

The included emissions reduction measures benefits analysis contains an inventory of co-pollutants for each Reservation for the base year of 2022. These estimates are based on the National Emissions Inventory (NEI) and downscaled by population for each Reservation. Additionally, associated co-pollutant reductions and general community benefits are discussed for each proposed measure. The goal of this benefits analysis is to consider pollution reduction and improvements to Tribal economies, health, safety, and resiliency.

The CCAP will expand on the PCAP to include a comprehensive GHG inventory using more specific emissions and energy use data, if available, and also include GHG sinks from carbon sequestration. GHG emissions reduction targets and projects will be included in the CCAP to help gauge the performance and success of reducing emissions. Plans for funding and workforce requirements will be developed to build a roadmap to guide the implementation of emissions reduction measures.

Map 1 – San Diego Tribal Collaborative CPRG Reservation Locations



1.1 CPRG Objectives

The CPRG program, administered by the U.S. Environmental Protection Agency (EPA), is funded through the Inflation Reduction Act of 2022 (IRA). Three overarching objectives the EPA intends to achieve through the IRA include:

- Tackle damaging climate pollution while supporting the creation of good jobs and lowering energy costs for families
- Accelerate work to address environmental injustice and empower community-driven solutions in overburdened neighborhoods
- Deliver cleaner air by reducing harmful air pollution in places where people live, work, play, and go to school

CPRG is designed to reduce GHG emissions that contribute to climate change by providing funding to states, municipalities, Tribes, and territories for planning and implementation of emissions reduction measures. Through implementing GHG emission reduction measures, CPRG also aims to restore ecosystems, improve deteriorating infrastructure, foster economic growth, and bolster public health by reducing the pollution burden that disproportionately affects disadvantaged communities.

The two phases of the CPRG program include: 1) Planning (PCAP & CCAP); and 2) Implementation. The PCAP prioritizes emissions reduction measures that will be pursued during Phase 2. This implementation phase contains specific goals for Tribes (and other eligible applicants). These include:

1. Implement ambitious measures that will achieve significant cumulative GHG reductions by 2030 and beyond
2. Pursue measures that will achieve substantial community benefits (such as reduction of criteria air pollutants (CAPs) and hazardous air pollutants (HAPs)), particularly in low-income and disadvantaged communities
3. Complement other funding sources to maximize these GHG reductions and community benefits; and
4. Pursue innovative policies and programs that are replicable and can be “scaled up” across multiple jurisdictions

1.2 PCAP Objectives

The primary objective of this PCAP is to serve as a strategic plan for reducing Tribal emissions of GHG's and other harmful pollutants. This is achieved through the following plan objectives:

- Perform intergovernmental collaboration with members of the SDTC consortium
- Document baseline GHG emissions
- Identify and prioritize emission reduction measures
- Evaluate associated GHG reductions and co-benefits from implementing prioritized emissions reduction measures

The outcomes of this PCAP, which encompasses GHG and co-pollutant emissions inventories, proposed GHG reduction measures, and benefits analysis, will ultimately bolster community capacity, increase economic and climate resilience, and promote energy independence. The PCAP is poised to create solutions that deliver the maximum benefit to communities that are overburdened and underserved, in turn furthering the EPA's goals for the IRA and the CPRG program.

2.0 BACKGROUND

2.1 Pala Band of Mission Indians

The Pala Band of Mission Indians Reservation ("Pala Reservation") is home to the Pala Band of Mission Indians, who trace their heritage to the Cupeños (Kuupangaxwichem) and the Luiseños (Payómkawichum). These two Tribes have shared territory since 1903. The Cupeños originally occupied the headwaters of the San Luis Rey River until they were expelled from their homeland and joined the Luiseño Tribe in what is now called the Pala Reservation (Pala Tribe , 2024). The Reservation is located east of Fallbrook in northern San Diego County and encompasses 13,000 acres. The Pala Band of Mission Indians has 918 enrolled Tribal members, most of which reside on the Reservation (PED, 2019). With a population density of 68 persons per square mile, Pala has 1,573 total residents and 425 housing units (PED, 2019).

Natural Features

The northern San Diego County area has a Mediterranean to desert climate with hot, dry summers, and moist, mild winters. The Reservation occurs on a wide alluvial valley surrounded by steep granite mountains. The largely undeveloped Reservation area is dominated by chaparral and scrub vegetation, with some woodland and forested areas at higher elevations in the northeastern portion.

The San Luis Rey River laterally bisects the Reservation, dividing the northern and southern sides. During storm events, the river experiences a significant surge in flow, posing serious flood risks to neighboring areas. Just west of the Reservation boundary, there is a series of ponds that resulted from a now-closed sand and gravel operation along the river. Along the riverbanks, invasive plant species such as *Arundo spp.*, *Eucalyptus spp.,* and *Tamarix spp.* are widely distributed despite ongoing efforts to manage and control their populations.

Areas surrounding the Reservation have undergone rapid development, increasing the burden on natural resources and degrading ecosystems and habitats within its boundaries. The Climate Change Vulnerability Assessment conducted by the Pala Environmental Department (PED) in 2019 identified the primary climate change risks for Pala, including significantly elevated temperatures, more frequent wildfires, less predictable storm and flooding events, as well as prolonged periods of drought. Each of these risks has the potential to substantially impact human health, socio-economic health, air quality, and GHG emissions (PED, 2019).

Facilities and Enterprises

Major land uses include agriculture, commercial businesses including gaming and motocross racing, and residential areas. The most notable facility within the Reservation is the Pala Casino Resort and Spa, located on the western side of the Reservation. The casino, which employs 1,900 people, has nine restaurants, four entertainment venues (including the Starlight Theatre), an 11,000 square foot day spa, and an 86,000 square foot gaming floor with 2,250 slot machines and 84 table games. The Pala Casino Resort Hotel has 500 rooms, 82 suites, and a conference center (Pala Casino, 2023). The Tribe utilizes its

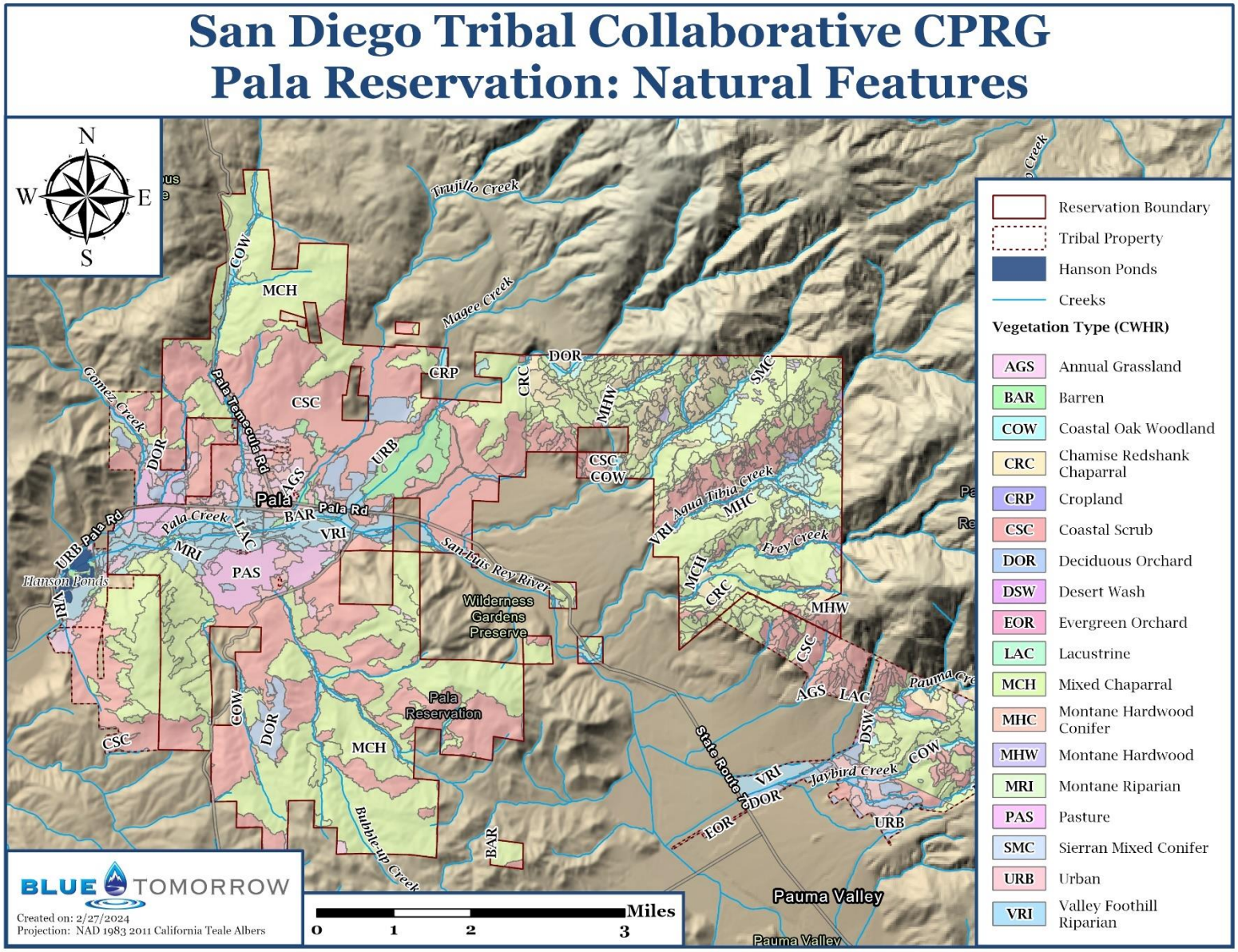
earnings to support its members through social services and education, in addition to investing in infrastructure improvements.

Agricultural land uses on the Reservation include large citrus and avocado orchards, a small parcel of agricultural land southeast of the junction between the 15 and 76 freeway, and a small, man-made retention pond for irrigation of crops and orchards along the San Luis Rey River. Additionally, there are some small parcels of Reservation and tribal land to the east of the main Reservation used for agriculture (PED, 2019).

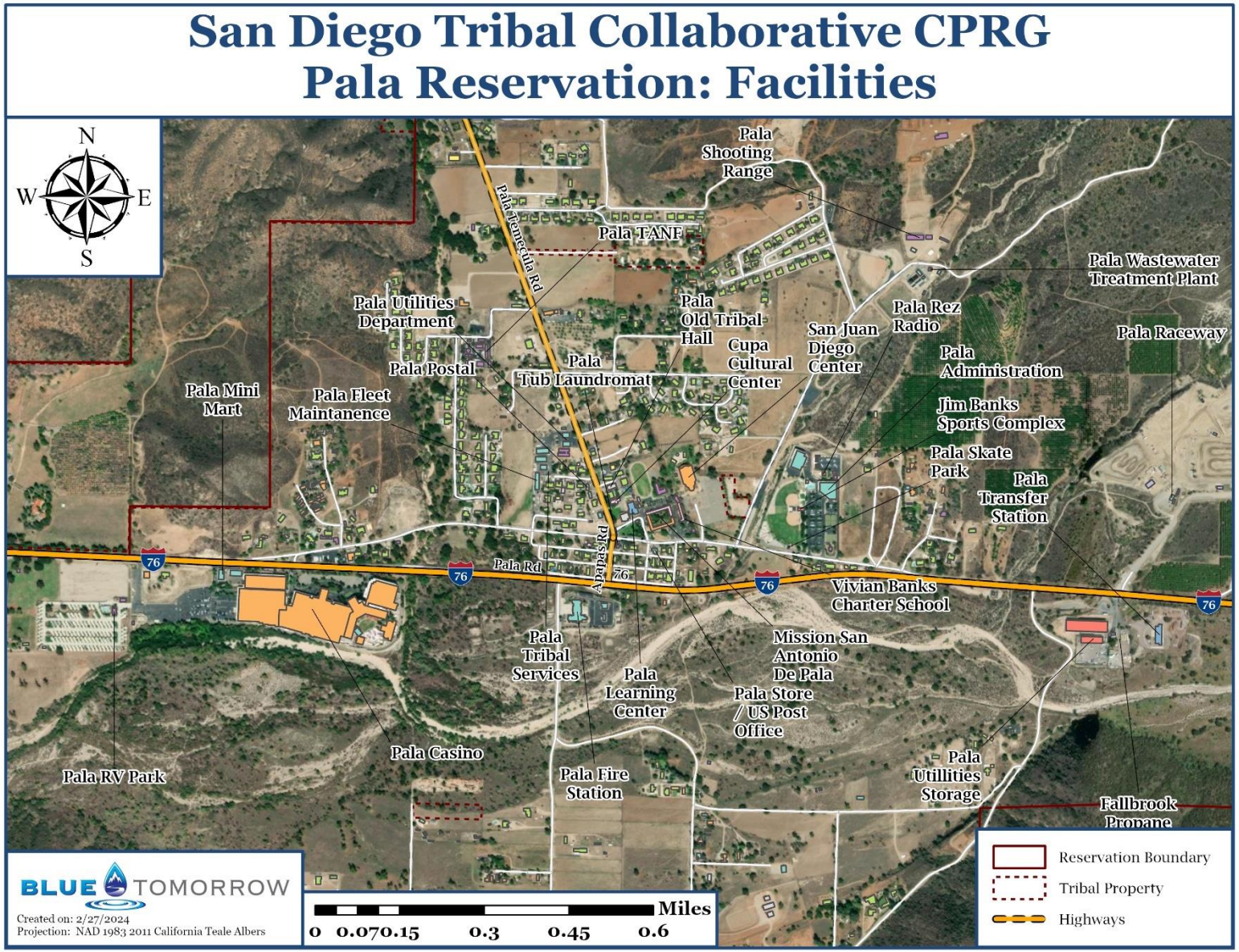
The Pala Tribe also owns and operates Pala Mesa Resort and Golf Course, just west of interstate 15. The resort includes an outdoor swimming pool, a restaurant, a golf shop, a two-story hotel with 133 rooms, an artist school and retreat, and an 18-hole golf course (Pala Mesa Resort, 2023). The Pala Tribe also operates Fox Raceway, a professional-grade motocross park with three racetracks.

Other notable facilities on the Reservation include administrative office buildings, a large fitness center, a day care, a Boys and Girls Club, a fire station, a cultural center, and law offices. A transfer station manages waste for residents and a hazardous waste curbside pickup service provided by PED.

Map 2 – Natural Features of Pala Reservation



Map 3 – Facilities on Pala Reservation



2.2 Jamul Indian Village of California

Jamul Indian Village of California (JIVoC) is one of the twelve bands that make up the Kumeyaay Nations. The Reservation is located 25 miles east of San Diego, on moderately steep slopes within the Jamul mountains. Located on 6.032 acres of trust land, JIVoC is a federally recognized Tribe. The JIVoC Tribe has 76 Tribal Members, including 49 adults and 27 minors, but none reside on the Reservation. (Prosper Sustainability & Kimley Horn, 2022). Prior to federal recognition in 1981, residents lived in small huts made of plywood scraps and the most reliable source of water for residents was Willow Creek, a small creek which ran through the Reservation. Following federal recognition, Tribal members gained access to municipal resources for water and electricity infrastructure. In 2016, the Jamul Casino was built, a 360-million-dollar casino that now takes up much of the Reservation land (Jamul Indian Village of California, 2023).

Natural Features

The primary natural resource is Willow Creek, which runs north to south through the center of the JIVoC Reservation and maintains an oak woodland riparian corridor (San Diego Integrated Regional Water Management, 2019).

Facilities and Enterprises

There are five buildings on the Reservation. The most prominent is the 200,000 square foot Jamul Casino on the east side of the property. It sits on top of an eight-level underground parking garage that has a capacity of up to 1,800 vehicles. The casino includes seven restaurants and 1,700 slot machines. Other facilities include an administrative office building, a wastewater treatment facility, a small chapel, a security office, the Environmental Protection Department (EPD), and a community center. The administrative offices house the Cultural Department, Accounting, Tribal Council Chambers, and Human Resources.

Map 4 – Facilities and Natural Features on JIVoC Reservation

2.3 Viejas Band of Kumeyaay Indians

The Viejas Band of Kumeyaay Indians is one of the twelve bands of Kumeyaay Indian Nations. This band traces its lineage back to the residents of the Capitan Grande River Valley, who endured both the loss of their lands and access to the San Diego River on two distinct occasions. The first was in 1888, when the completion of the Cuyamaca Dam resulted in the creation of Lake Cuyamaca, located approximately 12 miles northeast of the present-day Reservation. The second was in 1935, when the construction of another dam resulted in the creation of El Capitan Reservoir, situated roughly 6 miles northwest of the current Reservation. On both occasions, the developments acted not only to displace the residents from their ancestral lands, but also to deny access to San Diego River's waters.

In response, twenty-eight families pooled their resources from the forced sale of their Capitan Grande land to acquire Viejas Valley land. The current members of the Viejas Band of Kumeyaay Indians are all direct descendants of these families. Viejas Valley was officially designated as a Reservation by executive order in 1934.

Today, the Viejas Band of Kumeyaay Indians Reservation ("Viejas Reservation") is located just east of Alpine in San Diego County along Interstate 8 within Cleveland National Forest, on 1,609 acres of federal trust land. The Reservation is home to approximately 289 of the 394 enrolled members, with a total population of 520 people (Viejas Band of Kumeyaay, 2023).

Natural Features

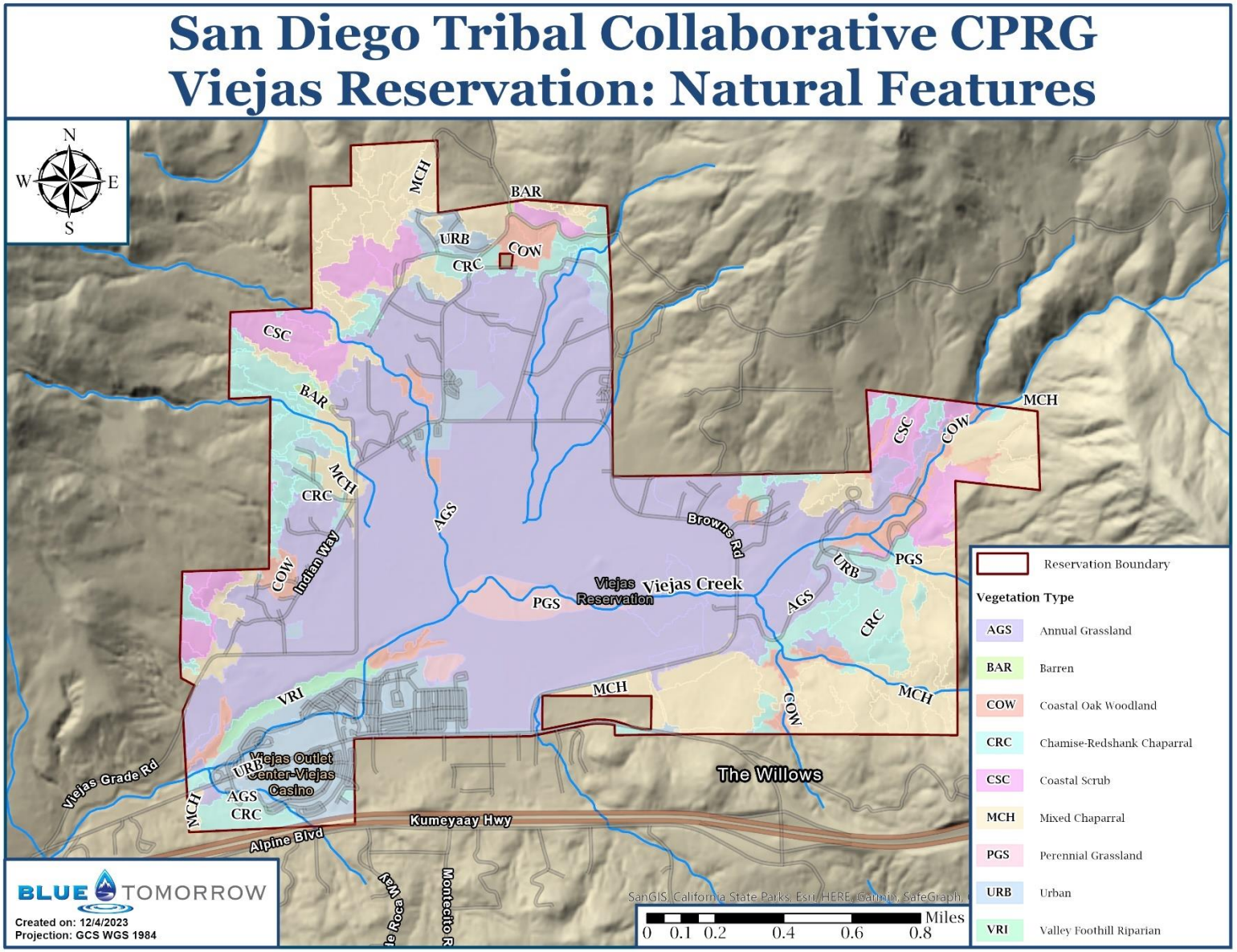
Viejas Valley is comprised primarily of grassland, wetland, and coastal mountain slope landscapes. The key land uses in this region include ranching, residential, and commercial zones. The most prominent vegetive communities in the region are expansive open annual grasslands, chaparral, coastal scrub, and coastal oak woodlands. The main channel of Viejas Creek flows from east to west, bisecting the Reservation, and receives tributaries from both the northern and southern sides.

Facilities and Enterprises

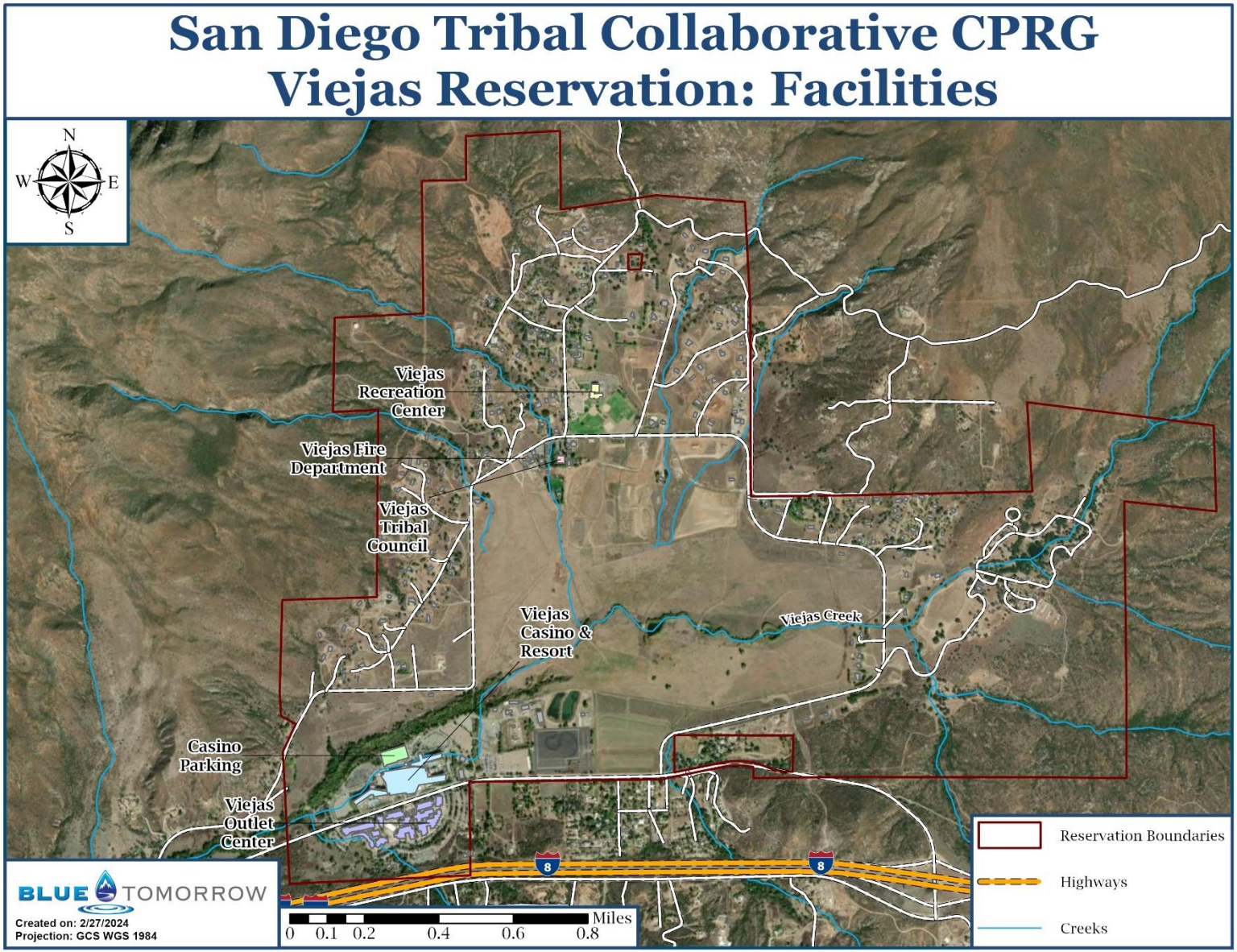
Viejas Casino stands as one of California's most prosperous casinos, significantly contributing to the economic sovereignty of the Tribe. The 325,000 square foot casino boasts an impressive 129,500 square foot gaming area, five restaurants, two 128 room hotels (Viejas Resort and Willows Hotel & Spa), and a large parking garage (Viejas Casino & Resort, 2023). Directly south of the casino is the Viejas Outlet Center, an extensive shopping center spanning over 1 million square feet, hosting 57 retail stores featuring a wide array of popular retail brands (BRG Consulting, 2016).

Other facilities in the Viejas Reservation include a recreational vehicle park, a tribal council building and governmental complex, a fire department, an education department, and a recreation center.

Map 5 – Natural Features of Viejas Reservation



Map 6 – Facilities on Viejas Reservation



2.4 La Posta Band of Missions Indians

The La Posta Band of Mission Indians is one of the twelve bands of the Kumeyaay Indian Nations and was federally recognized through the Trust Patent in 1893, which established the Reservation. The La Posta Band of Mission Indians Reservation ("La Posta Reservation") has preserved much of its rich heritage and is marked by the presence of numerous archaeological sites and cultural landmarks, including sacred burial grounds and ancestral habitation sites.

La Posta Reservation encompasses approximately 3,500 acres plus another 200-acre area, named "Little La Posta," located 2 miles northwest of the main Reservation. The Reservation is bordered on the eastern and southeastern sides by the Manzanita and Campo Reservations, respectively. Interstate Highway 8 runs along the southwestern border of the Reservation. La Posta Reservation is located between San Diego and El Centro in the Laguna Mountains, and has a population of 55 people, 23 of which are enrolled tribal members. Much of the Reservation is undeveloped, with a limited number of structures primarily consisting of residential buildings.

Natural Features

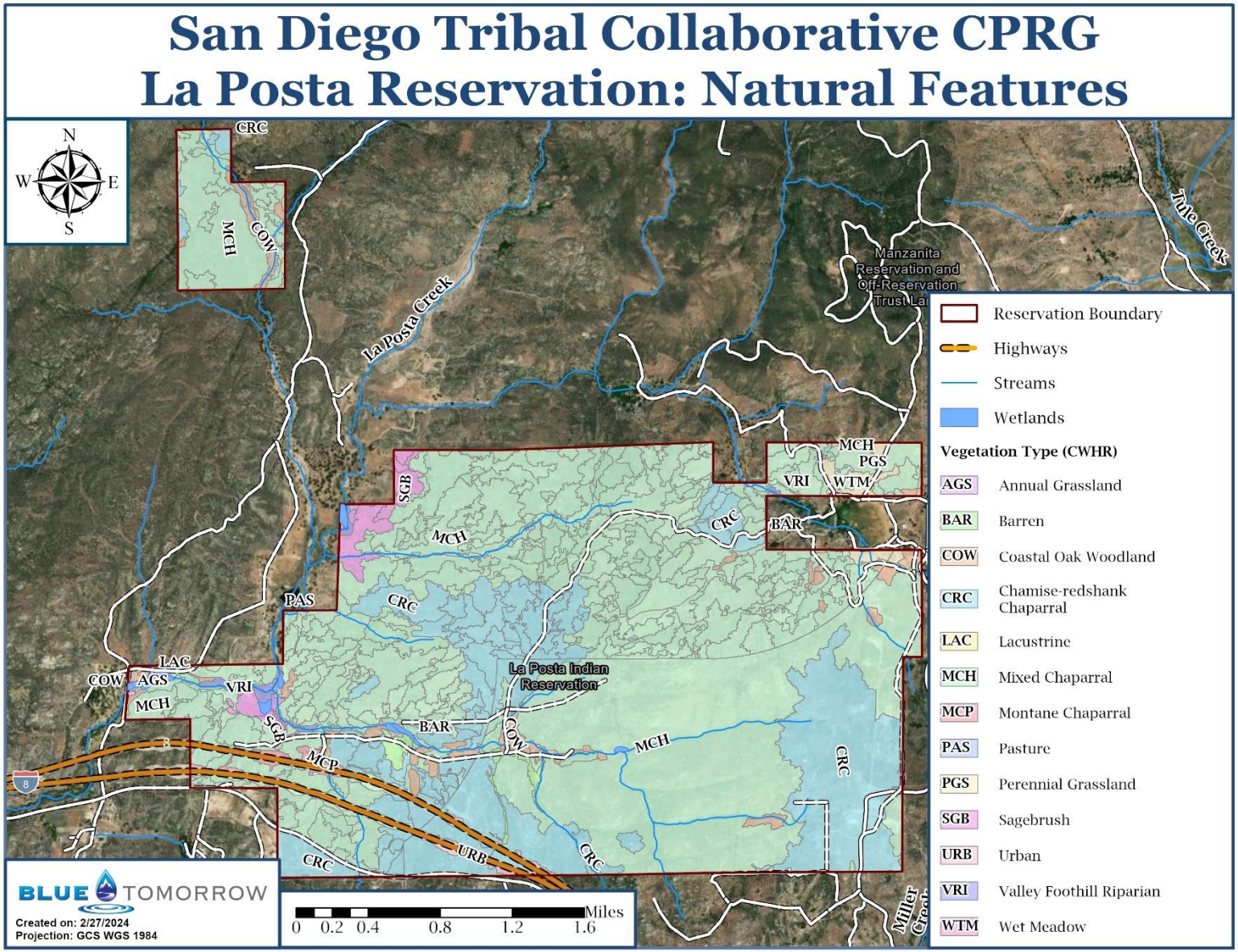
La Posta Reservation resides within the Tijuana River watershed. The region is comprised of freshwater marshes, southern willow riparian woodlands, southern oak woodlands, great basin sage scrub, chamise-redshank chaparral, and southern mixed chaparral vegetative communities. The landscape is characterized by mountainous regions, high deserts, woodlands, small ponds, and various waterways that contribute to the area's ecological diversity. In recent years, significant changes to the waterways and water resources on La Posta Reservation have been observed, with several lakes, aquifers, and waterways drying up due to drought. Wetlands are also adversely affected by roadway related erosion and sedimentation.

Facilities and Industries

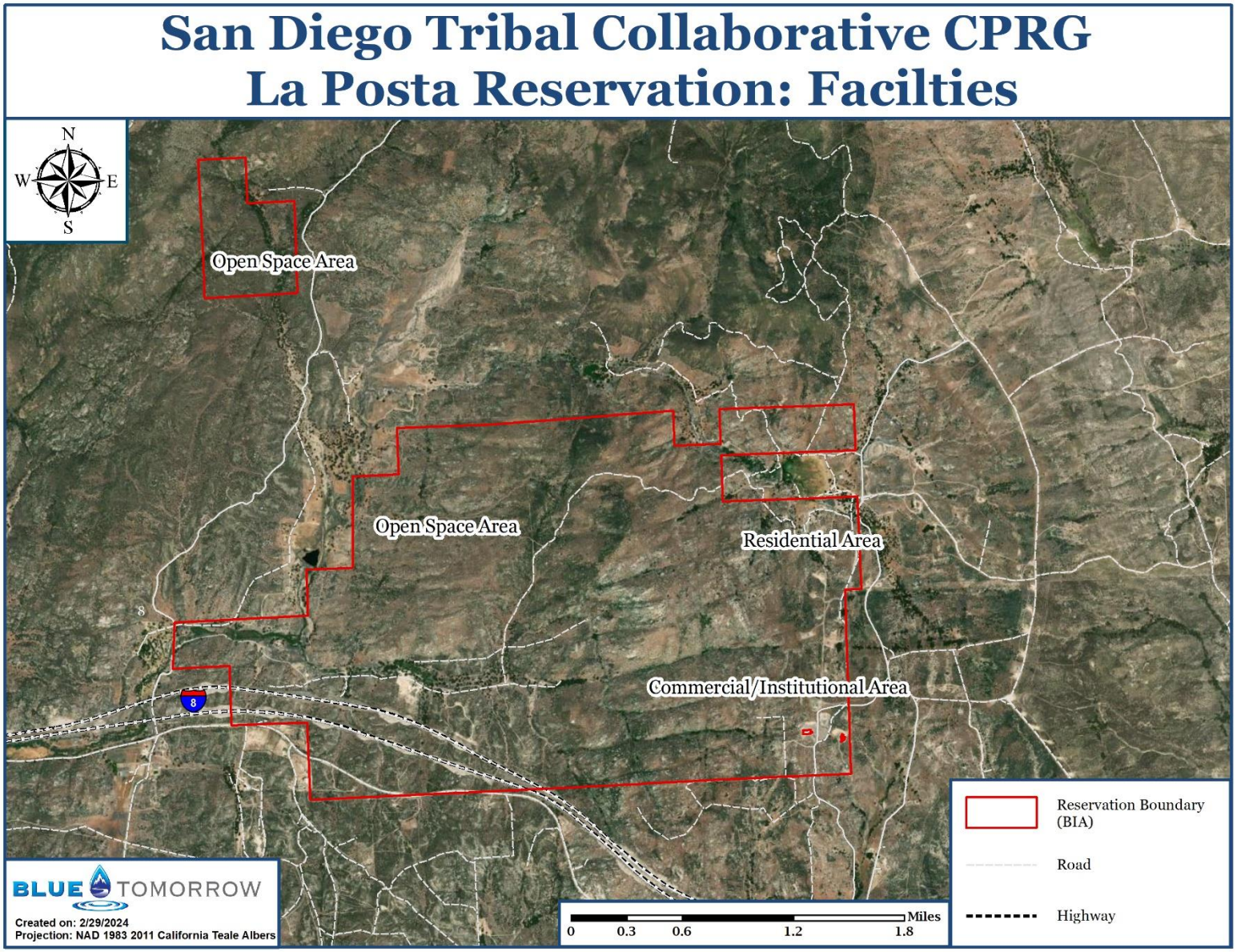
Most of La Posta Reservation is rural and undeveloped. Aside from 13 residential buildings, the facilities on the Reservation are the Tribal Administrative Offices, La Posta Tribal Police Department, the Boys and Girls Club, the Southern Indian Health Substance Abuse Center, and the La Posta Casino (not in operation). La Posta Casino opened in 2007. It was one of the smallest casinos in San Diego, employing 100 people at its peak, and closed in 2012.

There are also two active water wells on the Reservation that supply drinking water to residents. However, water insecurity is a growing concern to La Posta environmental staff, who have observed steady decreases in groundwater levels over the past 10 years (La Posta Band of Mission Indians, 2019).

Map 7 – Natural Features of La Posta Reservation



Map 8 – Facilities on La Posta Reservation



3.0 GHG EMISSIONS INVENTORY

The emissions inventory is organized by the following sources, where applicable: electricity use, point sources, non-point sources, on-road and non-road mobile sources, solid waste generation, agriculture, land management, water, and wastewater processing. A comprehensive narrative of the methods and calculations of emissions for each Tribe is included in the Appendix (Section 7.1)

The quantified emissions are also categorized by the following sectors: residential, commercial, mixed, and electricity generation. The residential sector is comprised of only emissions related to the people living within the boundaries of the respective Reservation. The commercial sector is comprised of for-profit businesses and governmental/administrative enterprises. The electricity generation sector only includes emissions pertaining to the generation of electricity within the Reservation boundaries. This does not include electricity purchased from the grid, which is generated elsewhere. The mixed sector emissions are those which could not be easily separated into any of the above-mentioned sectors. For this inventory, the only emissions that fall into the "mixed" sector come from on-road mobile sources.

This emissions calculations section outlines the steps taken to calculate each source of GHG emissions for each Reservation in the SDTC. Wherever possible, data sources and estimation tools are cited and described below. Tools that were utilized most frequently include the Tribal Greenhouse Gas Inventory Tool (TGIT), the U.S. Energy Information Administration Commercial Building Energy Consumption Survey (CBECS), the EPA's Waste Reduction Model (WARM), and the EPA's Carbon Footprint Calculator.

3.1 Pala Band of Mission Indians

The total estimated annual GHG emissions derived from sources and activities on the Pala Reservation in the base year 2022 is 9,776 MTCO2e (Table 1). Within the Pala Reservation, the primary sources of emissions are stationary non-point sources, electricity consumption, and on-road mobile transportation, with the on-road mobile contributing the highest emissions among all individual sources.

Table 1 – Total Emissions by Sector and Source in Metric Tons of CO2 Equivalent

Sector	Electricity	Non-point Sources	Off-road Mobile	On-road Mobile	Solid Waste	Wastewater	Total
Commercial	2,177	2,470.2	2.2	-	357.9	12.6	5,019.9
Residential	908.4	923.1	41.7	-	316	-	2,189.2
Mixed	-	-	-	2,567		-	2,567
Total	3,085.4	3,393.3	43.9	2,567	673.9	12.6	9,776.1

The Pala Casino Spa Resort stands out as a major contributor to GHG emissions due to its extensive and consistent consumption of both electricity and propane as a large commercial establishment with a high volume of daily visitors. The total emissions from the Pala Casino Spa Resort electricity and propane consumption are 2,912 MTCO2e, which is higher than the total emissions from on-road mobile transportation.

If emissions are combined into their source category groups, stationary non-point sources contribute the most to the total emissions on the Reservation (34.7%). The second largest combined source category is electricity consumption (31.6%), followed by on-road mobile sources (26.3%), solid waste generation (6.9%), off-road mobile sources (0.4%), and wastewater treatment (0.1%) (Figure 1, Table 2). When grouped by sector, the commercial sector was the greatest contributor to GHG emissions (Figure 2, Table 3). It is important to note that, given the lack of Reservation specific data, many of these calculations relied on county-level or national averages for various components. While these calculations serve as general estimations of emissions on the Reservation, they should be refined with acquired data for the CCAP emissions inventory.

The per capita annual emissions for residents of the Pala Reservation are 6.56 MTCO2e, although this value is significantly skewed by emissions from the casino. However, when considering emissions solely within the residential and mixed sectors (on-road mobile sources, propane consumption, and electricity use), per capita emissions are reduced to 4.84 MTCO2e per year. For comparison, the City of San Diego average per capita annual emissions in 2019 was 6.8 MTCO2e (City of San Diego, 2020). In the CCAP emissions inventory, emissions will be further broken down by sector to calculate per capita averages with higher specificity.

Figure 1 – Pala Reservation GHG Emissions (MTCO2e) by Source

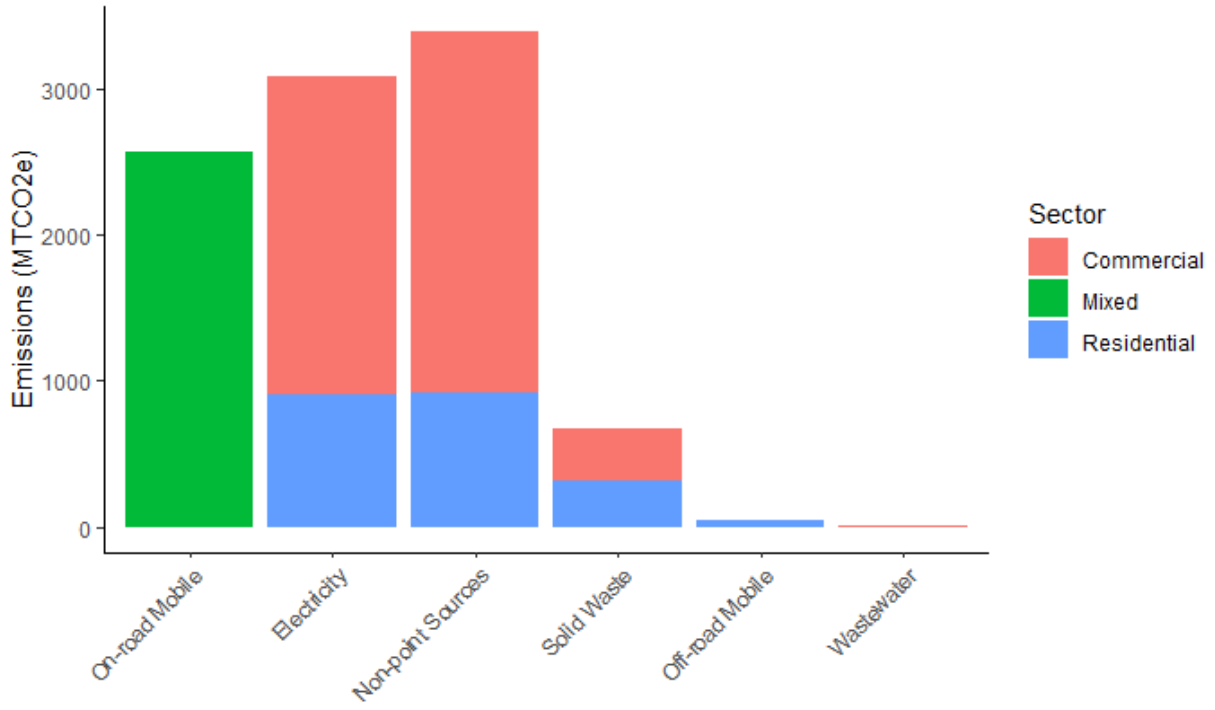


Table 2 – Pala Reservation GHG Emissions Percentages by Source

Source	GHG Emissions	Percent
Non-point Sources	3,393.3	34.7%
Electricity	3,085.4	31.6%
On-road Mobile	2,567.0	26.3%
Solid Waste	673.9	6.9%
Off-road Mobile	43.9	0.4%
Wastewater	12.6	0.1%

Figure 2 – Pala Reservation GHG Emissions (MTCO2e) by Sector

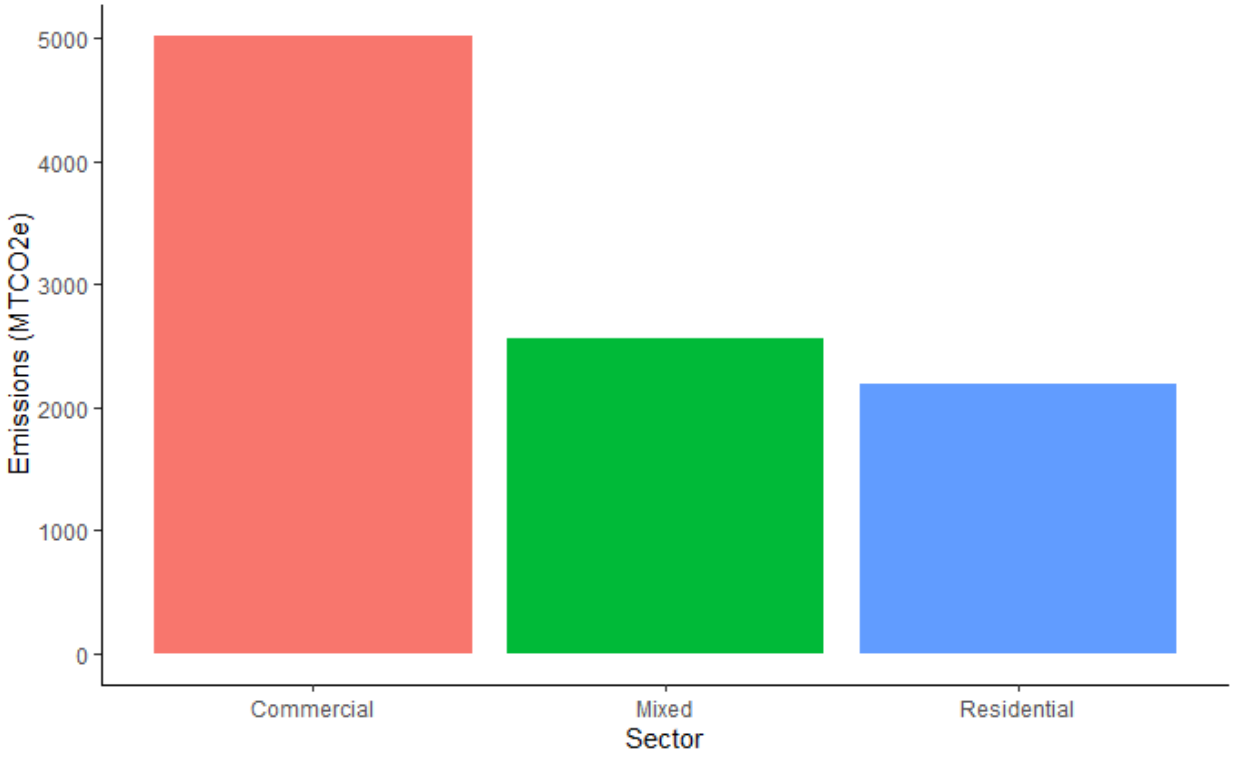


Table 3 – Pala Reservation GHG Emissions Percentages by Sector

Sector	Emissions	Percent
Commercial	5,019.9	51.3%
Mixed	2,567.0	26.3%
Residential	2,189.3	22.4%

3.2 Jamul Indian Village of California

The total estimated annual GHG emissions derived from sources and activities on the JIVoC Reservation in the base year 2022 is 5,030 MTCO2e (Table 4). Within the Reservation, the primary sources of emissions are stationary non-point sources and electricity consumption.

Table 4 – JIVoC Reservation Total Emissions by Sector and Source in Metric Tons of CO2 Equivalent

Source	Source Category	Sector	Scope	Emissions (MTCO2e)
On Road Mobile	On-road Mobile	Commercial	1	106.4
Solid Waste Generation	Solid Waste	Commercial	3	64.3
Diesel Backup Generators	Non-point Sources	Commercial	1	1,819.6
Urban Forestry	Urban Forestry	Commercial	1	-1.2
Casino SDGE Electricity Use	Electricity	Commercial	2	2,220.4
Casino Propane Use	Non-point Sources	Commercial	1	773.6
Wastewater	Wastewater	Commercial	1	46.9
Total				5,030.0

The Jamul Casino is the primary source of GHG emissions within the Reservation. The total emissions from the Jamul Casino electricity, diesel, and propane consumption are 4,813 MTCO2e, which is almost the entirety of the emissions from JIVoC Reservation.

The per capita annual emissions for the Reservation are difficult to calculate because there are no residents on the Reservation; the only establishments within its boundaries are commercial or institutional enterprises (Figure 3, Table 5).

The largest individual source of emissions derived from within the Reservation boundaries come from non-point sources, specifically casino related propane and diesel fuel combustion. The second largest source of emissions within the Reservation is electricity consumption. The Jamul Casino is the largest consumer of electricity and fuel out of all other buildings on the Reservation. This is most likely the case because it is open daily with a high volume of visitors.

If emissions are combined into their source category groups, stationary non-point sources contribute the most to the total emissions on the Reservation (51.5%). The second largest combined source category is electricity consumption (44.1%), followed by on-road mobile sources (2.1%), solid waste generation (1.3%), and wastewater treatment (0.9%). It is important to note that, given the lack of Reservation specific data, many of these calculations relied on county-level or national averages for various components. While these calculations serve as general estimations of emissions on the Reservation, they should be refined with acquired data for the CCAP emissions inventory.

Figure 3 – JIVoC Reservation Emissions (MTCO2e) by Source

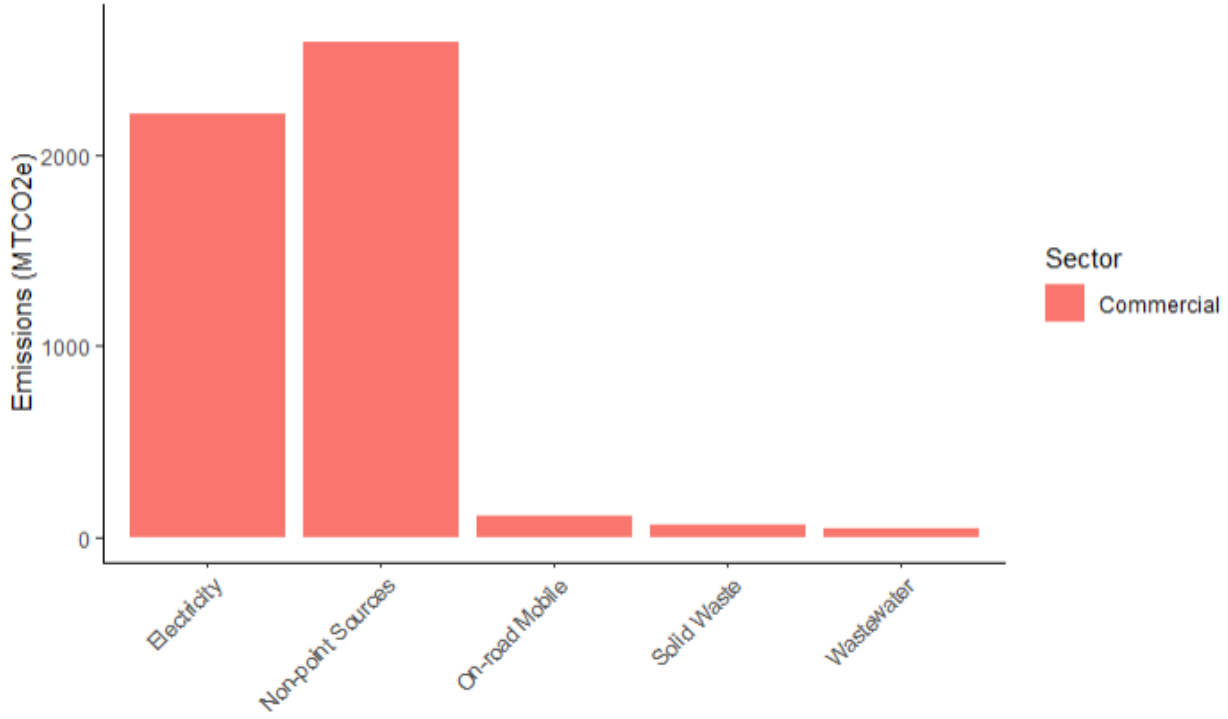


Table 5 – JIVoC Reservation Emissions Percentages by Source

Source	Emissions	Percent
Non-point Sources	2,593.2	51.5%
Electricity	2,220.4	44.1%
On-road Mobile	100.9	2.1%
Solid Waste	64.3	1.3%
Wastewater	46.9	0.9%

3.3 Viejas Band of Kumeyaay Indians

The total estimated annual GHG emissions derived from sources and activities on the Viejas Reservation in the base year 2022 is 11,276 MTCO2e. Within the Viejas Reservation, the primary sources of emissions are Stationary Non-Point Sources and Electricity, with commercial natural gas use contributing the highest emissions among all individual sources (Figure 4, Table 7). Viejas Casino & Resort stands out as a major contributor to GHG emissions due to its extensive and consistent consumption of both electrical energy and natural gas as a commercial establishment.

Table 6 – Viejas Reservation Total Emissions by Sector and Source in Metric Tons of CO2 Equivalent

Sector	Electricity	Non-point Sources	On-road Mobile	Solid Waste	Wastewater	Total
Commercial	4,023.7	4,362.7	25.0	661.7	-	9,073.1
Residential	396.7	537.6	1,126.4	138.0	4.2	2,202.9
Total	4,420.4	4,900.3	1,151.3	799.8	4.2	11,276.0

The per capita emissions for residents of Viejas Reservation are 23 MTCO2e, although this value is significantly skewed by emissions from the casino and other commercial facilities. However, when considering emissions solely within the residential sector (mobile sources, propane use, and electricity use) (Figure 5, Table 8), per capita emissions are significantly reduced to 4 MTCO2e. For comparison, the San Diego County average per capita annual emissions in 2019 was 7 MTCO2e (City of San Diego, 2020). In the CCAP emissions inventory, emissions will be further broken down by sector to calculate per capita averages with higher specificity.

The greatest source of GHG emissions on the Viejas Reservation is the commercial sector, accounting for a substantial 80.5% of the total annual emissions, or 9,073 metric tons of carbon dioxide equivalent (MTCO2e). Within the commercial sector, Viejas Casino & Resort most significantly contributes to emissions, primarily due to its continuous hours of operation and its substantial influx of visitors.

The primary sources of GHG emissions on the Reservation are stationary non-point sources, accounting for the largest portion of the total emissions at 43.5%. They are followed by *Scope 2* sources from electricity generation, representing 39.2% of emissions, on-road mobile sources at 10.2%, and finally, solid waste hauling and management at 7.1%. Due to gaps in specific Reservation-level data, many of these calculations relied on county or national averages for estimating sector emissions. While these calculations serve as general estimations of emissions on the Reservation, they should be refined with acquired data for the Comprehensive Climate Action Plan (CCAP).

Figure 4 – Viejas Reservation Emissions (MTCO2e) by Source

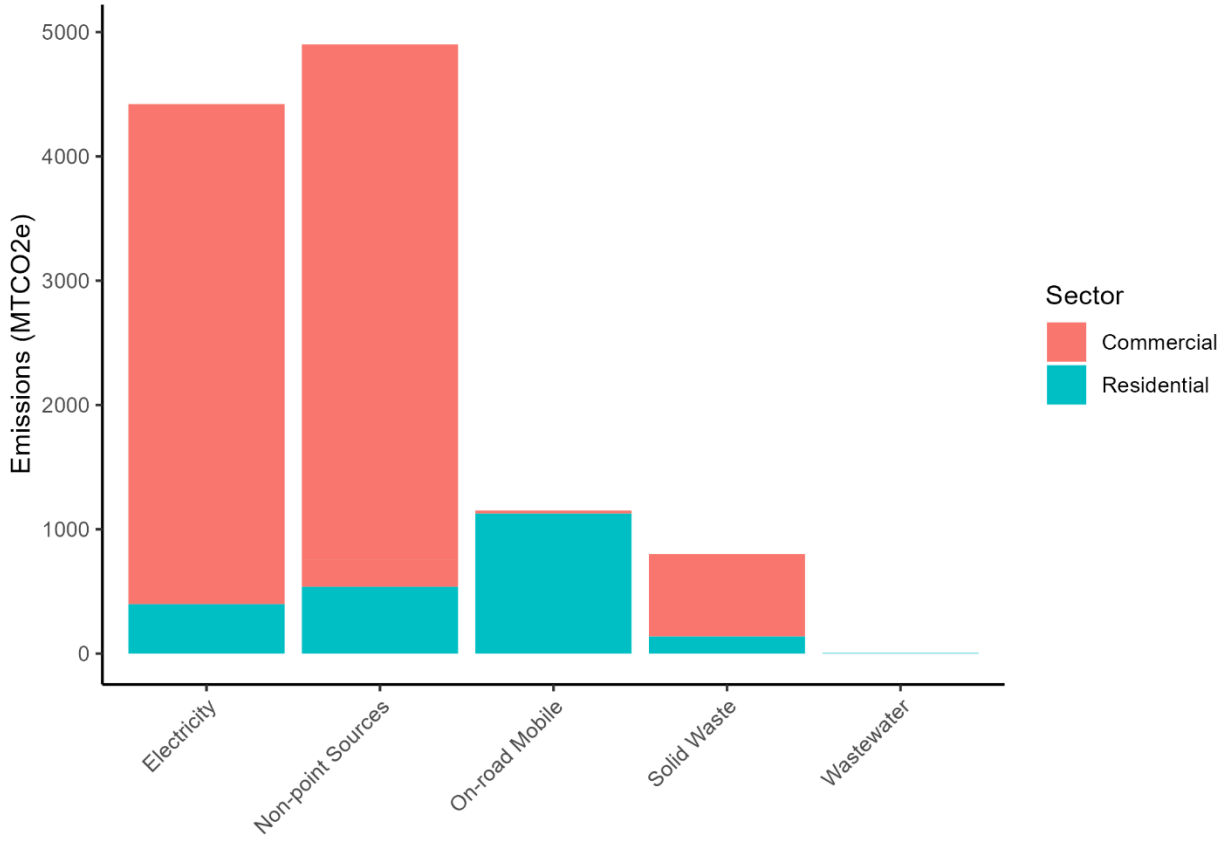


Table 7 – Viejas Reservation Emissions (MTCO2e) and Percentages by Source

Source	Emissions	Percent
Non-point Sources	4,900.3	43.5%
Electricity	4,420.4	39.2%
On-road Mobile	1,151.3	10.2%
Solid Waste	799.8	7.1%
Wastewater	4.2	0%

Figure 5 – Viejas Reservation Emissions (MTCO2e) by Sector

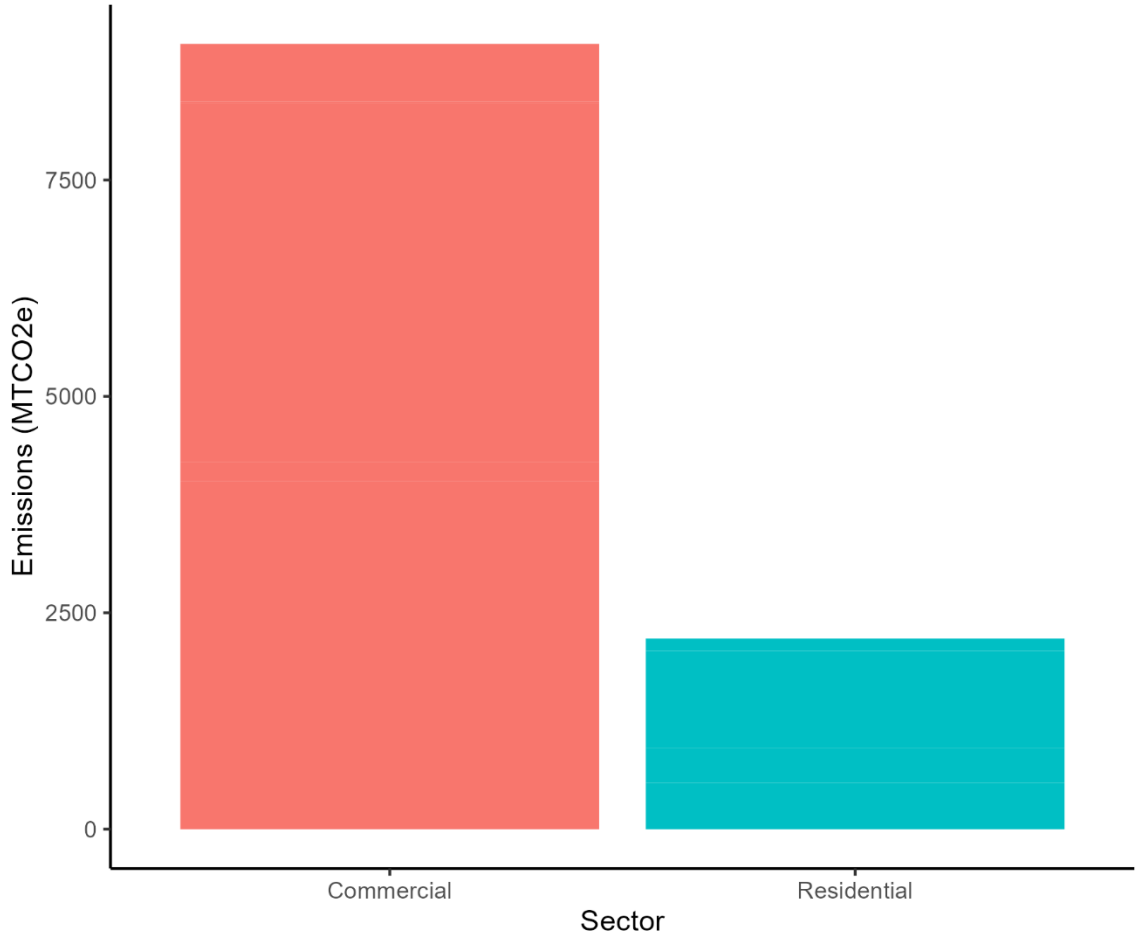


Table 8 - Viejas Reservation Emissions (MTCO2e) and Percentages by Sector

Sector	Emissions	Percent
Commercial	9,073.1	80.5%
Residential	2,198.7	19.5%

3.4 La Posta Band of Mission Indians

The total estimated annual GHG emissions derived from sources and activities on the La Posta Reservation in the base year 2022 is 311 MTCO2e (Table 9). Within the La Posta Reservation, the primary sources of emissions are Stationary Non-Point Sources and Electricity, with commercial propane use contributing the highest emissions among all sources (Figure 6, Table 10).

Table 9 – La Posta Reservation Total Emissions by Sector and Source in Metric Tons of CO2 Equivalent

Sector	Electricity	Non-point Sources	On-road Mobile	Solid Waste	Wastewater	Total
Commercial	61.9	130.0	-	-	-	191.9
Residential	26.2	34.9	41.8	4.8	11.6	119.3
Total	88.1	165.0	41.8	4.8	11.6	311.2

The per capita emissions for residents of La Posta Reservation are 7.41 MTCO2e. However, when considering emissions solely within the residential sector (mobile sources, propane use, and electricity use) (

Source	Emissions	Percent
Non-point Sources	165.0	53.0%
Electricity	88.1	28.3%
On-road Mobile	41.8	13.4%
Wastewater	11.6	3.7%
Solid Waste	4.8	1.5%

Figure 7, Table 11), per capita emissions are significantly reduced to 2.84 MTCO2e. For comparison, the San Diego County average per capita annual emissions in 2019 was 6.8 MTCO2e (City of San Diego, 2020). In the Comprehensive Climate Action Plan (CCAP) emissions inventory, emissions will be further broken down by sector to calculate per capita averages with higher specificity.

The greatest source of GHG emissions on the La Posta Reservation is the commercial sector, accounting for 61.7% of the total annual emissions, or 192 MTCO2e.

The primary sources of GHG emissions on the Reservation are stationary non-point sources, accounting for the largest portion of the total emissions at 53.0%. They are followed by *Scope 2* sources from electricity generation, representing 28.3% of emissions, on-road mobile sources at 13.4%, wastewater management at 3.7%, and finally, solid waste hauling and management at 1.5%. It is important to note that, given the lack of specific Reservation data, many of these calculations relied on county-level or national averages for various components. While these calculations serve as general estimations of emissions on the Reservation, they should be refined with acquired data for the CCAP.

Figure 6 – La Posta Reservation Emissions (MTCO2e) by Source

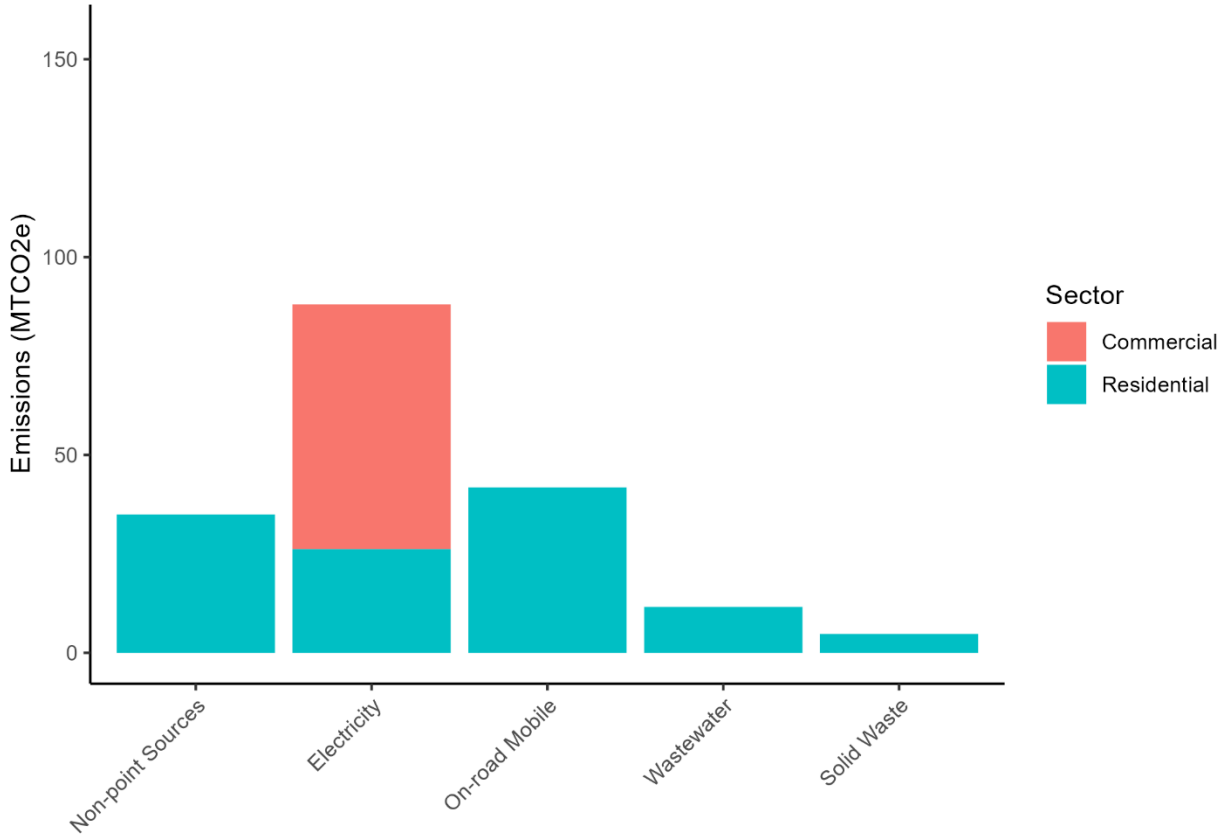


Table 10 – La Posta Reservation Emissions (MTCO2e) and Percentages by Source

Source	Emissions	Percent
Non-point Sources	165.0	53.0%
Electricity	88.1	28.3%
On-road Mobile	41.8	13.4%
Wastewater	11.6	3.7%
Solid Waste	4.8	1.5%

Figure 7 – La Posta Reservation Emissions (MTCO2e) by Sector

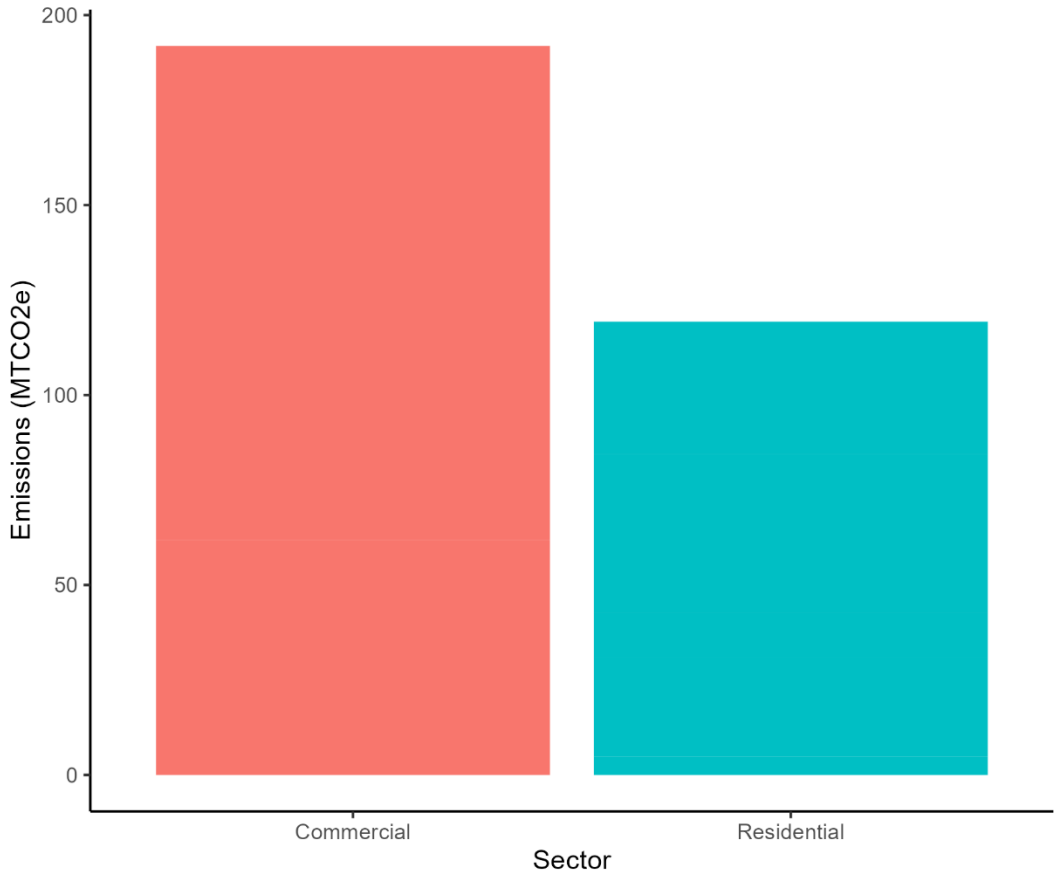


Table 11 - La Posta Reservation Emissions (MTCO2e) and Percentages by Sector

Sector	Emissions	Percent
Commercial	191.9	61.7%
Residential	119.3	38.3%

4.0 QUANTIFIED GHG REDUCTION MEASURES

This section provides information on the priority GHG emissions reduction measures identified by each Tribe along with a quantified estimate of the GHG reductions that would be achieved if implemented. The following information is provided for each reduction measure: estimate of the quantifiable GHG emissions reductions, implementing agency or agencies, implementation schedule and milestones, milestones for obtaining implementing authority as appropriate, geographic location, metrics for tracking progress, and the applicable sector. All estimates of quantifiable GHG emissions reductions are rounded to the nearest metric ton of carbon dioxide equivalent. Refer to the Appendix (Section 7.2). for an explanation of how these GHG reduction measures were quantified and the assumptions used.

GHG reduction measures were prioritized based on the alignment with projects already in progress, the benefits for the community, maximum GHG emissions reductions, and the goals of the Tribal governments. In order to choose projects to propose in this PCAP, each Tribe conducted outreach to stakeholders and residents via social media and in-person meetings. Determining the feasibility of these projects involved interdepartmental communication and collaboration, along with occasional Tribal Council and Elders meetings.

4.1 Pala Band of Mission Indians

The Pala Tribe identified four (4) priority GHG reduction measures for the PCAP (Table 12).

Table 12 – Pala Reservation Priority GHG Reduction Measures

Source	Priority Reduction Measures
Transportation	1. Tribal EV Adoption Program
Electricity	2. EV Charging Station Installation 3. Energy Audits & Retrofits
Solid Waste	4. Community Compost Program

1. Tribal Electric Vehicle (EV) Adoption Program

The Tribe proposes to develop a Tribal EV Adoption Program to encourage the Tribal community to switch to EVs. The Pala Tribe has a goal of 30% EV adoption within the Tribal community. This measure will use funding to hire support staff to incentivize the purchase of electric vehicles, perform outreach, and identify additional funding sources for the purchase of EVs. Depending on allocated funding, it may be possible to offer rebates or low interest loans for EV purchases. If 30% of residents switch to EV, it is estimated that emissions would be reduced on the Reservation by 770 MTCO2e per year. This estimate does not consider the upstream emissions associated with the production of EVs and their batteries.

Pala Priority Measure #1: Tribal EV Adoption Program	
Description	Hire dedicated support staff to guide and assist Tribal members throughout the EV purchasing process. Offer comprehensive support to community members, aiding in the access of available rebates or incentive programs to alleviate the costs of upfront EV purchases.
Estimate of the Quantifiable GHG Emissions Reductions	770 MTCO2e/year
Implementing Agency	Pala Environmental Department
Milestones For Obtaining Implementing Authority	Tribal Council Approval
Implementation Schedule and Milestones	Year 1: Program development/hiring staff Year 2: 15% EV Adoption Year 3: 30% EV Adoption
Geographical Location	Pala Reservation
Metrics for Tracking Progress	Number of EVs purchased per year Avoided GHG emissions per year
Applicable Sector	Transportation

2. EV Charging Station Installation

Expansion of EV charging infrastructure on the Pala Reservation is prioritized to meet the increasing demand and needs of its workers, residents, and visitors. The Tribe currently has 36 Level 2 chargers located at the Pala Casino Spa Resort. The proposed GHG emissions reduction measure includes the installation of ten (10) Level 3 chargers between the Pala Administrative Center and Fleet Department, as well as an additional 20 Level 2 chargers in high-use areas of the Reservation, such as at the Pala Casino Spa Resort.

The expansion of the EV charging infrastructure on the Pala Reservation aims to reduce fuel consumption and encourage the shift from gasoline and diesel-powered vehicles to EVs. With the addition of 30 EV chargers, this measure promotes the use of cleaner transportation options. In an optimal scenario where the chargers are used for 12 hours per day, this measure has the potential reduce up to 3,719 MTCO2e per year. Costs associated with this measure would include the purchase, installation, and maintenance of EV chargers. Level 3 chargers contain cooling systems and filters that level 1 and 2 do not have, and therefore require regular maintenance. The industry standard assumption for the lifespan of EV chargers is ten years.

Pala Priority Measure #2: EV Charging Station Installation	
Description	Install 20 Level 2 chargers and 10 Level 3 chargers on the Reservation in addition to existing chargers. Level 3 chargers will be deployed at the Pala Administrative Center and Fleet Department. Additional Level 2 chargers will be installed in high-use areas of the Reservation such as the Pala Casino Spa Resort.
Estimate of the Quantifiable GHG Emissions Reductions	3,719 MTCO2e/year
Implementing Agency	Pala Environmental Department
Milestones For Obtaining Implementing Authority	Tribal Council Approval
Implementation Schedule and Milestones	Year 1: Install 10 Level 3 chargers Year 2: Install 10 Level 2 chargers Year 3: Install 10 Level 2 chargers
Geographical Location	Pala Administrative Center, Pala Fleet Department, Pala Casino Spa Resort
Metrics for Tracking Progress	Number of EV charging stations installed per year EV miles charged per year
Applicable Sector	Transportation and electricity generation/consumption

3. Energy Audits & Retrofits

Energy audits and retrofits for Tribal homes and facilities are proposed to reduce the electricity and heating demands for residential, administrative, and commercial buildings. Professional energy auditors will identify which systems are running efficiently and determine the cost benefits and feasibility of implementing retrofits. Funds may be allocated to the training and certification of Tribal employees to accomplish this. Specifically, the Tribe aims to first enhance energy efficiency of the residential sector through the replacement of liquefied petroleum gas (LPG) heaters on the Reservation. The goal of this measure is to install heat pumps, electric stoves, and tankless water heaters in 50 Tribal homes to move away from LPG use. Air source heat pumps are an energy-efficient alternative to furnaces and air conditioners in all climates. They work by transferring heat between a home and the outside air (U.S. Department of Energy, 2024). This retrofit has the potential to reduce emissions by 430 MTCO2e per year. There are additional retrofits that can also be considered later, such as updating or replacing windows, checking for air leaks, and creating an outreach and marketing program to inform residents of

the opportunity to lower their energy costs. Residents will approve the identified upgrades and opt in to purchase the materials and installation.

Pala Priority Measure #3: Energy Audits & Retrofits	
Description	Conduct energy audits to identify energy-saving opportunities for Tribal homes and facilities. Retrofit 50 Tribal homes and all Tribal facilities with air-source heat pumps to increase energy efficiency.
Estimate of the Quantifiable GHG Emissions Reductions	430 MTCO2e/year
Implementing Agency	Pala Environmental Department
Milestones for Obtaining Implementing Authority	Tribal Council Approval
Implementation Schedule and Milestones	Year 1: 25 Tribal homes & 25% of facilities installed with heat pumps Year 2: 50 Tribal homes & 50% of facilities installed with heat pumps Year 3: 100% of Tribal facilities installed with heat pumps
Geographical Location	Pala commercial and residential areas
Metrics for Tracking Progress	Number of homes installed with heat pumps Average annual energy savings per home Tribal member satisfaction surveys
Applicable Sector	Electricity generation/consumption

4. Community Compost Program

A community compost program on the Pala Reservation is proposed to reduce GHG emissions by diverting organic waste from landfills to composting systems. This would reduce landfill emissions and create high-quality compost that is beneficial for local agriculture and community gardening projects. With full community participation and effective composting of organic materials, the program is expected to diminish the amount of food waste sent to landfills by up to 807 short tons per year and cut the associated GHG emissions by approximately 495 MTCO2e. Costs associated with this program will largely be staff time for designing and developing the program. Upfront cost for supplies (i.e., buckets) to distribute to participating households. Ongoing costs include staff time to coordinate pickups and transportation of food scraps and compost.

Pala Priority Measure #4: Community Compost Program	
Description	Create a collection system for picking up food and yard waste from residents and facilities. Compost produced by the program can be used by residents and the community at large. Community programs may also include education and outreach to encourage the public to engage with this initiative.
Estimate of the Quantifiable GHG Emissions Reductions	495 MT CO2e/year
Implementing Agency	Pala Environmental Department
Milestones for Obtaining Implementing Authority	Tribal Council Approval
Implementation Schedule and Milestones	Year 1: Program planning & outreach Year 2: Launch program
Geographical Location	Pala Reservation
Metrics for Tracking Progress	Estimated amount of waste diverted from landfill Number of houses participating in program
Applicable Sector	Solid waste management

4.2 Jamul Indian Village of California

Jamul Indian Village of California identified two (2) priority GHG reduction measures for the PCAP (Table 13).

Table 13 – JIVoC Priority GHG Reduction Measures

Source	Priority Reduction Measures
Electricity	1. EV Charging Station Installation 2. Jamul Casino Microgrid

1. EV Charging Station Installation

Expansion of EV charging infrastructure on the Reservation is proposed to meet the increasing demand of its visitors. The Tribe currently has eight (8) Level 2 chargers located at the Jamul Casino. This measure plans to install an additional 10 Level 2 chargers for Jamul Casino Hotel when it opens in 2025. The expansion of the EV charging infrastructure on the Reservation aims to reduce fuel consumption

and encourage the shift from gasoline and diesel-powered vehicles to EVs. With the addition of 10 EV chargers, this measure promotes the use of cleaner transportation options, while potentially reducing emissions by 232.5 MTCO2e per year. Costs associated with this measure would include the purchase and installation of EV chargers and associated infrastructure, as well as maintenance.

JIVoC Priority Measure #1: EV Charging Station Installation	
Description	Install 10 Level 2 EV charging stations for the Jamul Casino Hotel.
Estimate of the Quantifiable GHG Emissions Reductions	232.5 MT CO2e/year
Implementing Agency	JIVoC Environmental Protection Department
Milestones for Obtaining Implementing Authority	Tribal Council Approval
Implementation Schedule and Milestones	Year 1: Jamul Casino Hotel construction complete Year 2: Install 10 Level 2 chargers
Geographical Location	Jamul Casino Hotel
Metrics for Tracking Progress	Number of EVs charged by the new installations
Applicable Sector	Transportation and electricity generation/consumption

2. Jamul Casino Microgrid

The Tribe proposes to install a microgrid to serve the Jamul Casino. A solar microgrid is a localized electrical grid which uses solar energy for power. Solar panels generate electricity which is transferred to large backup batteries that can deliver stored power at a later time. This is useful because electricity from mainstream grid distributors costs more during on-peak hours, when the demand for electricity is higher. During these times, the microgrid batteries can supply necessary electricity so that there will be a larger cost savings associated with using solar energy. This is called 'peak-shaving.' Another functionality of solar microgrids is 'net-metering' which means that in the event the solar panels generate more electricity than the consumer needs, the microgrid can sell electricity back to the mainstream grid supplier. This can significantly offset electricity bills. Microgrids systems offer resilience to power outages by supplying locally generated electricity.

This microgrid would be powered by solar panels installed on the casino roof and on a 4-acre land parcel. If the casino roof and approximately 80% of the land parcel is installed with solar panels, the Tribe stands to reduce electricity related emissions by 2,485 MTCO2e per year.

JIVoC Priority Measure #2: Jamul Casino Microgrid	
Description	Deploy a microgrid to serve the Casino to ensure a reliable electricity supply and ability to maintain power during grid disruptions. Electricity will be generated by solar panels installed on the casino roof and a 4-acre parcel set aside for solar panels and associated infrastructure.
Estimate of the Quantifiable GHG Emissions Reductions	2,485 MT CO2e/year
Implementing Agency	JIVoC Environmental Protection Department
Milestones for Obtaining Implementing Authority	Tribal Council Approval
Implementation Schedule and Milestones	Year 1: Planning & purchasing of materials Year 2: Install solar panels on Casino roof Year 3: Set up 4-acre parcel with solar and connect to Casino
Geographical Location	Jamul Casino
Metrics for Tracking Progress	Number of solar panels installed on Casino roof Number of solar panels installed on parcel Annual electricity savings from using solar panels instead of the grid
Applicable Sector	Electricity generation/consumption

Additional GHG Emissions Reduction Measures

In addition to the priority GHG emission reduction measures, JIVoC has also identified three (3) additional measures that are proposed for implementation. For these additional measures, implementation timeline and scale of the activity were uncertain during development of the PCAP. As a result, GHG reduction calculations are not included. These GHG reduction measures will be further explored during the development of the CCAP.

Source	Additional GHG Reduction Measures	Description
Electricity	Solarize Tribal Homes	Fully fund solar panel installations for Tribal member homeowners to reduce electricity emissions associated with the residential sector.
Electricity	Wastewater Renewable Energy	Install solar panels on rooftops/open areas of wastewater treatment plants to generate on-site renewable electricity. Pair photovoltaic systems with energy storage solutions to store excess energy for use during peak demand. Consider the feasibility of small-scale wind turbines to harness wind energy at wastewater treatment facilities.
Carbon Removal	Green Infrastructure	Upgrade existing urban infrastructure with green features, such as permeable pavements, bioswales, and rain gardens, which enhance carbon sequestration while managing stormwater.

4.3 Viejas Band of Kumeyaay Indians

The Viejas Tribe identified four (4) priority GHG reduction measures for the PCAP (Table 14).

Table 14 – Viejas Reservation Priority GHG Reduction Measures

Source	Priority Reduction Measures
Electricity	1. Energy Audits & Retrofits 2. Solarize Tribal Homes
Waste & Materials	3. Establish Recycling Program
Transportation	4. Fleet Electrification

1. Energy Audits & Retrofits

Energy audits and retrofits for Tribal homes and facilities are proposed to reduce the electricity and heating demands for residential, administrative, and commercial buildings. Professional energy auditors will identify which systems are running efficiently and determine the cost benefits and feasibility of implementing retrofits. Funds may be allocated for the training and certification of Tribal employees to

accomplish this. Specifically, this measure plans to weatherize 200 Tribal homes by replacing standard double-pane windows with triple-pane ones. Triple-pane windows are more energy efficient than double-pane windows and improve insulation and minimize energy loss. Triple-pane windows have a thin third pane to create two air spaces instead of one, and they also have two low-emissivity coatings that reflect radiant heat (U.S. Department of Energy, 2024). This retrofit has the potential to reduce emissions by 173 MTCO2e per year. There are additional retrofits that can also be considered later, such as updating or replacing windows, checking for air leaks, and creating an outreach and marketing program to inform residents of the opportunity to lower their energy costs. Residents will approve the identified upgrades and opt in to purchase the materials and installation.

Viejas Priority Measure #1: Energy Audits & Retrofits	
Description	Conduct energy audits to identify energy-saving opportunities for Tribal homes. Retrofit 200 Tribal homes with triple pane windows to increase energy efficiency and reduce heating and cooling loss. Homes would also be set up with energy metering, so energy savings are documented.
Estimate of the Quantifiable GHG Emissions Reductions	173 MTCO2e/year
Implementing Agency	Viejas Environmental Department
Milestones for Obtaining Implementing Authority	Tribal Council Approval
Implementation Schedule and Milestones	Year 1: 25% of Tribal homes retrofitted Year 2: 50% of Tribal homes retrofitted Year 3: 75% of Tribal homes retrofitted Year 4: 100% of Tribal homes retrofitted
Geographical Location	Viejas commercial and residential areas
Metrics for Tracking Progress	Number of homes retrofitted with triple-pane windows per year Average annual energy savings per home Tribal member satisfaction surveys
Applicable Sector	Electricity generation/consumption

2. Establish Recycling Program

A Reservation-wide recycling program for Tribal homes and facilities will enhance the sustainability of waste management practices and reduce GHG emissions by diverting recyclable waste from landfills. With full community participation and effective recycling of materials, the program is expected to diminish the amount of waste sent to landfills by up to 939 short tons per year and cut the associated GHG emissions of methane by approximately 290 MTCO2e. Costs associated with this program will largely be staff time for designing and developing the program. Upfront cost for supplies (i.e., recycling receptacles) to distribute to homes and commercial areas. Ongoing costs include staff time to coordinate pickups and transportation of recycling bins to a central location.

Viejas Priority Measure #2: Establish Recycling Program	
Description	Establish a Reservation-wide comprehensive recycling program for various materials including paper, plastics, glass, and metals. Improve the proper separation and recycling of industrial waste streams. Can start with education programs over a few months and ramp up awareness over a few years. Supply recycling bins to each Tribal home.
Estimate of the Quantifiable GHG Emissions Reductions	290 MT CO2e/year
Implementing Agency	Viejas Environmental Department
Milestones for Obtaining Implementing Authority	Tribal Council Approval
Implementation Schedule and Milestones	Year 1: Program planning, development, and outreach Year 2: Roll out recycling program Year 3: Ongoing community outreach and education
Geographical Location	Viejas Reservation
Metrics for Tracking Progress	Estimated amount of waste diverted from landfills per year
Applicable Sector	Solid Waste Management

3. Solarize Tribal Homes & Implement Net Metering Policy

This measure aims to provide fully funded installations of solar panel systems with net metering capabilities for 200 homes on the Reservation. Net metering allows homeowners to sell surplus electricity generated by solar panels back to the grid electricity provider, in this case, San Diego Gas and Electric. Net metering not only conserves energy, but also significantly offsets the homeowner's energy costs. Given current energy demand, it is estimated that each home would have to install 201 square feet, or approximately 12 solar panels (17.5 sq ft each), to offset all electricity emissions from the residential sector. This equates to a reduction of 397 MTCO2e per year, the same amount estimated to be emitted annually. Depending on the specifics of each solar installation, installing more than 12 solar panels per home could potentially generate excess electricity homeowners could sell back to the grid.

Viejas Priority Measure #3: Solarize Tribal Homes & Implement Net Metering Policy	
Description	Offer fully funded solar panel installation for community members. Goal is to set up 200 homes on the Reservation with solar and net metering ability to allow homeowners to receive credit for excess electricity generated and fed back to the grid.
Estimate of the Quantifiable GHG Emissions Reductions	397 MT CO2e/year
Implementing Agency	Viejas Environmental Department
Milestones for Obtaining Implementing Authority	Tribal Council Approval
Implementation Schedule and Milestones	Year 1: 25% of Tribal homes solarized Year 2: 50% of Tribal homes solarized Year 3: 75% of Tribal homes solarized Year 4: 100% of Tribal homes solarized
Geographical Location	Viejas Reservation
Metrics for Tracking Progress	Number of homes installed with solar panels per year Avoided GHG emissions per year Profits made from selling energy back to the grid
Applicable Sector	Electricity Generation & Consumption

4. Tribal Fleet Electrification

This measure aims to replace 20 light-duty trucks in the Tribal fleet with EVs. The Tribal fleet is currently made up of 25 light-duty trucks. By switching 20 of these vehicles to electric, it is anticipated that GHG emissions will be reduced by 20 MTCO2e. This estimate does not consider the upstream emissions associated with the production of EVs and their batteries.

Viejas Priority Measure #4: Fleet Electrification	
Description	Replace 20 light-duty trucks with EVs for the Tribal fleet.
Estimate of the Quantifiable GHG Emissions Reductions	20 MT CO2e/year
Implementing Agency	Viejas Environmental Department
Milestones for Obtaining Implementing Authority	Tribal Council Approval
Implementation Schedule and Milestones	Year 1: Purchase 20 EVs to replace gas-powered trucks
Geographical Location	Viejas Reservation
Metrics for Tracking Progress	GHG emissions saved from electrifying fleet per year
Applicable Sector	Transportation, Electricity Generation & Consumption

Additional Priority Measures

In addition to the priority GHG emission reduction measures, the Viejas Tribe has also identified three (3) additional measures that are proposed for implementation. For these additional measures, the implementation timeline and scale of the activity were uncertain during development of the PCAP. As a result, GHG reduction calculations are not included. These GHG reduction measures will be further explored during the development of the CCAP.

Source	Non-Priority Reduction Measures	Description
Electricity	EV Charging Station Installation	Install EV Charging stations in high-use areas of the Reservation, such as the Viejas Casino.
	Renewable Heating and Cooling (RHC) Systems	Install renewable heating systems, such as ground-source heat pumps, air-source heat pumps, and solar thermal systems, for residential and commercial buildings.
	Combined Heat and Power (CHP) Systems	Install CHP systems in Tribal facilities to increase energy efficiency by simultaneously generating electricity and useful heat from a single source. During conventional power generation, heat is lost. By capturing and using heat that would otherwise be wasted, CHP can achieve 80% efficiency while typical technology only achieves around 50%.

4.4 La Posta Band of Mission Indians

The La Posta Tribe identified two (2) priority GHG reduction measures for the PCAP (Table 15).

Table 15 – La Posta Reservation Priority GHG Reduction Measures

Source	Priority Reduction Measures
Carbon Removal	1. Implement Erosion Controls for Wetland Restoration 2. Acquire Land for Restoration & Revegetation
Electricity	3. Solarize Tribal Homes & Facilities

1. Implement Erosion Controls for Wetland Restoration

La Posta is proposing to retore wetlands and enhance carbon sequestration to offset its GHG emissions. Due to a culvert that increases the flow of water from interstate highway 8, 7.41 acres of riparian creek habitat on the Reservation is being degraded from sedimentation. Erosion controls are needed to inhibit sediment from discharging into the wetland. Restoring the wetland will require planning, erosion mitigation, construction, and revegetation activities. The site assessment will be conducted by environmental professionals, who will identify potential methods for mitigating this habitat destruction. Methods to reduce flow such as the installation of riprap underneath the outlet of the culvert may be pursued. Additional restoration techniques such as invasive species removal and native species planting will also be employed when funding allows. If this area is restored to its fullest potential, it will sequester an estimated 9.6 MTCO2e per year, decreasing La Posta Reservation's net GHG emissions.

La Posta Priority Measure #1: Implement Erosion Controls & Wetland Restoration	
Description	Implement erosion controls necessary to facilitate wetland restoration of surrounding area. Develop a project/program to restore and protect degraded wetland ecosystems, which are highly effective at sequestering carbon. Restoration may include removing invasive plants and planting natives, targeting areas particularly prone to erosion and desertification. Target native plant vegetation on degraded lands to prevent further soil erosion and enhance carbon storage.
Estimate of the quantifiable GHG emissions reductions	9.6 MT CO2e/year
Implementing agency	La Posta Environmental Department
Milestones for obtaining implementing authority	Tribal Council Approval
Implementation schedule and milestones	Year 1: Develop planning document for restoration of project area Year 2: Begin implementing restoration measures in the project area Year 3+: Ongoing maintenance & restoration activities
Geographical location	La Posta Reservation
Metrics for tracking progress	Flow rate and sedimentation monitoring Native Species health and abundance
Applicable sector	Carbon Removal

2. Land Acquisition for Restoration & Revegetation

A 120-acre parcel has been identified by the Tribe for acquisition, in order to restore the area and utilize it as a preserve. Restoration activities would include planning, identification and removal of invasive species, and planting of native vegetation. Funding would be allocated toward employing a team of individuals responsible for assessing habitat quality on the parcel and establishing a restoration plan to improve the ecosystem benefits. If this parcel is fully restored to the greatest extent possible, it has the potential to sequester 156 MTCO2e per year, reducing La Posta Reservation's net GHG emissions.

La Posta Priority Measure #2: Land Acquisition for Restoration & Revegetation	
Description	Evaluate the ecological status of land parcel. Set clear restoration goals and objectives. Develop comprehensive restoration plan. Clear invasive species. Identify appropriate native vegetation for the site. Monitor and evaluate progress with a focus on keystone species.
Estimate of the quantifiable GHG emissions reductions	156 MT CO2e/year
Implementing agency	La Posta Environmental Department
Milestones for obtaining implementing authority	Tribal Council Approval
Implementation schedule and milestones	Year 1: Develop planning document for restoration of project area Year 2: Begin implementing restoration measures in the project area Year 3+: Ongoing maintenance & restoration activities
Metrics for tracking progress	Area of land restored per year Estimated carbon sequestered by area Keystone species health and presence within the parcel
Applicable sector	Carbon Removal

3. Solarize Tribal Homes & Facilities

This measure aims to provide fully funded installations of solar panels for 13 homes and select Tribal facilities on the Reservation. Given current energy demand, it is estimated that each home would have to install 201 square feet, or approximately 12 solar panels (17.5 sq ft each), to offset all electricity emissions from the residential sector. This equates to a reduction of 26 MTCO2e per year, approximately the same amount estimated to be emitted annually. Tribal facilities would have to install a total of 6,276 square feet, or 359 solar panels, to offset all electricity emissions from the commercial sector, which equates to a reduction of 62 MTCO2e per year. Depending on the specifics of each solar installation, installing solar panels on a larger area than mentioned above could potentially generate excess electricity homeowners could sell back to the grid. In total, the Tribe would reduce an estimate 88 MTCO2e per year if Tribal homes and facilities were solarized.

La Posta Priority Measure #3: Solarize Tribal Homes & Facilities	
Description	Transition residence and community buildings to solar power to reduce use of generator during Public Safety Power Shut Offs (PSPS). The goal is to provide solar installations to all 13 of the Tribal homes on the Reservation as well as the following facilities: Tribal Administration Office, Boys and Girls Club, Old Casino, and Addiction Treatment Center.
Estimate of the quantifiable GHG emissions reductions	88 MT CO2e/year
Implementing agency	La Posta Environmental Department
Milestones for obtaining implementing authority	Tribal Council Approval
Implementation schedule and milestones	Year 1: Install solar panels on all 13 Tribal homes Years 2-3: Install solar panels on Tribal facilities
Geographical location	La Posta Reservation
Metrics for tracking progress	Energy savings from solar panels Profits made from selling energy back to the grid if any
Applicable sector	Electricity Generation & Consumption

Additional Priority Measures

In addition to the priority GHG emission reduction measures, the La Posta Tribe has also identified four (4) additional measures that are proposed for implementation. For these additional measures, the implementation timeline and scale of the activity were uncertain during development of the PCAP. As a result, GHG reduction calculations are not included. These GHG reduction measures will be further explored during the development of the CCAP.

Source	Non-Priority Reduction Measures	Description
Electricity	Energy Audits & Retrofits	Conduct energy audits to identify energy-saving opportunities for Tribal homes and community buildings. Offer incentives, low interest loans, or fully fund energy-efficient retrofits (i.e., replacing appliances with Energy Star-rated ones).
Waste & Materials	Community Compost Enhancement Project	Improve the current community compost program on the Reservation. Possibly create a collection system for picking up food and yard waste from residents and facilities. Compost produced by the program can be used by residents and the community at large. Community programs may also include education and outreach to encourage the public to engage with this initiative.
Carbon Removal	Green Infrastructure	Upgrade existing urban infrastructure with green features, such as permeable pavements, bioswales, and rain gardens, which enhance carbon sequestration while managing stormwater. Not only do these added features sequester carbon themselves, but also protect wetlands from stormwater.
	Establish Buffer Zones to Protect Critical Habitat	Establish buffer zones around sensitive wild areas or wetlands to protect them from encroachment and limit disturbances that reduce carbon stocks.

5.0 BENEFITS ANALYSIS

For the CPRG PCAP, the EPA mandates a general benefits analysis, as well as a benefits analysis specifically for disadvantaged communities. Because Native American Reservations are already classified as disadvantaged communities, this PCAP has one overarching benefits analysis. This approach follows EPA guidelines and allows Tribes to integrate considerations for all community members uniformly within their overall climate action strategies.

The benefits analysis will be split into sections for the four SDTC members. For each of these subsequent benefits analyses, there is a base year (2020) co-pollutant inventory, and a description of both the co-pollutant related benefits and other community benefits for each quantified GHG reduction measure proposed. Co-pollutants that are included in this analysis may be criteria air pollutants (CAPs), which are emphasized, or hazardous air pollutants (HAPs).

At the time this inventory was created, there was no Reservation-specific co-pollutant data available for this analysis. The EPA NEI was utilized in order to meet PCAP requirements for this section. In order to provide base year co-pollutant emissions estimates, the San Diego County co-pollutant data from the NEI was programmatically scaled down to the population of each SDTC Tribe.

Description of Prevalent Co-pollutants

The co-pollutants that are prevalent in the 2020 San Diego County NEI data include volatile organic compounds (VOCs), carbon monoxide (CO), particulate matter (PM10 and PM2.5), methanol, ammonia, nitrogen oxides (NOx), formaldehyde, toluene, and xylenes.

Volatile Organic Compounds (VOCs)

VOCs include a variety of compounds frequently found in petroleum fuels, hydraulic fluids, paint thinners, and dry-cleaning agents. Some VOCs have short term health effects such as eye nose and throat irritation as well as long term health effects such as exacerbation of asthma and other respiratory conditions (EPA, 2023).

Carbon Monoxide (CO)

Carbon monoxide is a product of incomplete oxidation of carbon in combustion. Sources of carbon monoxide include gas stoves and furnaces, generators and other gasoline-powered equipment, automotive exhaust, and tobacco smoke (EPA, 2023).

Particulate Matter (PM)

Particulate matter includes both solid particles and liquid droplets that are small enough to be inhaled, which can cause serious adverse health effects. PM2.5 particles are smaller than 2.5 micrometers in diameter, while PM10 particles are smaller than 10 micrometers in diameter (EPA, 2023). PM can penetrate into the lungs and bloodstream, leading to respiratory and cardiovascular problems which may cause premature death.

Methanol

Methanol is primarily used as an industrial solvent for inks, resins, adhesives, and dyes, as well as for chemical manufacturing. Exposure to airborne methanol may occur due to inhalation of evaporative gases from solvent use or vehicle exhaust. Airborne methanol exposure may cause immediate health effects such as visual disturbances and neurological damage, as well as long term health conditions such as cancer and reproductive or developmental effects (EPA, 2000).

Ammonia

Airborne ammonia is a toxicant derived from vehicle exhaust, decomposition of waste, and fertilizer application. The inhalation of ammonia may cause irritation of the eyes, nose, and throat, as well as increase susceptibility to respiratory infections (EPA, 1995).

Nitrous Oxides (NOx)

Nitrogen oxides (NOx) are a family of poisonous gases emitted via the combustion of fossil fuels. NOx plays a major role in the atmospheric reactions with VOCs that produce ozone, or smog. The inhalation of NO_2 can cause respiratory irritation, as well as contribute to the development of asthma and increase susceptibility to respiratory infections (EPA, 2023).

Formaldehyde

Formaldehyde is a byproduct of combustion and is also found in fuel burning appliances, fertilizers and pesticides, adhesives, composite wood products, building materials such as insulation, and cosmetics. Exposure to formaldehyde typically occurs via inhalation, which may cause irritation of the eyes, nose, and throat, as well as some forms of cancer (EPA, 2023).

Toluene

Toluene is a typically used in a solvent that is added to gasoline. For this reason, vehicle emissions are the primary sources of airborne toluene. The toxicant is also added to many common household adhesives, paints, coatings, and inks. The central nervous system is primarily affected by both acute and long-term toluene exposures. Acute exposure may cause fatigue, headaches, and nausea, while chronic exposure causes respiratory irritation, central nervous system dysfunction, developmental effects, and more (EPA, 2012).

Xylene (mixed isomers)

Xylene is usually found as a mixture of three isomers: m-xylene, o-xylene, and p-xylene. Airborne xylenes are released into the atmosphere as fugitive emissions from industrial sources, vehicles exhaust, and through volatilization from solvent use. Acute exposure to xylene results in irritation of eyes, nose and throat, gastrointestinal effects, and neurological effects. Chronic exposure results in central nervous system effects, respiratory effects, cardiovascular effects, and kidney effects (EPA, 2000)

5.1 Pala Band of Mission Indians

Co-Pollutant Inventory

The highest co-pollutant emissions from the Pala Tribe are from carbon monoxide, at an estimated 68.67 tons. This was followed by other criteria air pollutants such as VOCs, PM10, nitrogen oxides, PM2.5, and ammonia (Table 16).

Table 16 – Pala Top 10 Co-Pollutant Emissions Per Year (EPA, 2024)

Pollutant	Pollutant Type	Emissions (tons)
Carbon Monoxide	CAP	68.67
Volatile Organic Compounds	CAP	27.65
PM10 Primary (Filt + Cond)	CAP	14.78
Nitrogen Oxides	CAP	7.79
PM2.5 Primary (Filt + Cond)	CAP	4.45
Ammonia	CAP	2.22
Methanol	HAP	1.03
Toluene	HAP	0.55
Formaldehyde	HAP	0.53
Xylenes (Mixed Isomers)	HAP	0.43

Co-Benefits of Priority Emissions Reduction Measures

1. Tribal EV Adoption Program

Co-pollutant Benefits

The Tribal EV Adoption Program aims to encourage the community to switch to EVs by facilitating purchases of EVs and providing support for receiving rebates and discounts. The switch to EVs would greatly benefit the Tribe by reducing CAPs emitted into the atmosphere from fossil fuel use. Fossil fuel vehicles produce carbon monoxide and nitrogen oxides as products of the combustion process. They also release fine particles (PM2.5 & 10) through exhaust emissions and from agitating road dust. VOCs are also released into the atmosphere from the evaporation of gasoline and diesel fuel. Since EVs do not run on fossil fuels, they have no direct tailpipe emissions. This measure would greatly reduce the prevalence of these CAPs on the Pala Reservation.

Additional Benefits

The overall reduction in air pollution from EVs will help improve air quality on the Reservation. Improved air quality would benefit the Tribal community and vulnerable groups such as children and the elderly.

Exposure to PM2.5 has been linked to premature death, particularly in people who have chronic heart or lung diseases, and reduced lung function growth in children. PM10 is more likely to deposit on the surfaces of the larger airways of the upper region of the lung. Short-term exposures to PM10 have been associated primarily with worsening of respiratory diseases, including asthma and chronic obstructive pulmonary disease (COPD), leading to increased hospitalization.

Economic benefits from EV adoption include fuel cost savings for Tribal members. The Tribal is also looking to provide free EV charging on the Reservation for Tribal members, further incentivizing the adoption of EV's on the Reservation. Resiliency to price fluctuation due to gasoline shortages and embargoes would be strengthened with the incorporation of EV's, particularly with expansion of solarization and microgrid systems on the Reservation.

2. EV Charging Station Installation

Co-pollutant Benefits

Co-pollutant benefits from the installation of EV charging stations are very similar to the benefits acquired from switching to EVs. By providing charging infrastructure and thereby promoting the use of EVs, emissions of carbon monoxide, particulate matter, and nitrogen oxides would be reduced. VOCs have the potential to be reduced even more from this measure, as gasoline and diesel fuel storage contribute to VOC emissions. As EV adoption ramps up and more charging infrastructure is installed, it follows that VOC emissions from gas stations and gas-filling activities would also be reduced.

Additional Benefits

Expanding EV charging infrastructure would lead to improved air quality and community health on the Reservation (see discussion on Tribal EV Adaption). The proposed emissions reduction measure involves the installation of ten (10) Level 3 chargers between the Pala Administrative Center and Fleet Department, as well as an additional 20 Level 2 chargers in high-use areas of the Reservation, such as at the Pala Casino Spa Resort. If charging stations are discounted or free for Tribal employees, these would benefit the Tribal workforce that use EV's and can help with employee retention by subsidizing transportation costs. Additional charging stations at the Pala Casino Spa Resort can help encourage visitation and stay duration at Tribal enterprises.

3. Energy Audits & Retrofits

Co-pollutant Benefits

This measure aims to retrofit Tribal homes with air-source heat pump technology instead of using liquefied petroleum gas (LPG) for heating. LPG combustion releases carbon monoxide, nitrogen oxides, and formaldehyde into the atmosphere. Switching to air-source heat pumps would eliminate all CAP and formaldehyde emissions because contrary to LPG heating, heat pumps operate by transferring heat rather than burning fuel.

Additional Benefits

This program has the potential to decrease health risks during extreme weather events and climate disasters by keeping homes cool and well insulated. Members will benefit from better indoor air quality during wildfires or other high pollution events with the installation of robust air filters, which reduce health risks associated with air pollution. Additionally, replacing old appliances and installing energy efficient models can have the added benefit of saving Tribal members money by reducing monthly utility bills. These upgrades have the potential to increase property value. Based on Tribal member's occupations, this program also has the potential to increase job opportunities as labor will be needed to retrofit Tribal homes. Air-source heat pumps are an energy efficient alternative to traditional heating that would provide improved indoor air quality and a healthier living environment for Tribal members. This would be particularly beneficial for sensitive groups such as children, elderly people, and those with pre-existing health conditions. Aside from the health benefits, heat pumps have lower operating costs due to low maintenance requirements and a longer lifespan. Although upfront costs are greater, the benefits over time outweigh those from traditional heating.

4. Community Compost Program

Co-pollutant Benefits

Implementing a community compost program offers substantial benefits in terms of reducing co-pollutants on the Reservation. By diverting organic waste from landfills to composting facilities, this measure significantly decreases the volume of waste that undergoes anaerobic decomposition, a process responsible for generating methane, a potent GHG, and various co-pollutants. Composting organic material not only reduces emissions of methane but also mitigates the production of VOCs and ammonia. Additionally, the process helps in minimizing the reliance on chemical fertilizers, the production and use of which are associated with emissions of nitrogen oxides. The addition of compost to local soil ecosystems adds valuable bacteria, fungi, and microorganisms, producing what is known as 'living soil.' Living soil sequesters carbon as opposed to 'dead soil,' which releases carbon and particulate matter into the atmosphere throughout the process of desertification. Through these mechanisms, a community compost program would act to reduce co-pollutants, improving air quality and public health within the Reservation.

Additional Benefits

Implementing a community compost program brings several key benefits to the general community, such as fostering environmental sustainability and enhancing public health. Through composting, organic waste is transformed into a nutrient-rich soil additive, beneficial for plant growth and resulting in more productive gardens and green spaces. Such improvements in local greenery can bolster local food production and encourage community gardening projects. The addition of compost creates a healthy soil ecosystem, which reduces erosion, pests, and runoff into local waterways. Additionally, the compost program may serve as an educational tool, raising awareness about sustainable waste management practices among Tribal members. Overall, a community compost program not only

contributes to waste reduction but also supports local ecosystems, enriches soil quality, and promotes a culture of environmental stewardship within the community.

5.2 Jamul Indian Village of California

Co-Pollutant Inventory

The highest co-pollutant emissions from the Reservation are from carbon monoxide, at an estimated 3.5 tons. This was followed by other criteria air pollutants such as VOCs, PM10, nitrogen oxides, PM2.5, and ammonia (Table 17).

Table 17 – JIVoC Top 10 Co-Pollutant Emissions Per Year (EPA, 2024)

Pollutant	Pollutant Type	Emissions (tons)
Carbon Monoxide	CAP	3.50
Volatile Organic Compounds	CAP	1.41
PM10 Primary (Filt + Cond)	CAP	0.75
Nitrogen Oxides	CAP	0.40
PM2.5 Primary (Filt + Cond)	CAP	0.23
Ammonia	CAP	0.11
Methanol	HAP	0.05
Toluene	HAP	0.03
Formaldehyde	HAP	0.03
Xylenes (Mixed Isomers)	HAP	0.02

Co-Benefits of Priority Emissions Reduction Measures

1. EV Charging Station Installation

Co-pollutant Benefits

By providing charging infrastructure and thereby promoting the use of EVs, emissions of carbon monoxide, particulate matter, and nitrogen oxides would be reduced. VOCs have the potential to be reduced even more from this measure, as gasoline and diesel fuel storage contribute to VOC emissions. As EV adoption ramps up and more charging infrastructure is installed, it follows that VOC emissions from gas stations and gas-filling activities would also be reduced.

Additional Benefits

Expanding EV charging infrastructure would lead to reduced air pollution on the Reservation, improving air quality. This would benefit the community at large, particularly more vulnerable groups such as

children and elderly people. Tribal members would also save money on fuel because electricity is generally cheaper than gasoline and use of the charging stations could be offered free of charge or at a discounted rate for Tribal members.

2. Jamul Casino Microgrid

Co-pollutant Benefits

Grid electricity relies on power generation from a variety of different sources, including ones that utilize the combustion of fossil fuel to generate power. The combustion of fossil fuels is known to cause emissions of carbon monoxide, nitrogen oxides, VOCs, particulate matter, and sulfur dioxide. Although these emissions typically are scope 2 emissions occurring upstream of the site where the electricity is used, the electricity used still causes these emissions to occur elsewhere. Solar power does not involve the combustion of fossil fuels, and therefore implementing a solar powered microgrid completely eliminates emissions of the aforementioned pollutants.

Additional Benefits

There are many general community benefits to implementing solar powered microgrid projects. The peak saving ability of the grid will allow large batteries to store electricity during off-peak hours to be provided later, during peak hours. Because electricity costs more during peak hours, this will be a significant cost savings for Tribal members. The labor required to install and maintenance a local microgrid system may be sourced directly from tribal members or partners, producing additional economic benefits for the Tribe. Additionally, using locally generated electricity will reduce the community's dependence on outside energy sources. In the event of an emergency or power outage, the facilities can rely on energy stored by the microgrid batteries, increasing climate resilience.

5.3 Viejas Band of Kumeyaay Indians

Co-Pollutant Inventory

The highest co-pollutant emissions from the Viejas Tribe are from carbon monoxide, at an estimated 23.04 tons. This was followed by other criteria air pollutants such as VOCs, PM10, nitrogen oxides, PM2.5, and ammonia (Table 18).

Table 18 – Viejas Top 10 Co-Pollutant Emissions Per Year (EPA, 2024)

Pollutant	Pollutant Type	Emissions (tons)
Carbon Monoxide	CAP	23.04
Volatile Organic Compounds	CAP	9.28
PM10 Primary (Filt + Cond)	CAP	4.96
Nitrogen Oxides	CAP	2.61
PM2.5 Primary (Filt + Cond)	CAP	1.50

Ammonia	CAP	0.74
Methanol	HAP	0.35
Toluene	HAP	0.18
Formaldehyde	HAP	0.18
Xylenes (Mixed Isomers)	HAP	0.14

Co-Benefits of Priority Emissions Reduction Measures

1. Energy Audits & Retrofits

Co-pollutant Benefits

This measure plans to weatherize 200 Tribal homes by replacing standard double pane windows with energy efficient triple pane windows to improve insulation and minimize energy loss. With better insulation, residents would use less energy towards heating and cooling the home. This would reduce emissions related to *scope 2* emissions from fossil-fuel combustion for electric power, such as carbon monoxide, nitrogen oxides, VOCs, particulate matter, and sulfur dioxide. Additionally, the reduction in propane furnace use due to better insulation would greatly reduce indoor criteria air pollutant pollution and improve ambient indoor air quality.

Additional Benefits

Triple-pane windows provide a variety of benefits such as enhanced energy efficiency, increased comfort for homeowners, and reduced electricity and propane bills as a result of using less energy. In addition to the economic benefits to Tribal members, improved indoor air quality will reduce the risk of exacerbating respiratory and cardiovascular illnesses due to indoor criteria air pollutant emissions. The labor required to conduct home energy audits and install retrofits may be sourced from directly within the community, increasing economic and workforce resilience. In addition, home weatherization may increase climate resilience by better protecting homes from severe climate related weather events such as heat waves, extreme winter weather, high winds, and wildfire smoke.

2. Solarize Tribal Homes

Co-pollutant Benefits

Grid electricity relies on power generation from a variety of different sources, including ones that utilize the combustion of fossil fuel to generate power. The combustion of fossil fuels is known to cause emissions of carbon monoxide, nitrogen oxides, VOCs, particulate matter, and sulfur dioxide. Although these emissions typically are scope 2 emissions occurring upstream of the site where the electricity is used, the electricity used still causes these emissions to occur elsewhere. Solar power does not involve the combustion of fossil fuels, and therefore solarizing Tribal homes would eliminate emissions of the aforementioned pollutants.

Additional Benefits

Installing solar panels on Tribal homes offers many advantages, including financial savings, environmental benefits, and increased energy independence. Tribal homeowners could significantly reduce their electricity bills, with the potential of selling excess electricity back to grid through net metering. Having a renewable solar system supplying electricity also increases resilience during power outages and allows residences to be more energy independent. The labor required to assess project feasibility and install solar panels may also be sourced directly from Tribal members, increasing workforce stability and economic resilience.

3. Establish a Recycling Program

Co-pollutant Benefits

Implementing a recycling program offers substantial benefits in terms of reducing co-pollutants on the Reservation. By diverting recyclable waste from landfills to recycling facilities, this measure significantly decreases the volume of waste that undergoes anaerobic decomposition, a process responsible for generating methane, a potent GHG, and various co-pollutants. Recycling also reduces the use of raw materials, and the process of recycling generates less emissions than is generated from using raw materials. Through avoided landfill waste, this program would act to reduce co-pollutants, improving air quality and public health within the Reservation.

Additional Benefits

A recycling program delivers a wide range of benefits, including resource conservation, energy savings, waste reduction, economic growth, and community engagement. This program would benefit the Tribe by promoting sustainable practices, reducing pollution emitted from landfills, and opening opportunities for community engagement and education. Recycling also reduces the use of raw materials, and the process of recycling generates less upstream pollution than is generated from using raw materials. This measure would primarily focus on educational campaigns, which would enhance community engagement and increase awareness of general sustainability practices.

4. Fleet Electrification

Co-pollutant Benefits

This reduction measure targets older and less fuel-efficient vehicles for replacement with EVs. The switch to EVs would greatly benefit the Tribe by reducing CAPs emitted into the atmosphere from fossil fuel use. Fossil fuel vehicles produce carbon monoxide and nitrogen oxides as products of the combustion process. They also release fine particles (PM2.5 & 10) through exhaust emissions and from agitating road dust. VOCs are also released into the atmosphere from the evaporation of gasoline and diesel fuel. Since EVs do not run on fossil fuels, they have no direct tailpipe emissions. This measure would greatly reduce the prevalence of these CAPs on the Reservation.

Additional Benefits

The overall reduction in air pollution from the shift to EV use will help improve air quality on the Reservation, which would benefit the community at large, particularly more vulnerable groups such as children and elderly people. The cost of fuel for the Tribal fleet would also be reduced, as electricity is generally cheaper than gasoline and EV charging would likely be free of charge for Tribal fleet vehicles. In the event of an emergency or power outage, EVs may be utilized to provide backup power for essential services such as medical equipment, thus enhancing climate resilience.

5.4 La Posta Band of Mission Indians

Co-Pollutant Inventory

The highest co-pollutant emissions from the La Posta Tribe are from carbon monoxide, at an estimated 1.94 tons. This was followed by other criteria air pollutants such as VOCs, PM10, nitrogen oxides, PM2.5, and ammonia (Table 19).

Table 19 – La Posta Top 10 Co-Pollutant Emissions Per Year (EPA, 2024)

Pollutant	Pollutant Type	Emissions (tons)
Carbon Monoxide	CAP	1.94
Volatile Organic Compounds	CAP	0.78
PM10 Primary (Filt + Cond)	CAP	0.42
Nitrogen Oxides	CAP	0.22
PM2.5 Primary (Filt + Cond)	CAP	0.13
Ammonia	CAP	0.06
Methanol	HAP	0.03
Toluene	HAP	0.02
Formaldehyde	HAP	0.02
Xylenes (Mixed Isomers)	HAP	0.01

Co-Benefits of Priority Emissions Reduction Measures

1. Implement Erosion Controls for Wetland Restoration

Co-pollutant Benefits

Wetlands play a large role in carbon sequestration, capturing and storing carbon dioxide from the atmosphere. Wetlands reduce nitrogen oxide and ammonia pollution, as microbial activity in the soils goes through the process of denitrification. Particulate matter emissions could also be reduced by wetlands as they help to trap and filter particulate matter from the air and water. Vegetation structure

could also act as a natural barrier, reducing the concentration of PM2.5 and PM10 in the surrounding air and water.

Additional Benefits

Wetland restoration has many ecological and societal benefits. Wetlands are among the most biologically diverse ecosystems, providing critical habitat for a variety of plant and animal species. Wetlands act as natural filters and enhance water quality by trapping and removing pollutants from water. Furthermore, vegetation and root systems in wetlands stabilize soils and prevent erosion, which also provides benefits for flood control and stormwater management. Wetlands may also have cultural value to the Tribe and restoring them helps to preserve cultural heritage and traditional knowledge. Overall, wetlands enhance ecosystem services and strengthen climate resilience which can highly benefit the Tribal community.

2. Acquire Land for Restoration & Revegetation

Co-pollutant Benefits

Increasing vegetation and ecological diversity of unproductive or previously developed land greatly increases its ability to sequester carbon and filter criteria air pollutants. Enhancing root systems underground will increase moisture retention, reducing PM emissions from windy days. Vegetation also acts as a natural air filter, limiting the concentration of VOCs, nitrogen oxides, and sulfur dioxide. Revegetation also improves soil health, limiting the breakdown of organic material underground, which leads to lower emissions of criteria air pollutants.

Additional Benefits

Ecological restoration has many environmental and societal benefits. The program will focus on re-establishing species that are culturally and historically valuable to the La Posta Tribe. The labor required to implement this project may lead to volunteering or employment opportunities for tribal residents and community members. This will create increased workforce development and many valuable educational opportunities. This open-space area may also offer recreational activities such as hiking, biking, and birdwatching, which will positively impact the physical and mental health of community members.

3. Solarize Tribal Homes & Facilities

Co-pollutant Benefits

Grid electricity relies on power generation from a variety of different sources, including ones that utilize the combustion of fossil fuel to generate power. The combustion of fossil fuels is known to cause emissions of carbon monoxide, nitrogen oxides, VOCs, particulate matter, and sulfur dioxide. Although these emissions typically are scope 2 emissions occurring upstream of the site where the electricity is used, the electricity used still causes these emissions to occur elsewhere. Solar power does not involve the combustion of fossil fuels, and therefore solarizing Tribal homes and facilities would eliminate emissions of the aforementioned pollutants on the Reservation.

Additional Benefits

Installing solar panels on Tribal homes and facilities offers many advantages, including financial savings, environmental benefits, and increased energy independence. Tribal homeowners could significantly reduce their electricity bills, with the potential of selling excess electricity back to grid through net metering. Having a renewable solar system supplying electricity also increases resilience during power outages and allows the Tribe to be more energy independent.

6.0 REVIEW OF AUTHORITY TO IMPLEMENT

Each Tribe in the SDTC has the authority to implement GHG emissions reduction measures that are located on their respective Reservations and other lands held in federal trust. The governments of sovereign Tribal nations maintain the power to determine their own governance structures and enforce their own laws and regulations within their jurisdiction, including the implementation of GHG reduction measures. All the GHG emissions reduction measures identified in Section 4.0 are located on Reservation land. For each Tribe, approval from Tribal Council is required prior to implementing any GHG reduction measure.

If an emissions reduction measure is funded through a CPRG implementation grant, an official resolution would be adopted by the respective Tribal Council to approve acceptance of the grant and authorize the implementation of the project. A cultural monitor will be required for any GHG emissions reduction measures that will result in ground disturbance.

Section 4.0 contains a schedule of milestones for obtaining implementing authority for each priority emissions reduction measure.

7.0 APPENDIX

7.1 GHG Emissions Inventory Methodology

This emissions calculations section outlines the steps taken to calculate each source of GHG emissions on each Reservation. Wherever possible, data sources and estimation tools are cited and described below. Tools that were utilized most frequently include the Tribal Greenhouse Gas Inventory Tool (TGIT) (EPA, 2010), the U.S. Energy Information Administration Commercial Building Energy Consumption Survey (CBECS) (EIA, 2024), and the EPA's Waste Reduction Model (WARM) (EPA, 2024).

7.1.1 Pala Band of Mission Indians

Electricity Consumption Sources

This section of the inventory includes *Scope 2* emissions from electricity consumption, which are emissions derived from electricity that is consumed within the geographical scope of this inventory but generated elsewhere.

The Pala Reservation is served by the San Diego Gas and Electric (SDGE) utility provider which is part of the CAMX eGrid subregion. According to the 2022 SDGE power content label, energy from this source emits 508 lbs. CO2e per MWh generated (SDGE, 2023).

Commercial Sector Electricity Use

In the absence of Reservation-specific data for commercial electricity usage, estimates were calculated using national averages provided by the U.S. Energy Information Administration (EIA) 2018 Commercial Building Energy Consumption Survey (CBECS). CBECS table C21 contains average electricity use in kWh per square foot for buildings of various sizes, uses, occupancy, climate zone, and more. The Pala Reservation's commercial buildings were classified by activity type and size to estimate the electricity consumption of each. The CBECS average energy use factors do not include all building activity types, so buildings are categorized within the activity type that matches each building the closest. The estimated total commercial electricity use is 9,447,013 kWh, resulting in emissions of 2,177 MTCO2e (SDGE, 2023). See Table 20 on the next page for an in-depth breakdown of the facilities electricity use estimate.

Table 20 - Commercial Sector Facility Electricity Use Emissions Estimate

Facility	Principal Building Activity	Area (sq ft)	Energy Use by area (kWh/sq ft)	Electricity use (kWh)	MTCO2e
Pala Casino	Open continuously	259,887	20.7	5,379,660.9	1,239.6
Gas station and Minimart	Gas station with convenience store	5,561	224.7	1,249,556.7	287.9
Casino Hotel	Lodging	52,663	13.6	716,216.8	165.0
Administration Building	Office	20,749	13.2	273,886.8	63.1
Pala Fire Station	Office	20,433	13.2	269,715.6	62.1
Pala Casino Warehouse	Warehouse and storage	38,776	5.6	217,145.6	50.0
Casino Poolside Café	Food service	4,493	44.8	201,286.4	46.4
Pala Fitness Center	Public assembly	16,246	12.1	196,576.6	45.3
Pala Mission	Public assembly	12,774	12.1	154,565.4	35.6
Vivian Banks School	Education	14,857	9.3	138,170.1	31.8
Casino Spa	Service	16,473	6.9	113,663.7	26.2
San Juan Diego Center	Religious worship	23,980	4.7	112,706.0	26.0
Pala Learning Center	Education	7,979	11.2	89,364.8	20.6
Pala Youth Center	Education	5,174	11.2	57,948.8	13.4
Pala Childcare Center	Education	3,774	11.2	42,268.8	9.7
Utilities Office	Office	3,008	11.4	34,291.2	7.9
Pala Housing Resource Center	Education	2,792	11.2	31,270.4	7.2
Maintenance Office	Office	2,658	11.4	30,301.2	7.0
Fleet Maintenance	Warehouse and storage	5,708	5.1	29,110.8	6.7
Utilities Storage	Warehouse and storage	5,398	5.1	27,529.8	6.3
Pala Post Office	Office	1,440	11.4	16,416.0	3.8
Utilities Garage	Warehouse and storage	3,262	5.1	16,636.2	3.8
Law Enforcement Office	Office	1,351	11.4	15,401.4	3.5
Maintenance Garage	Warehouse and storage	2,874	5.1	14,657.4	3.4
KOPA Radio Station	Office	1,088	11.4	12,403.2	2.9
Maintenance Storage	Warehouse and storage	1,228	5.1	6,262.8	1.4
Total				9,447,013	2,177

Residential Sector Electricity Use

In the absence of Reservation-specific data for residential electricity usage, the values were estimated using national averages provided by the U.S. Energy Information Administration (EIA). The EIA reported that, in 2020, the average household in the western United States consumed approximately 8,608 kWh of electricity per year (EIA, 2023). The Covid-19 pandemic may have influenced this average electricity use slightly, but the previous EIA residential energy use survey was completed in 2015, and this was believed to be too outdated to include in this report. With 458 homes on the Reservation, this EIA average was used to estimate a total residential electricity usage of 3,942,464 kWh annually, resulting in emissions of 908 MTCO2e (EPA, 2010).

Stationary Point Sources

A point source is a single, identifiable source of pollution, such as a large facility that emits pollution from a single place. Sources that are geographically numerous and difficult to keep track of (i.e., gas-fired water heating tanks) are considered non-point sources. There are no identifiable point sources on the Pala Reservation, so this section is intentionally left blank.

Stationary Non-Point Sources

Non-point sources are any source of pollution which is outside of the definition of point sources in the above section. A stationary non-point source of GHGs is one that is not mobile, but too many to count individually or keep track of easily. The sources that are estimated and included in this section are propane heaters and water boilers, and small electricity generators.

Generator Sources

There is one generator located at the Casino and two at the Administration building in case of emergencies such as blackouts. At the time this inventory was created there was no data available on the fuel consumption or annual use of these generators, so they are not included in the inventory calculations. In preparation for the Comprehensive Climate Action Plan (CCAP) emissions inventory, data will be collected on all non-point sources such as generators.

Commercial Sector Propane Use

Within the Pala Reservation, all facilities use propane gas for cooking and heating. PED conducted an emissions inventory (EI) in 2011 which provides facility propane use data for 2010. Since then, new facilities have been established, and the CBECS estimation was used to generate estimates of their annual propane consumption. Facilities propane use emissions included in the Pala Reservation 2011 emissions inventory were within an acceptable range of the CBECS estimation for the same buildings, so the original values were included in this inventory for completeness. The buildings included in the 2011 EI are the administration building, fitness center, day care, boys and girls club, fire station, utilities, cultural center, law office, and mini mart. The propane use of these buildings totaled 24,245 gallons of propane amounting to emissions of 139.23 MTCO2e (EPA, 2010).

For the remaining commercial buildings that were not included in the above-mentioned 2011 EI, the CBECS estimation method was used to generate estimates. Emissions from these buildings totaled 2,331 MTCO2e (EPA, 2023), and the calculations are outlined in the below table.

Table 21 – Pala Reservation Commercial Building Estimated Emissions from Propane Use

Facility	Principal Building Activity	Area (sq ft)	Energy Intensity by area (Mbtu/sq ft)	Energy Intensity (MMBtu)	Propane Usage (mcf/yr)	MTCO2e
Pala Casino	Open continuously	259,887	104.3	27,106.2	10,773.5	1,672.8
Casino Hotel	Lodging	52,663	85.7	4,513.2	1,793.8	278.5
Missions	Public Assembly	12,774	81.1	1,036.0	411.8	63.9
Vivian Banks School	Education	14,857	62.7	931.5	370.2	57.5
San Juan Diego Center	Religious worship	23,980	35.3	846.5	336.4	52.2
Casino Spa	Service	16,473	50.9	838.5	333.3	51.8
Gas Station	Other	5,561	134.8	749.6	297.9	46.3
Pala Learning Center	Education	7,979	62.7	500.3	198.8	30.9
Pala Tribal Services	Public Assembly	4,595	81.1	372.7	148.1	23.0
Casino Poolside Café	Food service	4,493	64.1	288.0	114.5	17.8
Pala Housing Resource Center	Public Assembly	2,792	81.1	226.4	90.0	14.0
Maintenance Office	Office	2,658	65.5	174.1	69.2	10.7
Pala Post Office	Public Assembly	1,440	81.1	116.8	46.4	7.2
KOPA Radio Station	Office	1,088	65.6	71.4	28.4	4.4
Total				37,771	15,012	2,331

Residential Sector LPG use

All residences located within the boundaries of the Pala Reservation use liquified petroleum gas (LPG) for heating and cooking. A survey conducted by PED in 2011 found that an average of 336.5 gallons of LPG is used per household per year (Jones, 2012). There are 458 households currently located on the Pala Reservation. Using this average from the residential LPG use survey, it is estimated that a total of 154,117 gallons of LPG is consumed per year for all residences within the Reservation boundaries. This fuel consumption would result in emissions of 923 MTCO2e per year (EPA, 2010).

Solid Waste Generation Sources

The emissions associated with solid waste generation on the Pala Reservation are known as *Scope 3* emissions. *Scope 3* emissions can be described as "downstream" emissions, where the activity from one region subsequently causes emissions in another region. This is the case with Pala's solid waste generation as there is no landfill located within the Reservation boundaries. The Pala Reservation's contribution to methane emissions associated with decomposing waste material is estimated below. The Pala Reservation has a solid waste transfer station within its boundaries, where garbage is compacted and reloaded into larger vehicles. At the time this inventory was created, there was no data available from the solid waste transfer station. It is anticipated that due to the longer timeline available for creating the CCAP emissions inventory, it will be possible to obtain Reservation-specific solid waste generation data from the Pala Transfer Station.

In the absence of Reservation-specific solid waste generation data, the CalRecycle Estimated Solid Waste Generation Rates were used to generate an estimate of residential and commercially generated solid waste.

Table 22 – Pala Reservation Solid Waste Generation Estimates for Residential and Commercial Sectors

Sector	Units	Waste Generation Rate	Waste Generated (short tons)	MTCO2e
Commercial	487,883 sq ft	13 lbs/1000 sq ft/day	1,158	358
Residential	458 households	12.23 lbs/household/day	1,022	316
Total			2,180	674

Residential Sector Solid Waste Generation

The CalRecycle Estimated Solid Waste Generation Rates webpage cites that an average of 12.23 pounds of solid waste is generated per household per day (CalRecycle, 2024). This is equivalent to 4,463 pounds per household per year. There are 458 households on the Pala Reservation, which means that there is an estimated 1,022 short tons of solid waste generated by the Pala Reservation residents annually. The resulting emissions associated with the decomposition of this amount of solid waste is 316 MTCO2e (EPA, 2024).

Commercial Sector Solid Waste Generation

The CalRecycle Estimated Solid Waste Generation Rates webpage cites that an average of 13 pounds of solid waste is generated per 1,000 square feet of commercial space per day. This is equivalent to 4.745 pounds per square foot per year (CalRecycle, 2024). A list of commercial and institutional buildings on the Pala Reservation was created, omitting buildings that typically would not generate waste such as pump houses, warehouses, storage, wastewater facilities, and parking lots. The total indoor area of all of these buildings combined was 487,883 square feet. Using the estimation factor listed above, the total estimated annual waste generated was 1,157.5 short tons. The resulting emissions associated with the decomposition of this amount of solid waste is 358 MTCO2e (EPA, 2024).

On-Road Mobile Sources

On-road mobile emissions include any sources that are within the transportation sector that originate from paved roadways. A comprehensive inventory of all Pala Reservation roads was previously conducted by the PED, capturing data on road surface type, average daily traffic, length, and total VMT. Annual emissions from on-Reservation mobile sources were calculated using the total VMT obtained from this road inventory and the estimated average vehicle miles per gallon of fuel from the Tribal Greenhouse Gas Inventory Tool (TGIT) provided by the EPA. With an estimated annual VMT of 7,046,453 miles (Jones, 2012) and an average fuel efficiency of 24.1 mpg (EPA, 2010), a total of 292,384 gallons of gasoline were projected to have led to emissions totaling 2,567 MTCO2e in 2022. Emissions from this source are from both the commercial and residential sectors, so it is categorized in the "mixed" sector.

Non-Road Mobile Sources

Non-road mobile sources of emissions include any source that is not stationary and does not travel on paved roadways. These emissions are also frequently known as "off-road mobile" sources. The sources on the Pala Reservation that fit in this category include the Fox Raceway and lawn and garden equipment.

Fox Raceway Motocross Track

A mileage study in 2012 of the Fox Motocross Racetrack shows an estimated 135,213 miles travelled per year. The EPA's emissions factors for 2-stroke gas recreational equipment are 7.81 g CH4 and 0.03 g N20 per gallon for 2 stroke vehicles. For four stroke vehicles, the estimate is 8.45 g CH4 and 0.19 g N2O per gallon (EPA, 2023). By researching equipment specifications of popular dirt bikes and their fuel economy while on the racetrack, an average of 30 mpg was estimated. Combining this average mpg with the total vehicle miles travelled from the mileage study yields a total of 4,507.1 gallons of gasoline consumed per year at the racetrack. This fuel consumption would result in emissions of 41.72 MTCO2E per year (EPA, 2010). With the longer timeline to complete the CCAP comprehensive emissions inventory, it may be possible to obtain an updated mileage study from the Fox Raceway to represent emissions more accurately.

Lawn and Garden Equipment

The 2011 Pala Reservation Emissions Inventory used data which tracked the commercial use of lawn and garden equipment. According to this source, the emissions resulting from lawn and garden equipment use is 2.2 MTCO2e per year. In preparation for completing the comprehensive emissions inventory for the CCAP, it may be possible to obtain additional more recent data pertaining to the use of lawn and garden equipment in both the commercial and residential sectors.

Agriculture & Land Management

The Pala Reservation owns several large grapefruit and avocado orchards. At the time this inventory was created, there was no data available on fertilizer use within these agricultural industries. In improving this inventory for the CCAP, data will be collected that will allow for an estimate of nitrous oxide emissions from fertilizer application.

Water

The Pala Reservation does not import any water. At the time that this baseline inventory was created, there was no data available on energy used for water pumping. For the CCAP emissions inventory, it may be possible to collect data to represent water pumping related emissions more accurately.

Wastewater

The Pala Reservation operates a wastewater treatment plant (WWTP) which utilizes a pump station, sludge removal tank, sedimentation tank, aeration tank, and disinfection tank. The WWTP serves the entirety of the Reservation. Using the framework that the TGIT employs to estimate wastewater related GHG emissions, the emissions were estimated to be 12.59 MTCO2E annually (EPA, 2010).

7.1.2 Jamul Indian Village of California

Electricity Consumption Sources

The Reservation is served by the San Diego Gas and Electric (SDGE) utility provider which is part of the CAMX eGrid subregion. According to the 2022 SDGE power content label, energy from this source emits 508 lbs. CO2e per MWh generated (SDGE, 2023).

Commercial Sector Electricity Use

The VP of Non-Gaming at Jamul Casino supplied a record from recent years that cites an average, continuous power usage of 1.1 MW for the Reservation. In addition, two diesel generators are used to generate additional electricity during peak hours when the power delivered by SDGE is not enough to supply casino energy needs. The emissions associated with these diesel generators are discussed in the non-point sources section.

The continuous use of 1.1 MW amounts to a total annual energy usage of 9,636,000 kWh. The generation of this amount of electricity by SDGE power sources results in 2,220 MTCO2e per year (SDGE, 2023).

Stationary Point Sources

There are no identifiable point sources on the Reservation, so this section is intentionally left blank.

Stationary Non-Point Sources

Generator Sources

There are two diesel 2,000 kW rated generators on the Reservation. There was no specific data available on the capacity that these generators operate at, or the total fuel consumed. In preparation of the CCAP emissions inventory, it may be possible to obtain specific data on fuel consumption of these generators. The number of hours the generators were operated during 2022 was obtained from the VP of Non-Gaming at Jamul Casino: one of the generators ran for 882.7 hours while the other ran for 833.6 hours, totaling 1,716.3 hours. In order to use the annual hours of operation data to estimate emissions from these generators, it is assumed that they were operating at an average of 75% load capacity. For generators of this power rating operating at 75% capacity, an estimated 103.5 gallons of diesel is consumed per hour (Generator Source, LLC, 2024). Using the total hours of operation and the hourly

fuel consumption rate, it was estimated that these generators consumed 177,637 gallons of diesel in 2022. This would result in emissions of 1,820 MTCO2E per year (EPA, 2010).

Commercial Sector Propane Use

The Tribe relies on propane gas for all kitchens, heating, and seven water boilers. In the absence of Reservation-specific propane consumption data, the United States Energy Information Administration's 2018 Commercial Buildings Energy Consumption Survey (CBECS) was utilized. CBECS table C11 contains national average fuel consumption per square foot data for buildings of different principal activity types (EIA, 2024). The propane facilities calculation for buildings located on the Reservation is displayed below in Table 1. It is estimated that Reservation facilities uses about 134,676 gallons of propane gas per year, resulting in emissions of 774 MTCO2E per year (EPA, 2023).

Table 23 – JIVoC Facility Propane Use Estimate

Facility	Principal Building Activity	Area (sq ft)	Energy Intensity by Area (Mbtu/sq ft)	Energy Intensity (MMBtu)	Propane Usage (gal/yr)	MTCO2e
Casino	Open continuously	112,640	104.3	11,748.4	129,102.8	741.6
Administrative Office	Office	2,660	65.6	174.5	1,917.5	11.0
Chapel	Religious worship	1,910	35.3	67.4	740.9	4.3
Community Center	Public assembly	3,270	81.1	265.2	2,914.3	16.7
			Total	12,255.5	134,675.5	773.6

Solid Waste Generation Sources

The emissions associated with solid waste generation on the Reservation are known as *Scope 3* emissions. *Scope 3* emissions can be described as "downstream" emissions, where the activity from one region subsequently causes emissions in another region. This is the case with JIVoC's solid waste generation, as there is no landfill located within the Reservation boundaries.

The Vice President of Non-Gaming at Jamul Casino indicated that, according to Jamul Casino records, an average of 208 tons of solid waste is generated by the Reservation per year. The resulting scope 3 emissions associated with the decomposition of this amount of solid waste is 64.3 MTCO2e (EPA, 2024).

On-Road Mobile Sources

JIVoC Reservation has a one-way road that surrounds the casino which is about 0.4 miles long. According to the Vice President of Non-Gaming at Jamul Casino, there are an estimated 2,000 cars that travel the entire length of that road each day. This adds up to a total of 292,000 miles driven per year. Using an average fuel efficiency of 24.1 (EPA, 2010), it is estimated that 12,116 gallons of gasoline are consumed annually on the Reservation, which would result in emissions of 106.38 MTCO2e (EPA, 2010). With the longer timeline anticipated to complete the comprehensive emissions inventory for the CCAP, it may be

possible to obtain more accurate roadway travel data for the Reservation. This may include sampling delivery truck idling, other vehicle types present, and specific VMT data.

Water

The Reservation does not use any local water sources; all of the water needs on the Reservation are met by importing water from Otay Reservoir. With the longer timeline anticipated to complete the comprehensive emissions inventory for the CCAP, it may be possible to obtain specific water importing data for the JIVoC Reservation.

Wastewater

The Jamul Casino operates a wastewater treatment plant (WWTP) which is a tertiary facility that utilizes a combination of sub-surface disposal and trucking disposal. The WWTP serves about 5,550 people, and treats wastewater physically, biochemically, and chemically using screens, aeration basins, membrane bioreactors, reverse osmosis, ozone, UV, and sodium hypochlorite disinfectant systems, and an anaerobic digester (Jamul Indian Village of California, 2017). Currently, only the method of trucking for the disposal of wastewater is utilized to dispose of treated wastewater (Acorn Environmental, 2022). Using the framework that the TGIT employs to estimate wastewater related GHG emissions, the emissions were estimated to be 46.9 MTCO2E annually.

Carbon Sinks

Urban Forestry

The urban forestry section of this report details the carbon absorbed from the atmosphere by organic material. This estimate of carbon sequestration follows the estimation framework of the TGIT, which is based on the percent of urban canopy present at the Reservation.

The Environmental Director of Jamul Indian Village of California indicated that the urban area of the Reservation is about one-half acre, which contains about 75% tree cover. The Jamul Casino also utilizes green roof technology to sequester runoff, which also sequesters a minor amount of carbon. Using the framework set up in the TGIT, the reduction in net emissions due to this urban forestry is estimated to be (-)1.24 MTCO2e (EPA, 2010).

7.1.3 Viejas Band of Kumeyaay Indians

Electricity Sources

The electricity sector primarily relies on San Diego Gas and Electric (SDGE) within the CAMX eGRID subregion. Some facilities are powered in part by solar photovoltaic (PV) panels, but SDGE provides a vast majority of electric power to the Viejas Reservation. The combined electricity generating sources of the SDGE grid emit 508 lbs CO2e per MWh of electricity generated (SDGE, 2024). This section of the inventory includes *Scope 2* emissions from electricity consumption, which are emissions derived from electricity that is consumed within the Reservation but generated elsewhere.

Commercial Sector

The commercial sector on Viejas Reservation includes commercial, administrative, and critical facilities such as the recreation center, the Viejas Tribal Council building (administrative), the Viejas Fire Department, and businesses such as the Viejas Casino & Resort, Willows Hotel and Spa, and Viejas Outlet Center. In the absence of Reservation-specific data for commercial electricity usage, the value was estimated using national averages of 2018, provided by the U.S. Energy Information Administration (EIA). Estimates of electricity energy intensity in kWh/sq ft was reported by principal building activity to estimate annual electricity usage of these facilities (EIA, 2024). The cumulative annual electricity consumption for the commercial sector amounted to 14,514,302 kWh, resulting in emissions of 3,345 MTCO2e (Table 24) (EPA, 2010; SDGE, 2024).

Table 24 – Viejas Reservation Commercial Sector Electricity Usage and Associated Emissions

Facility	Principal Building Activity	Area (sq ft)	Electricity Use (kWh/sq ft)	Annual Usage (kWh)	MTCO2e
Fire Department	Public Order and Safety	2,828	14.2	40,158	9.3
Recreation Center	Public Assembly	28,004	12.1	338,848	78.1
Tribal Council	Office	11,688	13.2	154,282	35.6
Viejas Casino & Resort	Open Continuously	366,037	20.7	7,576,966	1,745.9
Willows Hotel and Spa	Lodging	257,369	13.6	3,500,218	806.5
Viejas Outlet Center (all buildings)	Mercantile Retail	278,648	21.0	5,851,608	1,348.4
Total				17,462,080	4,023.7

Residential Sector

In the absence of Reservation-specific data for residential electricity usage, the value was estimated using national averages provided by the U.S. EIA. The EIA reported that, in 2020, the average household in the western United States consumed approximately 8,608 kWh of electricity per year (EIA, 2023). While the COVID-19 pandemic may have had a marginal impact on average electricity consumption, there do not appear to be significant differences when comparing data trends from 2010 to 2020. With 200 homes currently residing on the Reservation, this EIA average was used to estimate a total residential electricity usage of 1,721,600 kWh annually, resulting in emissions of 397 MTCO2 (EPA, 2010; SDGE, 2024)

Stationary Point Sources

No point sources have been identified on Viejas Reservation.

Stationary Non-Point Sources

Generators

Generators are used within the residential sector of the Reservation. There are a total of 200 Kohler 48 kW Emergency Standby Power Generators available for use on the Reservation. However, only about 40 of them are currently connected and used intermittently, functioning solely as emergency backups. As a result, data on individual generator fuel consumption and operating hours are unavailable, making it impossible to estimate GHG emissions from residential generator use at this time.

Residential Propane Use

All homes on the Reservation are reported to use propane for heating and cooking. The EPA's household carbon footprint calculator (EPA, 2024) assumes that the average household consumes 39 gallons of propane per month. For the 200 homes and 500 residents on the Viejas Reservation, the annual use of propane is estimated to be 93,600 gallons, for a total energy use of 8,518 MMBtu and resulting in emissions of 538 MTCO2e annually (EPA, 2010).

Commercial Propane Use

The commercial and institutional facilities on Viejas Reservation (excluding Viejas Casino & Resort, Viejas Outlet Center, and Willows Hotel and Spa) use propane for heating and cooking. EIA published data concerning fuel consumption in 2022 for commercial buildings categorized by building use type (EIA, 2024). In the absence of propane usage data, the relevant values for gross energy intensity per square foot were selected for the Recreation Center, Fire Department, and Tribal Council building, and used to estimate their respective annual propane usage in gallons (Table 25). Using an average heat content of 0.091 MMBtu per gallon for propane gas, it was estimated that 38,028 gallons were used in commercial and institutional facilities, resulting in emissions of 219 MTCO2e (Table 25) (EPA, 2010) .

Table 25 – Viejas Reservation Commercial Sector Propane Usage and Associated Emissions

Facility	Principal Building Activity	Area (sq ft)	Energy Intensity by area (MBtu/sq ft)	Energy Intensity (MMBtu)	Propane Usage (gal/yr)	MTCO2e
Recreation Center	Public Assembly	28,004	89.5	2,506.4	27,406	157.6
Fire Department	Public Order and Safety	2,828	76.1	215.2	2,353	13.5
Tribal Council	Office	11,688	64.7	756.2	8,269	47.6
Total				3,477.8	38,028	218.72

Commercial Natural Gas Use

Among the commercial facilities within the Reservation, only Viejas Casino & Resort, Viejas Outlet Center, and Willows Hotel and Spa are connected to a natural gas line. In the absence of natural gas usage data for these facilities, the value was estimated using national averages of 2022 reported by the EIA for commercial buildings categorized by building use type (EIA, 2024). The relevant values for gross energy intensity per square foot were selected for the facilities and used to estimate their respective annual natural gas usage in thousand cubic feet (mcf) (Table 26). In total, it was estimated that with 1.037 MMBtu generated per thousand cubic feet, 75,309 mcf were used in commercial and institutional facilities, resulting in emissions of 4,144 MTCO2e (Table 26) (EPA, 2010).

Table 26 – Viejas Reservation Commercial Sector Natural Gas Usage and Associated Emissions

Facility	Principal Building Activity	Area (sq ft)	Energy Intensity by area (MBtu/sq ft)	Energy Intensity (MMBtu)	Natural Gas Usage (mcf/yr)	MTCO2e
Viejas Casino & Resort	Open Continuously	366,037	104.3	38,177.7	36,815.5	2025.8
Willows Hotel & Spa	Lodging	257,369	85.7	22,056.5	21,269.6	1170.4
Viejas Outlet Center	Mercantile Retail	278,648	64.1	17,861.3	17,224.1	947.8
Total				78,095.5	75,309.1	4,144.0

Solid Waste Generation

The emissions associated with solid waste generation on the Viejas Reservation are known as *Scope 3* emissions. *Scope 3* emissions can be described as "downstream" emissions, where the activity from one region subsequently causes emissions in another region, as is the case with solid waste generation on Viejas Reservation. There is no landfill located within the Reservation boundaries, and waste is hauled to Miramar landfill by Republic Services. Viejas Reservation's contribution to methane emissions associated with decomposing waste material at these locations is accounted for in this section.

In the absence of solid waste hauling data, GHG emissions from residential and commercial landfill waste were estimated using CalRecycle's daily waste generation averages for major waste sources (CalRecycle, 2024) and the Waste Reduction Model (WARM) Tool provided by the EPA (EPA, 2024). The commercial sector generated 2,140 short tons of waste, resulting in 662 MTCO2e. The residential sector generated 446 short tons, resulting in 138 MTCO2e. In total, 2,587 short tons of waste were generated on the Reservation, resulting in 800 MTCO2e of *Scope 3* emissions (Table 27).

Table 27 – Viejas Reservation Waste Generation and Associated Emissions

Sector/Facility	Units	Waste Generation Rate	Waste Generated (short tons)	MTCO2e
Commercial	902,054 sq ft	13lbs/1000 sq ft/day	2,140	661.74
Residential	200 households	12.23lbs/ household/day	446	138.04
Total			2,587	799.78

On-Road Mobile Sources

This section includes a summary of mobile sources of GHG emissions from residential use and from the Tribal fleet.

Residential Mobile

At the time this inventory was constructed, there was no data available on vehicles or vehicle miles travelled by residents. To address these data gaps, estimates from the National Emissions Inventory for San Diego County for passenger light-duty vehicles (EPA, 2024) were scaled to calculate per capita emissions and to obtain metrics for the population of Viejas Reservation. The approximate GHG emissions from residential mobile sources was determined to be 1,126 MTCO2e.

Tribal Fleet On-Road Mobile

The Viejas Tribal Government Public Works Department provided information concerning the Tribal fleet vehicles and their annual usage. This fleet is comprised of 25 light-duty trucks, each traveling approximately 2,000 miles per year, for a total of 50,000 miles annually. With an average mileage of 18.5 miles per gallon, the Tribal fleet consumes 2,703 gallons of gasoline annually, resulting in emissions of 25 MTCO2e (EPA, 2010).

Non-Road Mobile Sources

No non-road mobile sources of GHG emissions have been identified at this time on the Viejas Reservation.

Agriculture & Land Management Sources

Agricultural and land management sources of GHG emissions have not been identified at this time on the Viejas Reservation.

Water

Viejas Reservation does not import any water. There are no known *Scope 2* emissions associated with water usage including for electricity use or other emissions associated with providing water to the Reservation.

Wastewater

Since July 2000, the Viejas Wastewater Treatment Plant (WWTP) has employed immersed ultrafiltration membranes that adhere to strict California Department of Health Services guidelines and California Code and Regulations. It uses an immersed ultrafiltration membrane bioreactor which significantly expands treatment capacity and enhances plant performance with nutrient removal. This plant meets California's stringent standards for recycled water by producing effluent with turbidities that are approximately one-tenth the allowed limit. Nitrogen concentration tends to fall between 5 and 10 parts per million. The WWTP serves the Reservation by aerobically treating wastewater with nitrification/denitrification processes. For 500 residents, it is estimated that 4 MTCO2e is emitted annually by wastewater treatment (EPA, 2010).

7.1.4 La Posta Band of Mission Indians

Electricity Sources

The electricity sector relies on San Diego Gas and Electric (SDGE) within the CAMX eGRID subregion to provides electric power to the whole Reservation. The combined electricity generating sources of the SDGE grid emit 508 lbs CO2e per MWh of electricity generated (SDGE, 2024). This section of the inventory includes *Scope 2* emissions from electricity consumption, which are emissions derived from electricity that is consumed within the geographical scope of this inventory but generated elsewhere.

Commercial Sector

There are six buildings operated by the La Posta Tribe that make up the commercial sector. These are the Tribal Administrative Building, the air monitoring station, the drinking water facility, the boys and girls club, Substance Abuse Center, and the old casino that is no longer in operation. The old casino is currently vacant and does not purchase or use any electricity. In 2022, the Tribal Administrative Building purchased 44,642 kWh and the air monitoring station purchased 45,305 kWh. No Reservation-specific data concerning electricity purchased for the drinking water facility, the Substance Abuse Center, and the boys and girls club were available. Electricity use for these buildings was estimated using national

averages for 2022, provided by the U.S. Energy Information Administration (EIA). Estimates of electricity energy intensity in kWh/sq ft was reported by principal building activity to estimate annual electricity usage of these facilities (EIA, 2024). The cumulative annual electricity consumption for the commercial sector amounted to 268,479 kWh, resulting in emissions of 61.86 MTCO2e (Table 24) (EPA, 2010; SDGE, 2024).

Table 28 – La Posta Reservation Commercial Sector Electricity Usage and Associated Emissions

Facility	Principal Building Activity	Area (sq ft)	Electricity Use (kWh/sq ft)	Annual Usage (kWh)	MTCO2e
Actual					
Air Monitoring Station	-	-	-	44,642	10.29
Tribal Administrative Building	-	14,386	-	45,305	10.44
Estimated					
Boys and Girls Club	Public Assembly	7,265	10.4	75,556	17.41
Drinking Water Facility	Other	1680	9.5	15,960	3.68
Substance Abuse Center	Outpatient Health Care	5,840	14.9	87,016	20.05
Total				268,479	61.86

Residential Sector

In the absence of Reservation-specific data for residential electricity usage, the value was estimated using national averages provided by the U.S. Energy Information Administration (EIA). The EIA reported that, in 2020, the average household in the western United States consumed approximately 8,608 kWh of electricity per year (EIA, 2023). While the COVID-19 pandemic may have had a marginal impact on average electricity consumption, there do not appear to be any significant differences when comparing data trends from 2010 to 2020. With 13 homes currently residing on the Reservation, this EIA average was used to estimate a total residential electricity usage of 111,904 kWh consumed in 2020, resulting in emissions of 26.2 MTCO2e (EPA, 2010; SDGE, 2024) .

Stationary Point Sources

No point sources have been identified on La Posta Reservation.

Stationary Non-Point Sources

Residential Propane Use

All homes on the Reservation are reported to use propane for heating and cooking. The EPA's household carbon footprint calculator (EPA, 2024) assumes that the average household consumes 39 gallons of propane per month. For the 13 homes on the La Posta Reservation, the annual use of propane is estimated to be 6,084 gallons, for a total energy use of 554 MMBtu and resulting in emissions of 35 MTCO2e annually (EPA, 2010).

Commercial Propane Use

The commercial and institutional facilities that serve La Posta Reservation use propane for heating and various purposes. EIA published data concerning fuel consumption in 2022 for commercial buildings categorized by building use type (EIA, 2024). In the absence of propane usage data, the relevant values for gross energy intensity per square foot were selected for the Tribal administrative building, boys and girls club, and the Substance Abuse Center, and used to estimate their respective annual propane usage in gallons. In total, it was estimated that with 0.091 MMBtu generated per gallon of propane, 22,636 were used in commercial and institutional facilities, resulting in emissions of 130 MTCO2e (Table 25) (EPA, 2010) .

Table 29 – La Posta Reservation Commercial Sector Propane Usage and Associated Emissions

Facility	Principal Building Activity	Area (sq ft)	Energy Intensity by area (MBtu/sq ft)	Energy Intensity (MMBtu)	Propane Usage (gal/yr)	MTCO2e
Boys and Girls Club	Public Assembly	7,265	89.5	650.22	7,145	41.03
Substance Abuse Center	Outpatient Health Care	5,840	82.0	478.88	5,262	30.23
Tribal Administrative Building	Office	14,386	64.7	930.77	10,228	58.75
Total				2,059.87	22,636	130.01

Solid Waste Generation

The emissions associated with solid waste generation on the La Posta Reservation are known as *Scope 3* emissions. *Scope 3* emissions can be described as "downstream" emissions, where the activity from one region subsequently causes emissions in another region, as is the case with solid waste generation on La Posta Reservation. There is no landfill located within the Reservation boundaries, and waste is hauled by EDCO Waste and Recycling Services. La Posta Reservation's contribution to methane emissions associated with decomposing waste material at these locations is accounted for in this section.

In 2022, La Posta Reservation saw the disposal of 14.4 short tons of solid waste into landfills. GHG emissions from residential and commercial landfill waste were estimated using the Waste Reduction Model (WARM) Tool provided by the EPA (EPA, 2024). It is estimated that, in total, 4.77 MTCO2e was emitted from the hauled solid waste. Of this, the commercial sector, consisting of 5 buildings, contributed 28% of emissions for 1.34 MTCO2e and the residential sector, consisting of 13 buildings, contributed to 72% of emissions for 3.43 MTCO2e.

On-Road Mobile Sources

Residential Mobile

At the time this inventory was constructed, no specific data regarding the number of vehicles and vehicle miles traveled by residents on the Reservation were available. According to information provided by the La Posta Environmental Department, ten residents commute to work daily by car, with half using passenger vehicles and the other half using light duty trucks. The total road network within the Reservation spans 13.65 miles in length. To estimate vehicle miles traveled, fuel consumption, and GHG emissions on the Reservation, passenger vehicles were estimated to have an average fuel efficiency of 24.1 mpg, while light duty trucks achieve 18.5 mpg (EPA, 2010). Each commuter was assumed to travel the total span of roads on the Reservation in both directions of their daily two-way commute. For each vehicle type, 49,822.5 miles were estimated to be traveled annually, resulting in a total fuel consumption of 4,760.3 gallons and emissions of 41.8 MTCO2e (EPA, 2010).

Non-Road Mobile Sources

No non-road mobile sources of GHG emissions have been identified at this time on the La Posta Reservation.

Agriculture & Land Management Sources

Agricultural and land management sources of GHG emissions have not been identified at this time on the La Posta Reservation.

Water

La Posta Reservation does not import any water. There are no known *Scope 2* emissions associated with water usage including for electricity use or other emissions associated with providing water to the Reservation.

Wastewater

All households on La Posta Reservation are served by septic tanks to manage wastewater. Using the TGIT framework for wastewater emissions, it is estimated that septic systems generate 11.6 MTCO2e annually (EPA, 2010).

7.2 Priority Reduction Measures Methodology

7.2.1 Pala Band of Mission Indians

Tribal EV Adoption Program

The estimated annual VMT for the Pala Reservation is 7,046,453 miles which the TGIT estimates to emit 2,567 MTCO2e (EPA, 2010). The Tribe has a goal of achieving 30% EV adoption through the implementation of this measure, which would ideally reduce these emissions by 30%. Assuming 30% adoption of EVs by the Tribal community, the estimated emissions reduction is 770 MTCO2e per year if the measure is successful.

EV Charging Station Installation

Emissions reductions achieved by installing EV charging stations were quantified by utilizing miles charged per year. Assuming each charger is used 12 hours per day, the chargers combined would theoretically be able to provide electricity for 10,512,000 miles per year. Using the current average fuel efficiency of 24.1 miles per gallon for passenger gasoline-powered vehicles (EPA, 2010), the Reservation could see an annual reduction in emissions of 3,718 MTCO2e.

Energy Audits & Retrofits

The Tribe aims to enhance energy efficiency of the residential sector through the replacement of liquefied petroleum gas (LPG) heaters on the Reservation. The emissions inventory estimates that the residential sector uses a total of 154,117 gallons of LPG per year, resulting in emissions of 923 MTCO2e per year (EPA, 2010). The goal of this measure is to install heat pumps, electric stoves, and tankless water heaters in 50 Tribal homes to move away from LPG use. Heat pumps increase energy efficiency in the home by 65% (U.S. Department of Energy, 2024). Under the assumption that, nationally, 52% of electricity used in homes is devoted to heating and cooling (EIA, 2023) the installation of heat pumps alone would reduce emissions by 329 MTCO2e. Furthermore, by assuming that 50 home's worth of LPG-related emissions would be eliminated, the installation of these retrofits would reduce GHG emissions by up to 430 MTCO2e in total.

Community Compost Program

This measure aims to reduce the amount of compostable waste that is sent to the landfill by the Tribe. Using a 2012-13 City of San Diego Waste Characterization Study, it was found that 37% of potentially compostable waste was landfilled (City of San Diego, 2014). On the Pala Reservation, an estimated 2,180 tons of solid waste is generated per year (Section 3.1). Using the average proportion of food scraps from solid waste generation in San Diego County (37%), it is estimated that the Reservation sends 806.6 tons of compostable food waste to the landfill per year. Composting this amount of food waste instead of landfilling it would reduce annual emissions by 495 MTCO2e (EPA, 2024).

7.2.2 Jamul Indian Village of California

EV Charging Station Installation

Emissions reductions achieved by installing EV charging stations were quantified by utilizing miles charged per year. Assuming each charger is used 12 hours per day, the chargers combined would theoretically be able to charge 65,700 miles per year. Using the current average fuel efficiency of 24.1 miles per gallon for passenger gasoline-powered vehicles (EPA, 2010), the Reservation could see an annual reduction in emissions of 232 MTCO2e.

Jamul Casino Microgrid

This measure aims to deploy a microgrid for the Jamul Casino. This deployment involves installing solar panels on the roof of the Casino and on a 4-acre parcel of land. Given an annual average POA irradiance of approximately 214 kWh per square feet per year (NREL, 2024) and assuming 20% of solar panel efficiency (Enel X, 2024), solar panels installed on the Casino roof would generate approximately 4,819 MWh of electricity per year. Assuming 80% of the 4-acre land parcel is dedicated to solar panels, this area would produce approximately 5,963 MWh of electricity per year. With these two sources powering the Casino instead of traditional grid electricity, the Tribe stands to reduce emissions by approximately 2,485 MTCO2e per year.

7.2.3 Viejas Band of Kumeyaay Indians

Energy Audits & Retrofits

The Tribe aims to enhance energy efficiency of the residential sector through energy audits and retrofits. As many as 200 Tribal homes would be retrofitted with triple-pane windows on the Reservation. The residential electricity use for the 200 homes on the Viejas Reservation was estimated to use 1,721,600 kWh per year (Section 7.1.3). According to the EPA's Carbon Footprint Calculator, 14% of electricity use comes from air conditioning use, on average (EPA, 2024). Using this average, it was estimated that about 241,024 kWh is used for air conditioning on the Reservation, resulting in emissions of 55.58 MTCO2e. The Tribal homes rely on propane for space heating. The residential propane use on the Reservation was estimated to be 93,600 gallons per year, amounting to emissions of 538 MTCO2e (Section 7.1.3). The average percentage of propane used for home heating is 70% (EPA, 2024), indicating that an estimated 376.6 MTCO2e is generated by home heating in the Reservation. In total, emissions associated with heating and cooling homes on the Viejas Reservation are 432 MTCO2e. Installing triple-pane windows can improve HVAC-related energy performance by 40% or more (U.S. Department of Energy, 2024). Assuming 200 homes are retrofitted with triple-pane windows, this measure would reduce the emissions related to home heating and cooling by an estimated 173 MTCO2e per year.

Solarize Tribal Homes

This reduction measure was quantified by calculating the number of solar panels necessary to offset all emissions related to residential electricity use. Given an annual average plane of array (POA) irradiance of 215 kWh per square foot per year (NREL, 2024) and a solar conversion efficiency of 20% (Enel X,

2024), it is estimated that twelve (12) solar panels, each covering 17.5 sq ft, would suffice to meet the sector's energy needs. The solarization of Tribal homes would reduce emissions by up to 397 MTCO2e annually. If sufficient battery storage capacity and net metering were to be incorporated, the installation of additional solar panels would generate supplemental energy. The surplus could be sold to SDG&E to further reduce *Scope 2* emissions linked to off-Reservation electricity generation.

Establish a Recycling Program

The City of San Diego Waste Characterization Study found that approximately 33% of solid waste was recoverable in the residential sector and 37% was recoverable in the commercial sector (City of San Diego, 2014). The total estimated solid waste from Viejas Reservation is 661.7 tons for the commercial sector and 138 tons for the residential sector. With active engagement, the program can diminish the amount of waste sent to landfills by up to 147 and 792 short tons, for the residential and commercial sector, respectively. In total, 939 short tons of recyclables may be diverted, resulting in emissions reductions of 290 MTCO2e annually (EPA, 2024).

Fleet Electrification

The Viejas Tribal fleet is currently made up of 25 light-duty gasoline-powered trucks. This reduction measure plans to replace 20 of the vehicles from the existing fleet with all-electric vehicles (EVs). Each of these vehicles typically travels 2,000 miles annually. The TGIT estimates that each vehicle emits 1 MTCO2e annually (EPA, 2010). In total, the replacement of 20 Tribal fleet vehicles would result in emissions reductions of 20 MTCO2e.

7.2.4 La Posta Band of Mission Indians

Implement Erosion Controls & Acquire Land for Wetland Restoration

Assuming freshwater wetland carbon sequestration is approximately 1.43 tons per acre per year (Lal, et al., 2018), the area on the Reservation that would be restored (approximately 127.41 acres) has the potential to sequester 165 MTCO2e per year.

Solarize Tribal Homes & Facilities

This reduction measure was quantified by calculating the number of solar panels necessary to offset all emissions related to residential and commercial electricity use. Given an annual average plane of array (POA) irradiance of approximately 214 kWh per square feet per year (NREL, 2024) and assuming 20% solar panel efficiency (Enel X, 2024), each Tribal home would need to install approximately 201 square feet of solar panels (12 solar panels) on their roof to offset all residential emissions (26.2 MTCO2e). Tribal facilities would have to install approximately 6,276 square feet of solar panels (358 solar panels) across all buildings to offset all commercial emissions (61.9 MTCO2e) for a total reduction of 87.6 MTCO2e per year for this measure.

8.0 REFERENCES

Acorn Environmental. (2022). *Draft Tribal Environmental Impact Report.* Jamul, CA: Jamul Indian Village of California.

Acorn Environmental. (2022). *Jamul Casino Hotel and Event Center Project: Tribal Environmental Impact Report.* Jamul, CA: Jamul Indian Village of California.

BRG Consulting. (2016). *Viejas Casino & Resort Phase 3 Project.* Alpine, CA: The Viejas Band of Kumeyaay Indians.

California Energy Commission. (2017). *2016 Nonresidential Compliance Manual.* Retrieved from California Energy Commission: https://www.energy.ca.gov/filebrowser/download/2384

CalRecycle. (2024, January). *Estimated Solid Waste Generation Rates*. Retrieved from CA.gov: https://www2.calrecycle.ca.gov/wastecharacterization/general/rates

CalRecycle. (2024). *Estimated Solid Waste Generation Rates* . Retrieved from CalRecycle: https://www2.calrecycle.ca.gov/wastecharacterization/general/rates

City of San Diego. (2014). *2012-2013 Final Report Waste Characterization Study.* San Diego, CA: Cascadia Consulting Group.

City of San Diego. (2020). *City of San Diego Climate Action Plan 2020 Annual Report Appendix.* San Diego: City of San Diego.

EIA. (2023, December 18). *Use of energy explained - Energy use in homes* . Retrieved from U.S. Energy Information Administration: https://www.eia.gov/energyexplained/use-of-energy/electricity-use-in-homes.php#:~:text=The%20average%20U.S.%20household%20consumes,kilowatthours%20(kWh)%20per%20year.

EIA. (2024, January). *Commercial Buildings Energy Consumption Survey (CBECS): 2018 Survey Data*. Retrieved from U.S. Energy Information Administration: https://www.eia.gov/consumption/commercial/data/2018/index.php?view=consumption

Enel X. (2024, February). *Solar Panel Efficiency*. Retrieved from Enel X S.r.l: https://corporate.enelx.com/en/question-and-answers/are-solar-panels-energy-efficient#:~:text=The%20efficiency%20of%20solar%20panels,as%20much%20as%20nearly%2023%25%20&%20https://css.umich.edu/publications/factsheets/energy/photovoltaic-energy-factsheet

EPA. (1995). *Control and Pollution Prevention Options for Ammonia Emissions.* United States Environmental Protection Agency .

EPA. (2000, January). *United States Environmental Protection Agency*. Retrieved from Acetaldehyde: https://www.epa.gov/sites/default/files/2016-09/documents/acetaldehyde.pdf

EPA. (2000, January). *United States Environmental Protection Agency* . Retrieved from Methanol: https://www.epa.gov/sites/default/files/2016-09/documents/methanol.pdf

EPA. (2000, January). *Xylenes (Mixed Isomers)*. Retrieved from United States Environmental Protection Agency: https://www.epa.gov/sites/default/files/2016-09/documents/xylenes.pdf

EPA. (2010). Tribal Greenhouse Gas Inventory Tool.

EPA. (2012, April). *Toluene*. Retrieved from United States Environmental Protection Agency: https://www.epa.gov/sites/default/files/2016-09/documents/toluene.pdf

EPA. (2023, July 25). *Basic Information about NO2*. Retrieved from United States Environmental Protection Agency: https://www.epa.gov/no2-pollution/basic-information-about-no2

EPA. (2023, September). *GHG Emissions Factors Hub*. Retrieved from EPA United States Environmental Protection Agency: https://www.epa.gov/climateleadership/ghg-emission-factors-hub

EPA. (2023, July 11). *Particulate Matter (PM) Basics*. Retrieved from United States Environmental Protection Agency: https://www.epa.gov/pm-pollution/particulate-matter-pm-basics

EPA. (2023, March 28). *United States Environmental Protection Agency* . Retrieved from Facts about Formaldehyde: https://www.epa.gov/formaldehyde/facts-about-formaldehyde

EPA. (2023, March 15). *What are volitile organix compounds (VOCs)?* Retrieved from United States Enviroenmental Protection Agency: https://www.epa.gov/indoor-air-quality-iaq/what-are-volatile-organic-compounds-vocs

EPA. (2023, December 11). *What is carbon monoxide?* Retrieved from United States Environmental Protection Agency: https://www.epa.gov/indoor-air-quality-iaq/what-carbon-monoxide

EPA. (2024, January). *NEI Data Retrieval Tool (San Diego, CA)*. Retrieved from U.S. Environmental Protection Agency: https://awsedap.epa.gov/public/single/

EPA. (2024, January). *U.S. Environmental Protection Agency*. Retrieved from Carbon Footprint Calculator: https://www3.epa.gov/carbon-footprint-calculator/

EPA. (2024, January 31). *United States Environmental Protection Agency* . Retrieved from Sulfur Dioxide Basics: https://www.epa.gov/so2-pollution/sulfur-dioxide-basics

EPA. (2024). Waste Reduction Model (WARM) Version 16. U.S.A.

Generator Source, LLC. (2024). *Approximate Diesel Fuel Consumption Chart*. Retrieved from Generator Source - Sales, Rentals, Services: https://www.generatorsource.com/Diesel_Fuel_Consumption.aspx

Jamul Indian Village of California. (2017). *National Pollutant Discharge Elimination System Proposed Permit Fact Sheet.* Jamul, CA: United States Environmental Protection Agency.

Jamul Indian Village of California. (2023, December). *Jamul Indian Village History*. Retrieved from Jamul Indian Village A Kumeyaay Nation: https://jamulindianvillage.com/history

Jones, D. C. (2012). *Pala band of Mission Indians 2011 Emissions Inventory Update .* Pala, California: Pala Band of Mission Indians.

La Posta Band of Mission Indians. (2019). *Climate Change Vulnerability Assessment (unpublished).* Mountain Empire, CA: La Posta Band of Mission Indians.

La Posta Indian Environmental Office. (2005). *Clean Water Act Section 305(b) Water Quality Assessment Report Supplement.* Mountain Empire, CA: La Posta Band of Mission Indians.

Lal, R., Smith, P., Jungkunst, H. F., Mitsch, W. J., Lehmann, J., Ramachandran, P., . . . Ravindranath, N. H. (2018). The carbon sequestration potential of terrestrial ecosystems. *Journal of Soil and Water Conservation*, 6.

NREL. (2024, February). *PVWatts Calculator*. Retrieved from National Renewable Energy Laboratory: https://pvwatts.nrel.gov/

Pala Band of Mission Indians. (2023, December). *Pala History*. Retrieved from Pala Band of Mission Indians: http://www.palatribe.com/visitors/history/

Pala Casino. (2023, December). *Overview*. Retrieved from Pala Casino Spa & Resort: https://www.palacasino.com/casino/overview

Pala Mesa Resort. (2023, December). *Pala Mesa Golf Course*. Retrieved from Pala Mesa: https://www.palamesa.com/golf/

Pala Tribe . (2024). *History*. Retrieved from Pala Band of Misisons Indians: http://www.palatribe.com/visitors/history/#1574837691557-3e918b56-c817

PED. (2019). *Climate Change Adaptation Plan.* Pala, CA: Pala Band of Mission Indians.

PED. (2019). *Climate Change Vulnerability Assessment.* Pala, California: Pala Environmental Department.

Prosper Sustainability & Kimley Horn. (2022). *Transportation Climate Vulnerability Assessment.* Jamul, CA: Jamul Indian Village of California.

Reheis, M. C. (2016, December 9). *Owens (Dry) Lake, California; A Human-Induced Dust Problem*. Retrieved from U.S. Geological Survey Impact of Climate Change and Land Use in the Southern United States: https://geochange.er.usgs.gov/sw/impacts/geology/owens/#:~:text=The%20lake%20bed%20is%20probably,Gill%20and%20Gillette%2C%201991).

San Diego Integrated Regional Water Management. (2019). *Tribal Nations of San Diego.* San Diego, CA: Integrated Regionial Water Management Planning for the San Diego Region .

SDGE. (2023). *2022 Power Content Label.* San Diego: San Diego Gas and Electric.

SDGE. (2024, January). *2020 Power Content Label.* Retrieved from San Diego Gas & Electric: https://www.sdge.com/sites/default/files/documents/15781%20SDGE_Power_Content_Label_2020.pdf

SDGE. (2024, January). *2022 Power Content Label.* Retrieved from San Diego Gas & Electric: https://www.sdge.com/sites/default/files/documents/FINAL_S2210024_Power_Content_Label.pdf

U.S. Department of Energy. (2024, February). *BTO Seeks to Increase Adoption of Energy-Saving Triple Pane Windows*. Retrieved from Office of Energy Efficiency & Renewable Energy: https://www.energy.gov/eere/buildings/articles/bto-seeks-increase-adoption-energy-saving-triple-pane-windows

U.S. Department of Energy. (2024, February). *BTO Seeks to Increase Adoption of Energy-Saving Triple-Pane Windows*. Retrieved from Office of Energy Efficiency & Renewable Energy: https://www.energy.gov/eere/buildings/articles/bto-seeks-increase-adoption-energy-saving-triple-pane-windows

U.S. Department of Energy. (2024). *Heat Pump Systems.* Retrieved from Office of Energy Efficiency & Renewable Energy: https://www.energy.gov/energysaver/heat-pump-systems

U.S. Department of Energy. (2024). *Heat Pump Systems.* Retrieved from Office of Energy Efficiency & Renewable Energy: https://www.energy.gov/energysaver/heat-pump-systems

Viejas Band of Kumeyaay. (2023, December). *Viejas Historical Overview*. Retrieved from https://viejasbandofkumeyaay.org/viejas-community/kumeyaay-history/

Viejas Casino & Resort. (2023, December). *Viejas*. Retrieved from Viejas Casino & Resort: https://viejas.com/