Morongo Band of Mission Indians Priority Climate Action Plan

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Table of Contents

1 Introduction

1.1 Background

The Morongo Band of Mission Indians ('Tribe') reside on the Morongo Indian Reservation consisting of approximately 36,000 acres of land within the San Gorgonio Pass region of Southern California. The reservation is located approximately 90 miles east of Los Angeles and 22 miles northwest of the City of Palm Springs, along both sides of Interstate 10 (I-10). The I-10 Freeway is the major travel route between Los Angeles, Riverside, and San Bernardino Counties and the desert cities and communities of the Coachella Valley including Palm Springs, Rancho Mirage, Cathedral City, Palm Desert, and Indio. The City of Banning is located west of the reservation and the communities of Cabazon and Whitewater are located to the southeast and east of the reservation. The Morongo Reservation is located on the southern flanks of the San Bernardino Mountains, the northern flanks of San Jacinto Mountain ranges, and the intervening valley floor of the San Gorgonio Pass (the Pass) and San Gorgonio River. Much of the reservation lies primarily in the foothills and lower portions of the San Bernardino Mountains and the valley floor contains most of the developed areas.

Tribal sovereignty is dependent upon the livability and economic potential of the reservation. The reservation is home to approximately 1,000 tribal members, descendants, and community members. The residential, commercial, and institutional areas on the reservation are all located on the valley floor in the San Gorgonio Pass. This portion of the reservation is semi-arid desert, averaging 12 inches of rainfall annually. Rainfall is seasonally and annually highly variable and almost all precipitation occurs November through April. This area of the reservation is also subject to high winds due to the regional flow of wind from the coastal areas through the Pass, into the Coachella Valley.

In general, Morongo's climate is anticipated to become hotter and drier with more natural disaster events as climate change progresses. The reservation has been historically impacted by wildfires, droughts, flooding, extreme temperatures, and transport air pollution. Scientific data and research make clear that climate change will further exacerbate these extremes and will negatively impact the economic, cultural, and social welfare of the Morongo Band of Mission Indians[1]. The overall average temperature is projected to increase 3 to 7 degrees by the end of the century, resulting in longer, more intense heat waves and increased poor air quality days. Precipitation is anticipated to become more variable with "boom and bust" cycles of high precipitation years and drought years. Increased temperatures and variable precipitation will result in a longer wildfire season and more intense wildfires. Rainfall is anticipated to become more concentrated, resulting in more flooding events and debris flows within the reservation.

In 2019, the Tribe instituted the *Morongo Climate Change Vulnerability Assessment* (Resolution #080619-01), acknowledging the best available scientific research and projected impacts to the community and subsequently directing the Morongo Environmental Protection Department (EPD) to prepare, routinely revise a Climate Change Vulnerability Assessment for the Tribe, and communicate these vulnerabilities to the community and tribal leadership as a necessary step to protect and prepare the Morongo community.

[1] See data compiled within the Morongo Climate Change Vulnerability Assessment, Morongo Environmental Protection Department, August 2019.

1.2 CPRG Overview

The Tribe applied for and received funding under the Climate Pollution Reduction Grant (CPRG) program to develop plans for reducing greenhouse gas emissions and other harmful air pollutants under the control or influence of the Tribe. The Tribe is utilizing Phase 1 funding to develop a Priority Climate Action Plan and to prioritize near term actions for implementation grants available in Phase 2. Funding will then be used to develop a more detailed Comprehensive Climate Action Plan (CCAP) detailing long-term plans for climate pollution reduction.

1.3 PCAP Overview and Definitions

The Priority Climate Action Plan (PCAP) is a proactive approach by the Tribe to understand emission sources of climate pollutants within the control of the Tribe and to develop strong climate pollution reduction strategies to address these sources. The planning effort is led by the Morongo Environmental Protection Department with assistance from Blue Tomorrow, LLC (consultant), and informed by the Tribal Advisory Committee consisting of leaders and department heads within the Tribal Government. The Tribe plans to use the PCAP to prioritize strategies and leverage funding to reduce climate pollution sources on the Morongo Indian Reservation.

The Morongo PCAP includes the following required elements:

- A simplified ***Greenhouse Gas Inventory*** for the Morongo Indian Reservation gathered utilizing existing data available from the Morongo Environmental Protection Department, National Emissions Inventory, or other state/local sources. The inventory is preliminary and identifies data gaps which will be addressed in the comprehensive GHG inventory.
- ***Quantified projected GHG reductions for priority implementation measures*** identified by the Tribal Advisory Committee or Tribal Leadership.
- A ***benefits analysis for co-pollutants*** (such as criteria air pollutants, hazardous air pollutants, etc.) for projected pollutant reductions should the priority measures be implemented.
- A ***review of authority to implement*** the selected priority measures.

1.4 Approach to Developing the PCAP

1.4.1 Quality Assurance Project Plan

Prior to any data collection, the Morongo Environmental Protection Department with the assistance of Blue Tomorrow, LLC (consultant) developed a Quality Assurance Project Plan (QAPP) which defines the handling of environmental information associated with the project. The *Quality Assurance Project Plan for the Morongo Band of Mission Indians Climate Pollution Reduction Plan* (EPA R9/QA DCN:FY23ARD_264), approved October 20, 2023, describes the necessary quality assurance and quality control requirements and technical activities to ensure the baseline GHG inventory and emissions reduction calculations are reliable for the PCAP planning process.

1.4.2 Tribal Advisory Committee

The Morongo Environmental Protection Department established a Tribal Advisory Committee with committee members representing tribal departments that oversee transportation, facilities, and operations for the Tribe. The committee provided information to be used in the inventory, reviewed summary reports, and guided the prioritization of GHG reduction measures within the PCAP.

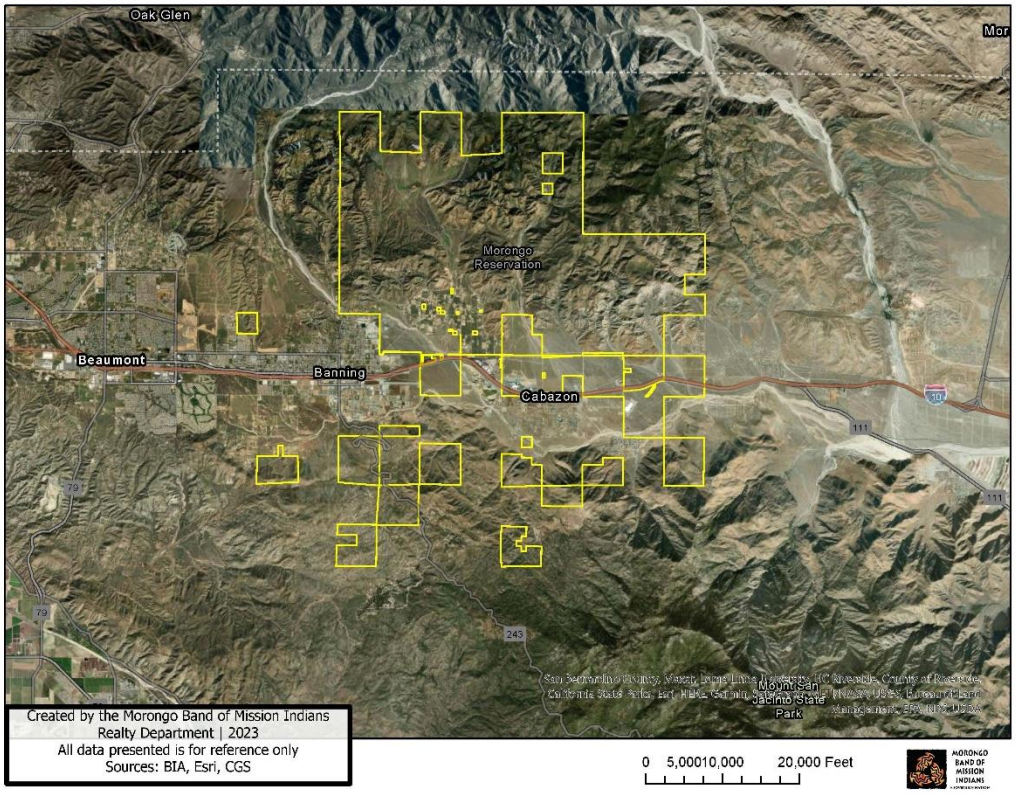
1.4.3 Identifying Reduction Measures

The Morongo Environmental Protection Department met several times with the Tribal Advisory Committee to identify feasible, near-term, high priority, and implementation-ready measures which would reduce the Tribe's greenhouse gas emissions. Blue Tomorrow, LLC (consultant) then quantified the projected GHG reductions that may be possible should the priority measures be successfully implemented.

1.5 Scope of the PCAP

The PCAP is limited to the geographic boundaries of the Morongo Indian Reservation, governed by the Morongo Band of Mission Indians. The Tribe does own and operate properties outside of the reservation. For the purposes of this planning process, those were excluded to simplify the authority to implement and prevent double-counting of emissions if those properties were included in a neighboring jurisdiction's inventory.

Map 1. Morongo Indian Reservation Jurisdictional Boundaries (2023)



2 Tribal Organization and Consideration

2.1 Organizational Structure

The Morongo Band of Mission Indians is a federally recognized Tribe and the Morongo Reservation came into being with a presidential executive order on May 15, 1876. Acting pursuant to its inherent sovereign status, the Tribe exercises governmental authority over the Morongo Indian Reservation. The Morongo Tribal Government is comprised of the Morongo General Council, which consists of the general membership of the Tribe and the Morongo Tribal Council, which conducts the day-to-day

governance of the Tribe pursuant to the powers and authority delegated to it by the General Council through tribal ordinances, resolutions, or the General Council direction. The Morongo Tribal Council is composed of a chair person and six council members, elected by the General Council to serve two year terms. Tribal Council meetings are scheduled every other week and General Council meetings are monthly.

The Tribal Government exercises a broad range of governmental powers pursuant to ordinances adopted by the General Council dealing with the administration and management of tribal natural resources, such as water, land and wildlife, environmental protection, regulation of Indian child welfare, gaming, labor relations, livestock, hunting and trespass, nuisance, off-road motorbikes, the sale of alcoholic beverages, taxation, and administration of internal tribal matters, including enrollment, elected tribal officials' code of conduct, conflict of interest, and grievances. Enforcement of tribal laws are effectuated, as appropriate, through the Morongo Reservation Patrol, pursuant to direction of the Tribal Council, and the Morongo Tribal Court on a case-by-case basis.

The Morongo Band of Mission Indians asserts its inherent sovereignty and jurisdiction over the Morongo Indian Reservation and its natural resources under the Environmental Protection Ordinance (Ordinance 12), adopted February 5, 2000. Under Ordinance 12, the Morongo Band of Mission Indians, acting pursuant to Tribal Law, custom, and tradition, exercises its inherent sovereignty to: 1) Declare tribal policy that will encourage productive and enjoyable harmony between humans and their environment; 2) promote efforts to prevent, eliminate or mitigate damage to the tribal environment and biosphere; 3) protect the health and safety of Tribal members and all other persons within the exterior boundaries of the reservation; 4) protect the stability and integrity of residential, wilderness, forest, desert, riparian, and environmentally-sensitive lands within the reservation; 5) protect the air, water, and land from pollution and degradation, including contamination of groundwater, surface waters, and drinking water supplies; 6) protect the historic and cultural values and traditions of the Tribe and the reservation as a permanent Tribal homeland; 7) prevent the deterioration of the standard of living, quality of life and well-being of the tribal members and other persons within the reservation; and 8) promote tribal environmental regulation under the principles of tribal sovereignty. The ordinance resulted in the creation of the Morongo Environmental Protection Department which includes programs for monitoring air quality, monitoring surface water quality, and pollution prevention.

2.2 Morongo PCAP Management and Development Team

- Morongo Environmental Protection Department is tasked with data gathering and developing the PCAP and managing the CPRG grant project.
- Blue Tomorrow, LLC (consultant) was hired by the Tribe to assist the Morongo Environmental Protection Department with technical analyses and emissions calculations. The contract is managed by the Environmental Protection Department.
- Tribal Advisory Committee consists of Tribal Government department heads overseeing transportation, construction, water/wastewater, and various commercial properties. Regular meetings allowed for the committee to guide the Environmental Protection Department in the planning process and to assist with identifying actionable emission reduction projects.
- Tribal Council reviews, approves, and finalizes the completed PCAP prepared by Tribal Government staff.

3 Greenhouse Gas Inventory

3.1 Summary

The preliminary greenhouse gas inventory quantified emissions from the following sources on the Morongo Reservation: electricity use, point sources, non-point sources, on-road and non-road mobile sources, solid waste generation, agriculture, land management, water, and wastewater processing. The quantified emissions were 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 reservation. The commercial sector is comprised of for-profit businesses and institutional/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 the Morongo Reservation, the only sources that fall into this "mixed" category are on-road mobile sources, wastewater, and wildfires. The emissions calculations in this inventory are broken down by source in Section 3.**Error! Reference source not found.**. These sources may be made up of multiple sectors, for example, electricity consumption is broken down into commercial and residential sectors, while point sources are broken down into electricity generation and commercial sectors.

The total estimated annual greenhouse gas emissions derived from the Morongo Reservation in the base year 2022 is 45,532 MTCO2e (Table 2). Within the Morongo Reservation, the primary sources of emissions are Stationary Point Sources (Section 3.**Error! Reference source not found.**) and On-Road Mobile Transportation (Section 3.**Error! Reference source not found.**), with the cogeneration facility contributing the highest emissions among all sources (Figure 1, Table 3). This is primarily because the facility serves as an off-grid power generation source for the Morongo Casino Resort Spa (MCRS), a commercial enterprise with substantial energy consumption. The cogeneration facility was built to provide resiliency against power outage issues, and while it does add considerably to direct emissions in the reservation, it saves a lot of energy that would normally be used for space and water heating within the casino.

Mobile transportation follows as the second-largest contributor to emissions, likely driven by the high volume of visitors to MCRS, rather than by residents (Figure 1, Table 3). This is an expected outcome, because the largest source of greenhouse gas emissions in the country is the transportation sector (EPA, 2023).

The per capita emissions for residents of the Morongo Reservation are 50.9 MTCO2e, although this value is significantly skewed by emissions from the casino. However, when considering emissions solely within the residential sector (natural gas and electricity use), per capita emissions are significantly reduced to 5 MTCO2e (

Figure 2, Table 4). This value is calculated excluding the "mixed sector," because there was no data available on residential mobile sources, the actual Morongo per capita emissions value is expected to be slightly higher. In the CCAP emissions inventory, emissions will be further broken down by sector to calculate per capita averages with higher specificity.

3.2 Emissions Sources and Calculation Methods

This emissions calculations section outlines the steps taken to calculate each source of GHG emissions on the Morongo 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), the U.S. Energy Information Administration Commercial Building Energy Consumption Survey (CBECS), and the EPA's Carbon Footprint Calculator.

3.2.1 Electricity Sources

The electricity sector primarily relies on two sources, Southern California Edison (SCE) and the cogeneration facilities located on Morongo Casino Resort and Spa (MCRS) premises. SCE serves as the prominent electricity provider to the Morongo Reservation, which is within the CAMX eGRID subregion. The combined electricity generating sources of the SCE grid emit 552 lbs. CO2e per MWh of electricity generated (Southern California Edison, 2022). 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. While the cogeneration facility does generate electricity, it is considered a point source with Scope 1 (direct) emissions, so it will be included in the "point source" section of this inventory.

Commercial Sector

A portion of the commercial sector's electricity consumption, which includes commercial and institutional buildings on the Morongo Reservation, was derived from monthly SCE utility bills that, in total, accounted for months between the years of 2022-2023. Of the 41 service addresses, three of their associated utility bills did not cover a 12-month period, so the available monthly data was averaged to address gaps, and to estimate total annual consumption. The cumulative annual electricity consumption for the commercial sector amounted to 15,636,742 kWh, resulting in emissions of 3,915 MTCO2e (Southern California Edison, 2022).

About 80% of the electricity that the Morongo Casino Resort and Spa consumes is generated locally at the Morongo Cogeneration Facility. Scope 1 emissions from this facility are included in Section 3.2.2 (Point Sources).

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). 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 611 homes currently residing on the

reservation, this EIA average was used to estimate a total residential electricity usage of 5,259,488 kWh annually, resulting in emissions of 1,317 MTCO2e (Southern California Edison, 2022).

3.2.2 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. This section of the inventory focuses on two point sources on the Morongo Reservation, the MCRS Cogeneration Facility and the BlueTriton Bottling Facility.

MCRS Cogeneration Facility

The cogeneration facility provides power and all heating and cooling to the Morongo Casino Resort Spa. The facility has four natural gas burning engines and four diesel engines. In 2022, the natural gas engines consumed a total of 309.51 MMcf of natural gas, and the diesel engines consumed a total of 7,893 gallons of diesel fuel (Morongo EPD, 2023). These two engines combined, emit an estimated 17,112 MTCO2e annually (EPA, 2010).

BlueTriton Bottling Facility

The BlueTriton Bottling Facility, also known as the Arrowhead Water Bottling Facility, is located in the southeast region of the Morongo Reservation. Fuel use data from the bottling facility included machinery specification and estimations of natural gas use in water boilers and resin dryers. The total estimated natural gas usage per year is 60,050 Mcf (BlueTriton, 2021). The bottling facility is estimated to produce emissions of 3,304 MTCO2e per year (EPA, 2023). Emissions associated with the electricity use of this facility are accounted for in the electricity section of this inventory (Section 3.2.1).

3.2.3 Stationary Non-Point Sources

Non-Point Sources are any source of pollution which is outside of the definition of point sources in Section 3.2.2. A stationary, non-point source of greenhouse gases 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 natural gas heaters and water boilers and small electricity generators.

Generators

Generators are used in the agricultural, residential, and commercial sectors of the reservation. Generators used in the agricultural sector are separately described in Section 3.2.7, agricultural and land management. For each generator, the average amount of fuel used per hour and the number of operation hours were used to determine a total annual fuel use of 196,779 gallons of diesel fuel (Generator Source, LLC, 2024), resulting in emissions of 2,016 MTCO2e (EPA, 2010).

Residential Sector Natural Gas Use

All homes on the reservation are reported to use natural gas for heating and cooking. The EPA's household carbon footprint calculator (EPA, 2024) assumes that the average household consumes 5,500 cubic feet of natural gas per month. For the 611 homes residing on the Morongo Reservation, the annual use of natural gas is estimated to be 40,326 Mcf, resulting in emissions of 2,219 MTCO2e annually.

Commercial Sector Natural Gas Use

While the Morongo Cogeneration Facility, located at MCRS, generates heat and electricity for much of the Casino area, some adjacent buildings including stores, fast-food restaurants, offices, and a grocery store, use the natural gas distribution line. Energy use estimates for each of the commercial buildings were derived from a 2018 US EIA study that considered factors such as size, occupancy, building type, and climate zone (EIA, 2024). Natural gas use estimation factors from this source that were utilized in this calculation are the number of cubic feet of natural gas used annually per square foot of indoor space. The specific factors used were: 30.7 for small kitchens, 37.9 for mercantile, and 27 for office spaces. Total energy use for buildings was estimated as 1,573,950 cubic feet of natural gas, leading to emissions of 86 MTCO2e (EPA, 2010).

3.2.4 Solid Waste Generation Sources

The emissions associated with solid waste generation on the Morongo 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 Morongo's solid waste generation as there is no landfill located within the reservation boundaries, and waste is hauled to Riverside County Lamb Canyon Sanitary Landfill. Morongo Reservation's contribution to methane emissions associated with decomposing waste material at this location is accounted for below.

Total solid waste hauling for 2022 was summarized for MCRS and the reservation including tribal government, non-casino commercial enterprises, and residential areas of reservation. It was reported that MCRS generated 2,253 tons of solid waste (43.5% of the total), and that the remaining reservation generated 2,931 tons (56.5% of the total). These values were input into the Waste Reduction Model (WARM) Tool (EPA, 2024), which estimated a total of 697 MTCO2e from the casino and 906 MTCO2e from the residential sector. In total, 1,603 MTCO2e of Scope 3 emissions from solid waste were generated by the reservation.

3.2.5 On-Road Mobile Sources

On-road mobile emissions include any sources that are within the transportation sector that originate from paved roadways. On-road mobile sources include a roadway inventory and vehicle miles travelled (VMT) study from the Morongo Transportation Department. This data was used for the emissions inventory quantifications for the on-road mobile sources because it includes all mobile transportation, both commercial and residential. In addition to this study, the emissions from the tribal fleet vehicles are also quantified. It is important to quantify emissions from the tribal fleet vehicles for Morongo's internal review and analysis of emissions sources. To avoid double-counting emissions, the tribal fleet calculation will not be included in the comprehensive emissions values because they are already included in the road inventory and VMT study.

Comprehensive On-Road Mobile Sources

In 2023, a comprehensive inventory of all reservation roads, except for Interstate Highway 10, was conducted, 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 the inventory and the estimated average vehicle miles per gallon of fuel from the Tribal Greenhouse Gas Inventory Tool (TGIT) provided by the EPA (EPA, 2010). With an estimated annual VMT of 36,354,467 miles and an average fuel efficiency of 24.1 mpg, a total of 1,508,484 gallons of gasoline were projected to have led to emissions totaling 13,245 MTCO2e in 2023.

Tribal Fleet Only On-Road Mobile Sources

Morongo keeps spreadsheets of data on their tribal fleet vehicles which include vehicle make, model, and annual odometer readings. These odometer readings were used to quantify the miles travelled by each vehicle during 2022. The EPA's estimated miles per gallon of fuel use per vehicle type (e.g., passenger car, light duty truck, heavy duty vehicle) was used to quantify the amount of gasoline, diesel, and compressed natural gas (CNG) used during 2022 (EPA, 2010). EPA emissions factors were then used to convert the amount of fuel used to carbon dioxide equivalent greenhouse gas emissions (EPA, 2023) (Table 1). In total, emissions from tribal fleet vehicles amounted to 522 MTCO2e in 2022.

Table 1 - Tribal Fleet Emissions

Vehicle type	Per vehicle kg CO_2e	Vehicle count	Total annual kg CO_2e
Passenger car	2,410	4	9,639
Light Duty Truck	3,516	69	242,617
Heavy Duty Vehicle	6,000	45	269,995
Total		118	522,251

3.2.6 Non-Road Mobile Sources

Non-road mobile sources of emissions include any source that is not stationary and does not travel on paved roadways. The sources on the Morongo Reservation that fit in this category include lawn and garden equipment and agricultural off-road vehicles.

Lawn and Garden Equipment

An inventory of lawn and garden equipment currently used on the reservation provided details such as the equipment type, year, make, model, and monthly hours of use. Additionally, equipment specifications for each included its average fuel consumption per hour of operation. Based on this data, the estimated annual fuel consumption was 2,256 gallons for gasoline-powered equipment, 216 gallons for diesel-powered equipment, and 452 gallons for mixed fuel-powered equipment. Subsequently, annual emissions resulting from the fuel usage of lawn and garden equipment were projected to be 29 MTCO2e annually (EPA, 2010).

Agricultural Non-Road Mobile Use

There is one ATV and one tractor used in the agricultural sector of the Morongo Reservation. The Morongo EPD supplied emissions estimates for these sources. The total carbon dioxide emitted from these sources is 5 MTCO2e per year.

3.2.7 Agriculture & Land Management Sources

Agriculture is a small source of emissions on the Morongo Reservation. The only sources within this section are general land management emissions such as agricultural generator use and wildfires.

3.2.8 Generators

Morongo EPD keeps track of the generators that are currently in use on the reservation and calculates the emissions from these generator sources. There are four gasoline generators in the agricultural sector of the Morongo Reservation. The Morongo EPD used estimated annual hourly operation and equipment specifications to estimate fuel use from these generators. EPA emissions factors (EPA, 2023) were then used to calculate emissions of 0.33 MTCO2e per year.

3.2.9 Wildfire

In 2022, seventeen (17) fires, including at least four (4) wildfires directly on the Morongo Reservation, influenced GHG emissions in the region. The four fires on the reservation burned a total of two acres, contributing to emissions of 55 MTCO2e (EPA, 2002; Colin C. Hardy, 1996). Emissions from these wildfires are not directly representative of operations on the reservation in 2022 because they were all unintentional. However, there is still validity to including them in this inventory because the Tribe may decide to implement emissions reduction projects in the future that include fire suppression via controlled burns or vegetation thinning.

3.2.10 Water Sources

The Morongo Reservation does not import any water. Scope 2 emissions associated with pumping local water are included in the calculations of emissions for the electricity sector (Section 3.2.1).

3.2.11 Wastewater Sources

The Morongo Reservation operates a wastewater treatment plant (WWTP) which can treat up to 750,000 gallons per day utilizing an OMNIFLO interchange sequencing batch reactor system, a Cannibal solids reduction system, an anaerobic digester, and large sludge drying beds (Morongo, 2024). The WWTP serves MCRS, while the residential area uses septic tanks to treat wastewater. The emissions from both the WWTP and the septic systems were estimated to contribute to 626 MTCO2e using the TGIT framework for wastewater emissions (EPA, 2010).

3.3 Emissions Overview

Table 2 – Total Emissions by Sector and Source in Metric Tons of CO2 Equivalent

Sector	Agriculture/ Land Management	Electricity	Non-point Sources	Off-road Mobile	On-road Mobile	Point Sources	Solid Waste	Wastewater	Total
Commercial	0.3	3,915.2	115.1	5.4		3,304.3	697.2		8,037.5
Mixed	55				13,244.5			626.4	13,925.9
Residential		1,317	2,219				905.7		4,441.7
Energy Generation			2,015.7			17,111.6			19,127.3

Total	55.3	5,232.2	4,349.8	5.4	13,244.5	20,415.9	1,602.9	626.4	45,532.4

Figure 1 – Emissions (MTCO2e) by Source

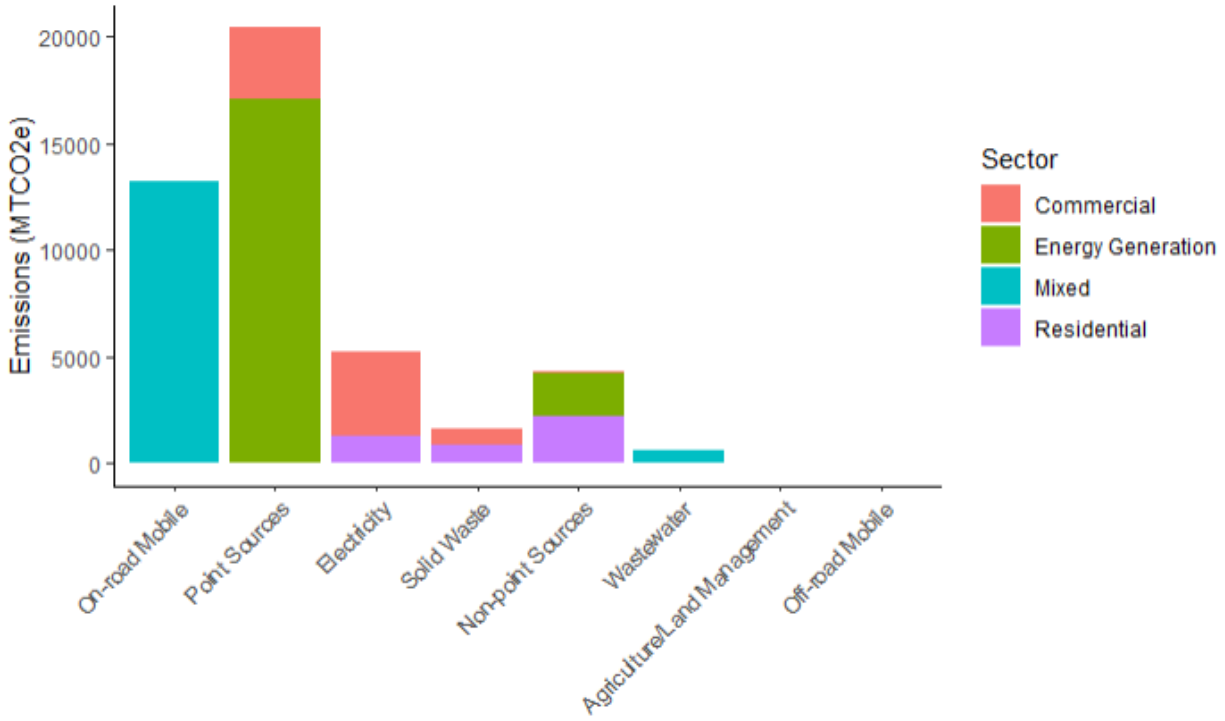


Table 3 – Emissions Percentages by Source

Source	Emissions (MTCO2e)	Percent
Point Sources	20,415.93	44.8%
On-road Mobile	13,244.50	29.1%
Electricity	5,232.17	11.5%
Non-point Sources	4,349.84	9.6%
Solid Waste	1,602.90	3.5%
Wastewater	626.37	1.4%
Agriculture/Land Management	55.30	0.1%
Off-road Mobile	5.44	0%

Figure 2 - Emissions (MTCO2e) by Sector

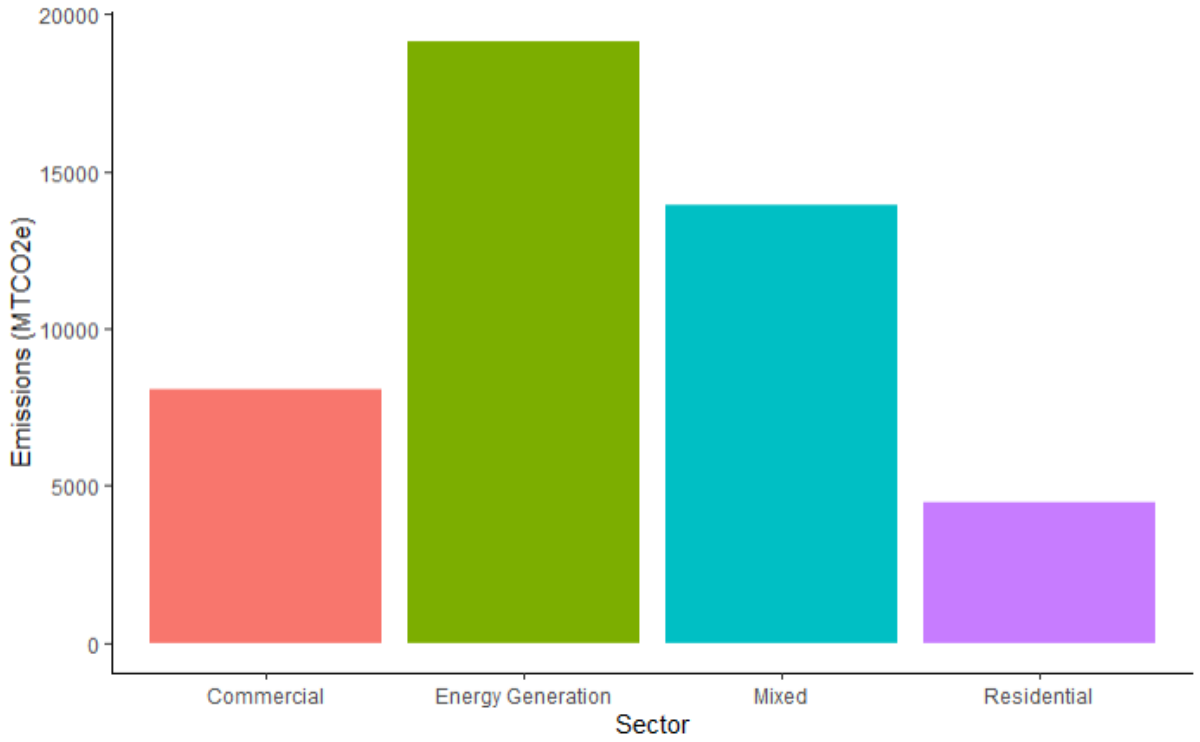


Table 4 – Emissions Percentages by Sector

Sector	Emissions	Percent
Energy Generation	19,127.31	42%
Mixed	13,925.84	30.6%
Commercial	8,037.60	17.7%
Residential	4,441.70	9.8%

4 Greenhouse Gas Reduction Priority Measures

This section provides information on the greenhouse gas (GHG) priority reduction measures chosen by the Morongo Band of Mission Indians, and 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, implementation schedule and milestones, milestones for obtaining authority to implement, geographic location, metrics for tracking progress, and the applicable sector.

Table 5 - Priority Reduction Measures

Source	GHG Reduction Measures
Transportation	1. Tribal Fleet Electrification
	2. EV Charging Station Installation

Electricity	3.	Solar-Powered Water Pumping at Reservoirs
Materials and Waste	4.	Community Compost Program

4.1 Priority Reduction Measure 1 - Tribal Fleet Electrification

The Morongo Tribal fleet is currently made up of 113 government-operated on-road vehicles. This reduction measure plans to replace 15 vehicles from the existing fleet, which includes both gasoline and diesel-powered vehicles, with all-electric vehicles (EVs). Tribal fleet vehicles average approximately 7,715 miles traveled per year (Marquez, 2022) and collectively consume about 5,060 gallons of gasoline and 595 gallons of diesel annually. By switching all 15 of these vehicles to electric, it is anticipated that GHG emissions will be reduced by 49.3 MTCO2e annually. However, this estimate does not consider the upstream emissions associated with the production of EVs and their batteries.

Table 6. Measure #1: Tribal Fleet Electrification	
Description	Replacement of existing Tribal fleet vehicles, composed of gasoline and diesel-powered vehicles, with electric vehicles. Implementation will prioritize older vehicles, beginning with : 2001 Ford Taurus (1), 2006 F-450 (1), 2007 Chrysler Sebring (1), 2007 Crown Victoria (1), 2011 Chevrolet trucks (2), 2013 Toyota Tundra (1), 2013 F-150 (1), 2013 Chevrolet Tahoe (1), 2015 Ford Transit Van (1), 2015 Ford Explorer (1), 2016 Ford Explorer (1), 2018 Ford Explorers (2), and 2019 Ford Explorer (1). This measure will act to reduce GHG emissions attributed to on-road mobile sources within the reservation by the commercial sector.
Annual Estimated GHG Emissions Reductions	49.3 MTCO2e/year
Implementing Agency/Agencies	Morongo Tribal Administration and Environmental Protection Department
Milestones for Obtaining Authority to Implement	Tribal Council Approval
Implementation Schedule	Year 1: Replace 5 Tribal fleet vehicles Year 2: Replace 5 Tribal fleet vehicles Year 3: Replace 5 Tribal fleet vehicles
Geographic Location	Morongo Reservation
Metrics Tracking Progress	1. Number of Tribal fleet vehicles replaced with EV per year 2. Annual reduction of GHG emissions

Applicable Sector	Transportation and electricity generation/consumption

4.2 Priority Reduction Measure 2 - Charging Station Installation

The Morongo Reservation aims to expand its EV charging infrastructure to meet the increasing demand and needs of its residents and visitors. Currently, the Morongo Travel Center has twelve Level 3 supercharging stations, the Morongo Casino Resort & Spa (MCRS) Valet features five Level 2 chargers, the MCRS parking structure has four Level 2 chargers, and the administration building has four Level 1 chargers. Plans are underway to increase the number of chargers with the addition of twenty-seven Level 2 chargers in the MCRS east parking area and thirty-seven Level 3 superchargers at Hadley Fruit Orchards.

Given the Morongo Reservation's high visitor traffic and the increasing prevalence of EVs in California, there is a significant and growing need for more charging facilities. In response to this demand, this reduction measure aims to expand the charging infrastructure by adding fifty Level 2 chargers near community buildings. This expansion aims to alleviate congestion at chargers in busy commercial areas. The new installations will be located at key community sites, including the administration building, community center, social services office, schools, and the Public Works Department building, thereby enhancing accessibility for both residents, employees, and visitors.

The expansion of the EV charging infrastructure on the Morongo Reservation is set to not only reduce fuel consumption directly but also to encourage the shift from gasoline and diesel vehicles to electric vehicles (EVs). With the addition of fifty EV chargers, the measure promotes the use of cleaner transportation options. In an optimal scenario where these chargers are utilized continuously, it's conceivable that the reservation could see an annual reduction in fuel consumption by nearly 300,000 gallons of gasoline. This estimate is based on the current average fuel efficiency of 24.1 miles per gallon for passenger gasoline-powered vehicles (EPA, 2010). Regardless of the usage rates of these chargers, the availability of chargers is expected to significantly decrease gasoline consumption. In the best-case scenario, this shift towards electric vehicles and charging station use could lead to a reduction in GHG emissions of up to 2,324 MTCO2e annually.

Table 7. Measure #2: Charging Station Installation	
Description	Install 50 Level 2 chargers on the reservation in addition to existing chargers. Additional Level 2 chargers will be installed in high-use areas of the reservation such as by the administration building, community center, social services office, schools, and Public Works parking lots.
Annual Estimated GHG Emissions Reductions	2,323.9 MT CO2e/year
Implementing Agency/Agencies	Morongo Construction Services Department and Environmental Protection Department
Milestones for Obtaining Authority to Implement	Tribal Council Approval and Cultural Monitoring for ground disturbing activities

Implementation Schedule	Year 1: Install 20 Level 2 chargers Year 2: Install 20 Level 2 chargers Year 3: Install 10 Level 2 chargers
Geographic Location	Administration building, community center, social services office, schools, Public Works
Metrics Tracking Progress	1. Number of EV charging stations installed per year 2. Number of EVs charged by the new installations 3. Change in gasoline and diesel sales in gallons on reservation
Applicable Sector	**Transportation and electricity generation/consumption**

4.3 Priority Reduction Measure 3 - Solar-Powered Water Pumping at Reservoirs

The main source of electricity used for water pumping on the Morongo Reservation is Southern California Edison (SCE). To the extent possible, water pumping is conducted during off-peak hours, when the average cost for both generation and delivery of utilities per kWh are reduced. While the current infrastructure is moderately cost-effective, the installation of solar systems to power water pumps at the reservoir has the potential to significantly reduce the Scope 2 GHG emissions generated from this source.

For the three planned reservoir sites, water pumps will each be retrofitted with two solar panels connected to a battery with sufficient storage capacity. Each of these water pumps consistently draw five (5) amperes. Assuming a standard operating voltage of 240V, these water pumps collectively consume 31,536 kWh annually. The adoption of solar panels with battery storage has the potential to eliminate Scope 2 emissions from these sources, thereby achieving a reduction of 7.9 MTCO2e annually.

Table 8. Measure #3: Solar-Powered Water Pumping at Reservoirs	
Description	Retrofit existing reservoir pumps with solar power panels and battery storage backup. Conduct energy audits to identify energy-savings from solar-powered water pumping at reservoirs. Three reservoir sites will be targeted. May act to significantly reduce or eliminate GHG emissions from electricity generation purchased from SCE for water pumping at these sites
Annual Estimated GHG Emissions Reductions	794 MT CO2e/year
Implementing Agency/Agencies	Morongo Water Department, Construction Services Department, and Environmental Protection Department
Milestones for Obtaining Authority to Implement	Tribal Council Approval and Cultural Monitoring for ground disturbing activities

Implementation Schedule	Installation will require approximately 3 months
Geographic Location	Morongo Reservoir
Metrics Tracking Progress	1. Number of pumps retrofitted 2. Average energy savings per retrofit
Applicable Sector	**Electricity generation/consumption**

4.4 Priority Reduction Measure 4 - Community Compost Program

The community compost program for the residents of Morongo Reservation aims to enhance the sustainability of waste management practices and reduce GHG emissions by mitigating the amount of methane generated from the otherwise landfill-bound waste. This program aims to divert organic waste from landfills to composting systems, to both reduce landfill use and to create high-quality compost that is beneficial for local agriculture and community gardening projects. With active community engagement and effective composting of organic materials, the program is expected to diminish the amount of waste sent to landfills by up to 141 short tons per year and cut the associated GHG emissions (in methane) by approximately 44 MTCO2e annually.

Table 9. Measure #4: Community Compost Program	
Description	Create a collection system for picking up food and yard waste from residents. 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.
Annual Estimated GHG Emissions Reductions	43.7 MT CO2e/year
Implementing Agency/Agencies	Morongo Environmental Protection Department and Morongo Public Works
Milestones for Obtaining Authority to Implement	Tribal Council Approval
Implementation Schedule	Year 1: Planning, education, and outreach Year 2: Launch program
Geographic Location	Morongo Reservation
Metrics Tracking Progress	1. Amount of waste diverted from landfill 2. Participation over time (Number of houses participating in program)

	3. User satisfaction surveys
Applicable Sector	**Solid waste management**

5 Co-Pollutant Inventory

Co-pollutant inventories were compiled using county-level data from the EPA 2020 NEI database and scaling it to the Morongo Reservation using a ratio of the 2022 reservation population to the 2022 Riverside County population. This method produced co-pollutant emissions scaled to the reservation by population. The co-pollutants were primarily emitted from the following sources:

- Mobile Sources
- Miscellaneous Area Sources
- Natural Sources
- Solvent Utilization
- Industrial Processes
- Stationary Source Fuel Combustion
- Waste Disposal, Treatment, and Recovery

The Tribe's most significant source of co-pollutant emissions is carbon monoxide, with an estimated release of 36.50 tons. This was followed by other criteria air pollutants such as VOCs, PM10, nitrogen oxides, PM2.5, and ammonia (EPA, 2024).

Table 10. Co-Pollutant Inventory

Pollutant	Pollutant Type	Emissions (tons)
Carbon Monoxide	CAP	36.50
Volatile Organic Compounds	CAP	16.52
PM10 Primary (Filt + Cond)	CAP	9.04
Nitrogen Oxides	CAP	6.84
Ammonia	CAP	3.69
PM2.5 Primary (Filt + Cond)	CAP	2.58
Methanol	HAP	0.93
Formaldehyde	HAP	0.37

Toluene	HAP	0.28
Acetaldehyde	HAP	0.28

6 Benefits Analysis - Co-Pollutant and General Benefits from Reduction Measures

5.2.1 Tribal Fleet Electrification

Co-pollutants Benefits

This reduction measure targets older and fuel inefficient vehicles for replacement with EVs.

The switch to EVs would greatly benefit the Tribe by reducing criteria air pollutants (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 air pollutants on the Morongo Reservation.

General 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.

5.2.2 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.

General 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.

5.2.3 Solar-Powered Water Pumping at Reservoirs

Co-pollutant Benefits

Water pumps usually depend on electricity from the grid provider or utilize a diesel generator. 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 produce emissions of VOCs, carbon monoxide, PM2.5, PM10, nitrogen oxides, 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 off-grid solar water pumping eliminates emissions of the co-pollutants.

General Benefits

There are many general community benefits to implementing solar powered water pumping projects. Water pumping requires consistent energy consumption, which adds up to typically large energy bills. By taking the water pump off the grid, energy costs for the community will be significantly reduced. A solar powered water pumping system will also increase water resource security by ensuring that the water needs of the community are met even when there is a power outage or emergency. Additionally, using locally generated electricity will reduce the community's dependence on outside energy sources.

5.2.4 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. Through these mechanisms, a community compost program would act to reduce co-pollutants, improving air quality and public health within the reservation.

General Benefits

Implementing a community compost program brings several key benefits to the general community, fostering environmental sustainability and enhancing public health. Through composting, organic waste is transformed into nutrient-rich soil, 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. Additionally, the 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.

7 Review of Authority to Implement

The Morongo Band of Mission Indians is a federally recognized Indian Tribe exercising inherent sovereignty and jurisdiction over the Morongo Indian Reservation and has the authority to implement GHG reduction measures within the Morongo Indian Reservation.

8 Next Steps

The planning team will continue to develop and improve the greenhouse gas inventory to fill data gaps improved the inventory for the Comprehensive Climate Action Plan (CCAP), including acquiring more specific emissions and energy use data from commercial and residential buildings. This will make the inventory more representative of the actual emissions of the Morongo Reservation. Additional meetings, discussions with Tribal Leadership, and the Morongo Community will be conducted to identify and prioritize meaningful reduction actions the Tribe can pursue in the next 5-10 years.

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