



**Fallon Paiute Shoshone Tribe
Environmental Protection Department**

Priority Climate Action Plan

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Table of Contents

Table of Contents	3
List of Figures	3
List of Tables	3
Executive Summary	5
1. Introduction.....	6
1.1 CPRG overview.....	6
1.2 PCAP Overview and Definitions	7
1.3 Approach to Developing the PCAP.....	7
1.4 Scope of the PCAP.....	8
2. PCAP elements	9
2.1 Greenhouse (GHG) Inventory	9
2.1.1 Transportation.....	9
2.1.2 Electricity Use.....	11
2.1.3 Solid Waste	11
2.2 GHG Reduction Measures	13
2.3 Benefits Analysis	17
2.4 Review of Authority to Implement	20
3. Next Steps	20
4. Appendix	21
4.1 Emission Reductions Estimate Method.....	21
5. References.....	22

List of Figures

Figure 1 FPST Reservation, Colony and Vicinity Map, which forms the geographic scope of the PCAP.....	5
Figure 2 Community Survey Responses.....	7
Figure 3 FPST GHG Emissions by Source.....	9
Figure 4 FPST CAPs and HAPs Emissions.....	17

List of Tables

Table 1. 2020 Tribal On-Road Mobile Emissions.....	10
Table 2. 2020 Tribal non-road emissions by pollutant.....	10

Table 3 FPST Priority GHG Reduction Measures 13
Table 4 2020 Co-Pollutant Emissions..... 17

Executive Summary

The Fallon Paiute Shoshone Tribe (FPST) received the Climate Pollution Reduction Grant (CPRG) from the U.S Environmental Protection Agency (EPA) in September, 2023. The grant supports the creation of plans to reduce FPST’s greenhouse gas (GHG) emissions. This priority Climate Action Plan (PCAP) is the first of two plans that the FPST will develop with this funding. The primary objective of this plan is to identify near-term, high-priority, implementation ready measures to reduce GHG emissions.

This PCAP includes a GHG inventory across three focus areas: transportation, electricity consumption and waste emissions. Related to each focus area are quantified emission reductions, co-pollutant benefits analysis and a review of authority to implement. The PCAP will be followed by the Comprehensive Climate Action Plan (CCAP). The CCAP will address all sectors of emissions.

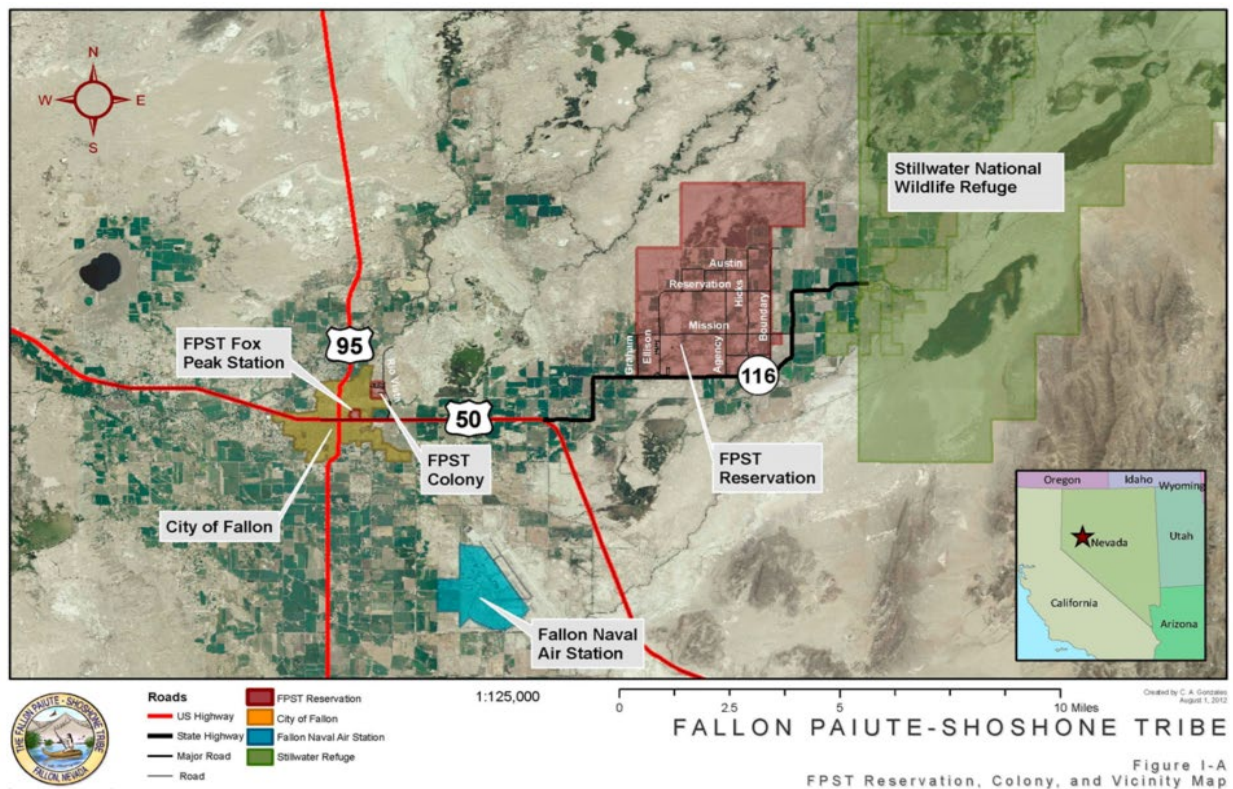


Figure 1 FPST Reservation, Colony and Vicinity Map, which forms the geographic scope of the PCAP.

1. Introduction

The Fallon Paiute-Shoshone Tribe (FPST) is a Federally-recognized Native American Tribe located in Churchill County, in West Central Nevada. The Tribe is traditionally known as the Toi-Ticutta (cattail eaters) band of Northern Paiute and is comprised of both Northern Paiute and Western Shoshone people.

The FPST Reservation was established on April 20, 1907 with 4,680 acres allotted (35 Stat. 85). The Fallon Colony was established by a Departmental Order which granted the Tribe 40 acres on August 13, 1917, and the land base increased by 20 acres by legislation in 1958.

Since the establishment of the Tribe in 1907, the land base of the Tribe has grown as additional land was granted to and acquired by the Tribe. An additional 3,480 acres were added to the North side of the Reservation. This property is known as Fallon II. 36 acres of land was acquired in the City of Fallon for economic development. The Tribe opened the Fox Peak Station on the 36-acre property. Additional property was acquired by the Tribe in Fernley, NV for economic development. The Tribe opened the Fox Peak 2 station on the Fernley property. Tribal land will be expanded by 10,000 acres as part of the National Defense Authorization Act.

Adjacent to the colony is the city of Fallon to the southwest, and the Fallon Naval Air Station to the southeast. The Stillwater Wildlife Management Area (SWMA) is located east of the reservation. The FPST Reservation and Colony have a population of approximately 1,200 people.

The FPST Environmental Protection Department (EPD), is responsible for the management of programs to protect human health and the environment on Tribal land. Under the Climate Pollution Reduction Grant (CPRG), the EPD will identify, evaluate, and utilize existing data resources to develop a Tribal inventory of the major sources of greenhouse gas (GHG) emissions within Tribal Land and from Tribal operations and use that inventory data to develop climate action plans. The EPD has not developed a GHG inventory or GHG reduction measures in the past. However, the purpose and activities of this project have been approved by the Tribe. The development of climate actions plans under this project, aligns with the Tribe's commitment to adapt to climate change, mitigate climate concerns and reduce air pollution.

1.1 CPRG overview

On March 1, 2023, the Environmental Protection Agency (EPA) announced the availability of \$250 million in planning grants, which included a \$25 million set-aside for tribes and territories, to reduce climate pollution associated with greenhouse gases and other harmful air pollution. This funding is part of the 5 billion Climate Pollution Reduction Grant (CPRG) funded through the 2020 Inflation Reduction Grant (IRA). The CPRG program has three broad objectives:

- 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.

This strategy will allow communities to address climate change and identify opportunities to revitalize the energy sector while addressing historic environmental injustices and inequities.

The CPRG program is split into two phases, a planning phase and an implementation phase. The FPST Environmental Protection Department received \$ 169,749 in funding for the planning phase of the CPRG. Under the CPRG Planning Grant program, grant recipients are required to develop and submit two deliverables over the course of the program period:

- A Priority Climate Action Plan (PCAP), due April 1, 2024.
- A Comprehensive Climate Action Plan (CCAP), due at the end of the grant period.

This document is intended to fulfill the PCAP deliverable obligation for the Fallon Paiute Shoshone Tribe.

1.2 PCAP Overview and Definitions

The first deliverable of Phase 1 is the PCAP. The primary objective of the PCAP is to identify near-term, high-priority, implementation-ready measures to reduce GHG emissions. The PCAP includes a GHG inventory, quantified GHG reduction measures for 3 focus areas, and a review of authority to implement the measures.

A Comprehensive Climate Action Plan (CCAP) will be completed following the PCAP, which will provide more detailed modeling, technical, and planning analyses, address all sources and sinks of emissions, and include additional engagement.

1.3 Approach to Developing the PCAP

The EPD created a community survey to determine the focus areas of the PCAP. According to the community survey, transportation, agriculture and solid waste emit the most GHGs on Tribal land. Because of limited data on agriculture emissions, we instead included electricity use in the GHG inventory. The EPD created a GHG inventory for the three major sources of emissions.

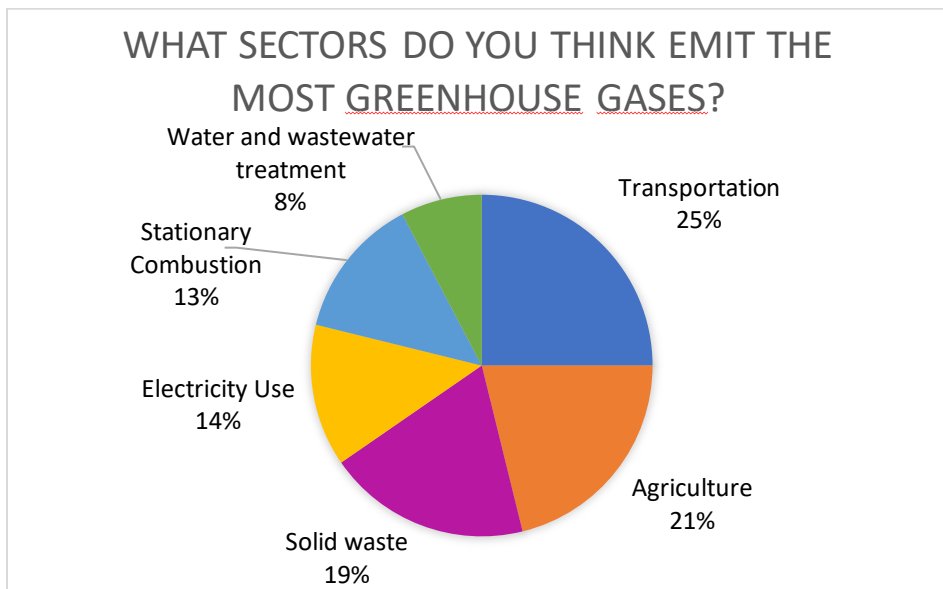


Figure 2 Community Survey Responses.

The EPD held two community meetings to identify major sources of pollution and emissions, discuss the GHG inventory results with the community, and identify near-term, high priority measures which would reduce the Tribe's greenhouse gas emissions. The EDP created a second community survey to gauge the community's interest on various reduction measures. Input from the surveys and community meetings was used to develop the priority reduction measures outlined in the PCAP. The EDP also held a staff meeting in which Tribal department managers and council members were invited to provide input on reduction measures and priorities. Community surveys were sent to Tribal employees/community members through emails and distributed at the community meetings.

The EPD collaborated with the Institute of Tribal Environmental Professionals to acquire National Emission Inventory data and calculate sectors emissions and reduction estimates.

1.4 Scope of the PCAP

The geographic scope of the PCAP is the Fallon Paiute Shoshone Tribe Reservation and colony. The PCAP is focused on transportation, electricity use and solid waste emissions. The FPST Reservation and Colony have an area of approximately 8,339 acres, and a population of approximately 1,200 people.

2. PCAP elements

2.1 Greenhouse gas (GHG) Inventory

The GHG emissions inventory focuses on three emission sources: transportation, electricity use, and waste generation. These focus areas were selected based on a community survey, public input and data availability. Additionally, transportation and electric consumption are the highest sources of emissions in the U.S and occur on all Tribal land. Emissions were calculated using different downscaling methods using population count and land area factors.

The total estimated annual GHG emissions from the three focus sources (i.e. transportation, electricity use and waste) is 10,997 MT CO₂e. On-road transportation is the highest source of emissions and accounts for 87 % of total emissions, followed by electricity at 10% and solid waste at 4%.

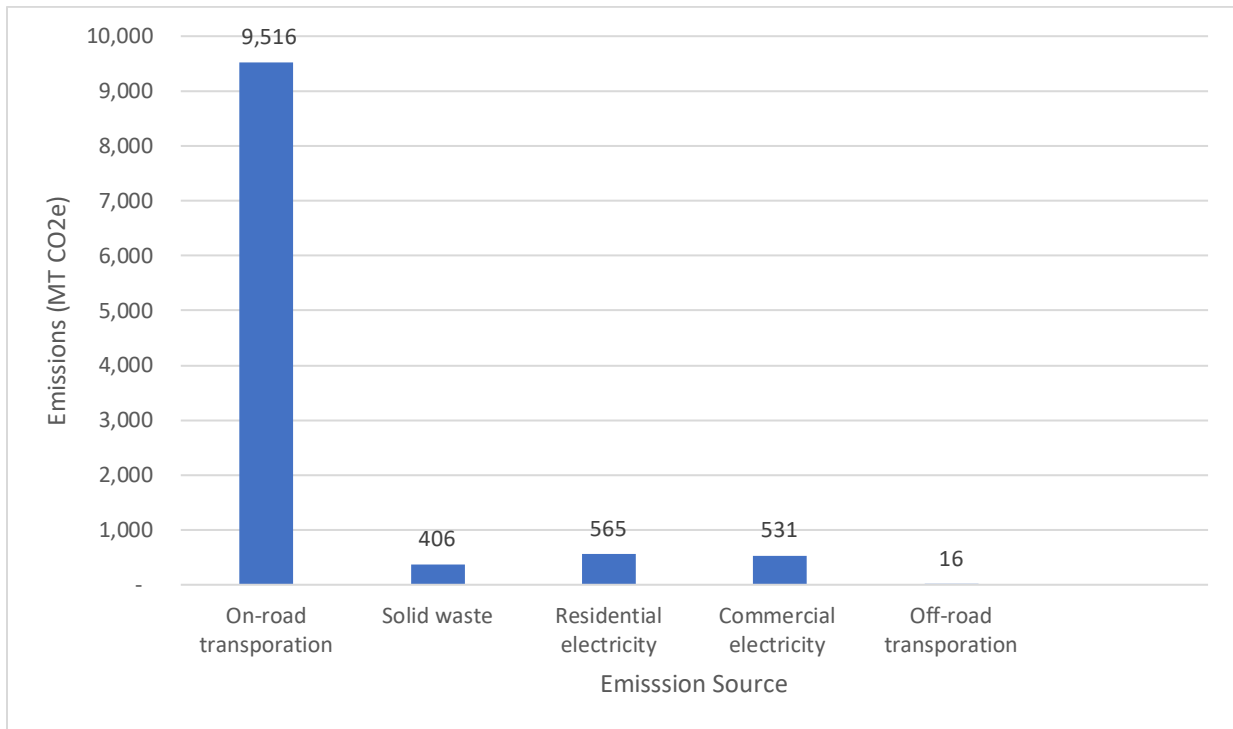


Figure 3 FPST GHG Emissions by Source.

2.1.1 Transportation

To calculate transportation emissions, we categorized transportation into two broad categories: on-road vehicles and off-road vehicles. On-road vehicles are vehicles used on roads for transportation of passengers or freight. Off-road vehicles include vehicles, engines and equipment used for construction, agriculture and recreation.

On-Road Transportation

To calculate on-road vehicles emissions, we used a population ratio to downscale county emissions to tribal emissions. The 2020 Churchill county on-road emissions were 202,357 MTCO₂e (NEI, 2020), and The county’s population in 2020 was 25,516 (US Census Bureau). The Tribal emissions were estimated to be 9,517 MT CO₂e. Carbon dioxide (CO₂) accounts for 99% of on-road emissions.

$$\text{Tribal onroad emissions} = \frac{\text{Tribal population}}{\text{County population}} \times \text{County onroad emissions}$$

$$9,517 \text{ mt CO}_2\text{e} = \frac{1,200}{25,516} \times 202,357 \text{ MT CO}_2\text{e}$$

	CO2 (MT CO2e)	N2O (MT CO2e)	CH4 (MT CO2e)	Total GHG
Tribal On-road emissions	9,448.70	46.22	21.79	9,516.72

Table 1. 2020 Tribal On-Road Mobile Emissions.

Off-road Transportation

Non-road mobile sources of emissions include any source that is not stationary and does not travel on paved roadways. Non-road equipment include construction, agricultural, recreation, lawn and gardening and commercial equipment. The only significant non-road emission source on the FPST is agricultural equipment, and therefore we only estimated emissions from this source. To estimate emissions from agricultural equipment, we used land area to allocate county emissions data to tribal emissions. The 2020 Churchill county off-road emissions from agricultural equipment were 5,987 MTCO₂e (NEI, 2020), and the county’s land area is 4950.16 square miles (3,168,102 acres) (US Census Bureau). The tribal emissions were estimated to be 16 MT CO₂e. Carbon dioxide (CO₂) accounts for 99% of off-road emissions.

$$\text{Tribal agriculture equipment emissions} = \frac{\text{Tribal land area}}{\text{County land area}} \times \text{Agriculture equipment emissions}$$

$$16 \text{ mt CO}_2\text{e} = \frac{8,339 \text{ acres}}{3,168,102 \text{ acres}} \times 5,987 \text{ mt CO}_2\text{e}$$

	CO2 (MTCO2)	CH4 (MT CO2)	Total GHG
Tribal non-road emissions	15.76	0.02	15.78

Table 2. 2020 Tribal Non-road Emissions by Pollutant.

2.1.2 Electricity Use

The Tribe's electricity is provided by NV Energy, which is part of NWPP eGrid subregion. According to the 2020 NV Energy power content label, energy from this source emits 804 pounds of CO₂ per MWh generated (NV Energy, 2020).

Residential Electricity Use

In the absence of tribal-specific data for residential electricity use, estimates were calculated by scaling county electricity use to tribal electricity use. County electricity use data was obtained from the State and Local Planning for Energy (SLOPE) Platform (National Renewable Energy Laboratory, 2024). To downscale county data to tribal data we used a population factor. According to the 2020 SLOPE data, residential electricity use in Churchill county was 32,953,635 kWh. Using the population factor, the Tribal residential electricity use was calculated to be 1,549,787 Kwh.

$$1,549,786 \text{ kWh} = \frac{1,200}{25,516} \times 32,953,635 \text{ kWh}$$

Using the NV Energy emission factor, the emissions from residential electricity are 565 MT CO₂ (EPA, 2024a).

Commercial Electricity Use

Similarly, commercial electricity use at the Tribe was limited, so we downscaled SLOPE commercial electricity use. To downscale the county commercial electricity use, we used the ratio of tribal commercial buildings square footage and the county commercial buildings square footage as a scaling factor. We used Eagle view aerial imagery to measure the square footage of tribal departments and businesses. The total square footage of tribal buildings is 137,112 square feet. The county's commercial square footage was obtained from the 2019 Commercial Building Inventory provided by the National Renewable Energy Laboratory (National Renewable Energy Laboratory, 2020). The total square footage of the county's commercial buildings is 2,900,000 square feet. Using the square footage factor, the tribal commercial electricity use was calculated to be 1,455,310 Kwh.

$$1,455,310 \text{ kWh} = \frac{137,112 \text{ square feet}}{2,900,000 \text{ square feet}} \times 30,780,666 \text{ kWh}$$

Using the NV Energy emission factor, the emissions from commercial electricity are 531 MT CO₂ (EPA, 2024a).

2.1.3 Solid Waste

The emissions associated with solid waste generation 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 the FPST.

There is no landfill located within the tribal boundaries, and waste is hauled to landfills by different waste collection services. The FPST's contribution to methane emissions associated with decomposing waste material at these locations is accounted for in this section.

According to the 2022 Nevada's Sustainable Materials Management Plan, an average of 10 pounds of municipal solid waste is generated per person daily in Churchill County. This average is higher than the state's average of 7.98 pounds per person daily. The average includes solid waste from residential and commercial and institutional locations. Approximately 60 % of solid waste is from residential sources (EPA, 2011), therefore the average residential solid waste per person is 6 pounds/day. Given the Tribe's population of 1,200 people, the yearly solid waste generated is estimated to be 1,314 short tons. The resulting emissions associated with the decomposition of this amount of solid waste are 406 MT CO₂e (EPA, 2024b).

2.2 GHG Reduction Measures

This section provides information on priority GHG reduction measures along with a quantified estimate of the GHG reductions that would be achieved if implemented. Priority reduction measures cover transportation and electricity use which were calculated in the GHG inventory and account for large emissions on Tribal land.

the following information is provided for each GHG reduction measure:

- Estimate of the quantifiable GHG emissions reductions
- Implementing agency or agencies
- Implementation schedule and milestones
- Geographic location
- Milestones for obtaining implementing authority as appropriate
- Metrics for tracking progress
- Applicable sector

The FPST identified 4 priority GHG reduction measures for the PCAP.

Source	Priority Reduction Measure
Transportation	<ol style="list-style-type: none"> 1. Create a Pilot Project to Electrify Tribal Vehicles 2. EV Charging Station Installation
Electricity	<ol style="list-style-type: none"> 3. Energy Audits and Retrofits 4. Solarize Tribal Homes

Table 3 FPST Priority GHG Reduction Measures.

1. Create a Pilot Project to Electrify Tribal Vehicles

This measure aims to replace 20 gasoline-powered vehicles in the Tribal fleet with EVs. Due to limited EV infrastructure in the area such as EV charging stations and repair and maintenance of EVs, this pilot project will allow the tribe to assess the feasibility of switching its entire fleet to EVs in the future. The Tribal fleet consists of 106 vehicles; this project will transition 18% of the fleet to EVs.

According to the EPA's Greenhouse Equivalencies Calculator, gasoline powered vehicles emit 4.2 MT CO₂e per year (EPA, 2024c). By replacing 20 vehicles, the emissions will be reduced by 60.8 MT CO₂e.

Reduction Measure #1: Create a Pilot Project to Electrify Tribal Vehicles	
Description	Replace 18% of tribal vehicles with EVs.
Estimate of the GHG Emissions Reduction	60.8 MT CO ₂ e
Implementing Agency	FPST Environmental Department, Transportation Department
Milestones for Obtaining Implementing Authority	Tribal Council Approval

Implementation Schedule and Milestones	Year 1: Purchase 10 EVs to replace gas-powered vehicles. Year 2: Purchase 10 EVs to replace gas-powered vehicles.
Geographical location	FPST
Metrics for Tracking Progress	GHG emissions saved from electrifying fleet per year; vehicle miles traveled by electric vehicles.
Applicable Sector	Transportation

2. EV Charging Stations Installation

This measure aims to expand the EV charging infrastructure to meet the increasing demand associated with switching to EVs. The Tribe currently has 2 charging stations at the Fallon-Fox Peak Station. This measure plans to install an additional 5 charging stations to charge Tribal and personal vehicles. The expansion of the EV charging infrastructure aims to reduce fuel consumption and encourage the shift from gasoline and diesel-powered vehicles to EVs. The total estimated GHG reductions from this measure is 209 MT CO₂.

Reduction Measure #3: EV Charging Station Installation	
Description	Install 5 EV charging stations to charge Tribal and personal vehicles.
Estimate of the GHG Emissions Reduction	209 MT CO ₂ e
Implementing Agency	FPST Environmental Department
Milestones for Obtaining Implementing Authority	Tribal Council Approval
Implementation Schedule and Milestones	Year 1: Install 3 EV charging stations. Year 2: Install 2 EV charging stations.
Geographical location	FPST
Metrics for Tracking Progress	Number of EV chargers installed, average annual energy savings per home, Tribal member satisfaction surveys
Applicable Sector	Electricity use, transportation

3. Energy Audits and Retrofits

Energy audits and retrofits for Tribal homes and facilities are proposed to reduce electricity and heating demands for residential, and administrative buildings. Energy audits will identify which systems need to be upgraded to reduce energy demands (i.e. lightning upgrades, weatherization of homes and buildings, replacement of appliances). Specifically, this measure aims to enhance energy efficiency in homes through the use of heat pumps in conjunction with oil, propane gas and wood heaters. Due to cold temperatures in the area, this option will allow residents to use heat pumps for heating when temperatures are moderate and use other heating sources when temperatures are below freezing. This dual-fuel system will reduce the use of propane, oil and wood heating in homes.

When properly installed, an air-source heat pump can deliver up to three times more heat energy to a home than the electrical energy it consumes. This is possible because a heat pump transfers heat rather

than converting it from a fuel like combustion heating systems. Heat pumps are also efficient source of cooling and can be beneficial in homes that lack central air conditioners

The goal of this measures is to install heat pumps in 30 Tribal homes. Under this measure, residents will have the option to either opt in or out of retrofits and energy audits. The total emission reductions from this measure is 88 MT CO2e.

Reduction Measure #3: Energy Audits and Retrofits	
Description	Conduct energy audits to identify energy-saving opportunities in Tribal homes and facilities. Retrofit 50 Tribal homes with heat pumps.
Estimate of the GHG Emissions Reduction	18 MT CO2 from 10 homes using propane heaters. 50 MT CO2 from 10 homes using oil heaters. 20 MT CO2e from 10 homes using wood heaters.
Implementing Agency	FPST Environmental Department, Housing Department
Milestones for Obtaining Implementing Authority	Tribal Council Approval
Implementation Schedule and Milestones	Year 1: Install heat pumps in 15 homes. Year 2: Install heat pumps in 15 homes.
Geographical location	FPST
Metrics for Tracking Progress	Number heat pumps installed, average annual energy savings per home, Tribal member satisfaction surveys
Applicable Sector	Electricity use

4. Solarize Tribal Homes

This measure aims to provide fully funded installation of rooftop solar panels for homes with net metering capabilities for 30 homes on the Reservation. In a net metering scenario, the surplus energy produced is supplied to the grid, and residents would receive a credit for any extra energy produced. 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 also increases resilience during power outages and allows the Tribe to be more energy independent.

Under this measure, residents will have the option to either opt in or out of solarizing their homes.

Reduction Measure #1: Solarize Tribal Homes	
Description	Provide fully-funded solar panel installation for 30 tribal homes.
Estimate of the GHG Emissions Reduction	686 MT CO2e
Implementing Agency	FPST Environmental Department, Housing Department
Milestones for Obtaining Implementing Authority	Tribal Council Approval
Implementation Schedule and Milestones	Year 1: Install solar panels in 15 homes.

	Year 2: Install solar panels in 15 homes.
Geographical location	FPST
Metrics for Tracking Progress	Number solar panels installed, average annual energy savings per home, Tribal member satisfaction surveys
Applicable Sector	Electricity use

2.3 Benefits Analysis

The burning of fossil fuels generates co-pollutants that have local impacts including criteria air pollutants (CAPs) and hazardous air pollutants (HAPs). While the measures included in this PCAP aim to reduce GHG emissions, they also serve to significantly improve air quality and public health of the FPST residents through the reduction of air pollutants. This section provides an inventory of co-pollutants emissions, and a description of co-pollutants benefits for each reduction measure.

Co-pollutants Inventory

To determine co-pollutants emissions, we used the 2020 NEI dataset. The NEI does not collect data for the FPST emissions. As a result, Churchill county co-pollutant emissions were scaled down using the population of the FPST.

Pollutant	Emissions (tons)	Pollutant Type
Ammonia	133	CAP
Carbon Monoxide	295	CAP
Nitrogen Oxides	72	CAP
PM10 Primary (Filt + Cond)	111	CAP
PM2.5 Primary (Filt + Cond)	22	CAP
Sulfur Dioxide	0.4	CAP
Volatile Organic Compounds	365	CAP
Formaldehyde	12	HAP
Methanol	54	HAP
Toluene	3	HAP
Xylenes	2	HAP

Table 4 2020 Co-Pollutant Emissions.

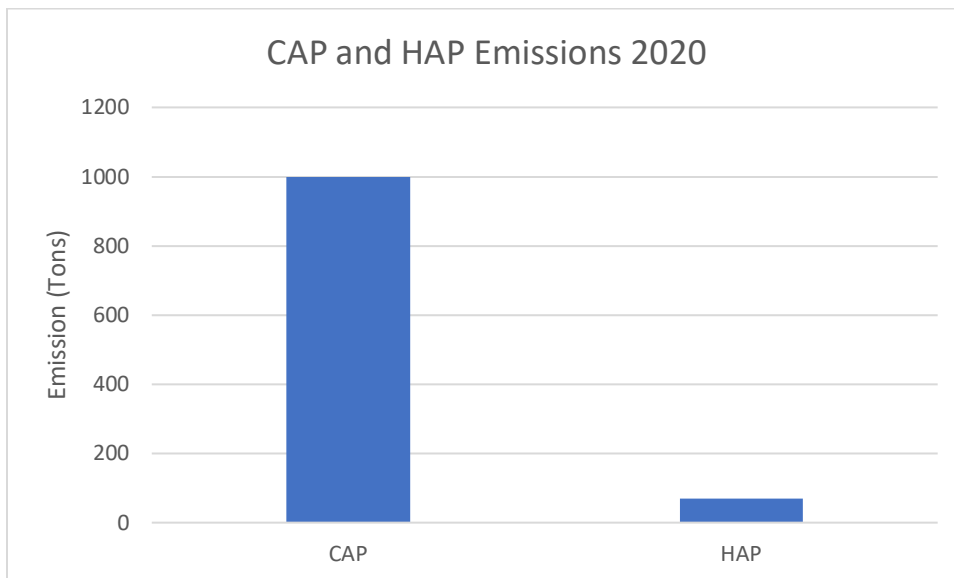


Figure 4 FPST CAPs and HAPs Emissions.

Co-Benefits of Priority Emissions Reduction Measures

1. Create a Pilot Project to Electrify Tribal Vehicles

Electrification of Tribal fleet targets will reduce air pollutants 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 (PM_{2.5} & 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.

Transitioning to EVs will reduce air pollution and improve air quality on Tribal land, 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 be reduced, as electricity is generally cheaper than gasoline. The pilot project will also allow the Tribe to assess the feasibility of switching its entire fleet to EV and encourage Tribal members as well to transition to EVs.

2. EV Charging Stations Installation

The Tribe currently has two outdated EV charging stations at Fox Peak gas station. Expanding the charging infrastructure will allow the Tribe and its members to transition to EVs. By providing charging infrastructure and 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. This measure will also allow the Tribe to meet charging needs derived from implementing the first measure.

3. Energy Audits and Retrofits

This measure aims to enhance energy efficiency in homes through the use of heat pumps in conjunction with oil, propane gas and wood heaters. Due to cold temperatures in the area, this option will allow residents to use heat pumps for heating when temperatures are moderate and use other heating sources when temperatures are below freezing. This dual-fuel system will reduce the use of propane, oil and wood heating in homes. Using source heat pumps would eliminate all CAP and formaldehyde emissions because heat pumps operate by transferring heat rather than burning fuel.

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. Heat pumps are also efficient at cooling homes and would be beneficial for homes that lack central air conditioners. Overall, the Fallon area experiences extreme high temperatures in the hot summer and cooling is needed for many homes.

4. Solarize Tribal Homes

Grid electricity relies on power generation from a variety of different sources, including ones that utilize the combustion of fossil fuel to generate power. According to NV Energy Content Label, 71 % of electricity comes from coal and natural gas sources, while 30% comes from renewable sources including solar, geothermal and hydroelectric (NV Energy, 2021).

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.

Installing solar panels on Tribal homes and facilities offers many advantages, including savings on energy costs, 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.

2.4 Review of Authority to Implement

The Fallon Paiute Shoshone Tribe is a sovereign government with jurisdiction over the FPST Reservation and Colony, the Tribe is governed by a by a seven-member governing body known as the Fallon Business Council. As a sovereign government, the Tribe has the authority to implement laws, regulations, and codes passed by the Fallon Business council on all lands held by the Tribe.

All of the GHG reduction measures identified in Section 2.2 are located on Tribal Land. To implement reduction measures, the EPD and other Tribal department must obtain the Council's approval to apply for grant funding. If an emission reduction measure is funded through a CPRG implementation grant or a similar grant, an official resolution would be adopted by the Council to accept the grant and authorize the implementation of the grant.

3. Next Steps

The EPD will continue to develop the Tribal GHG inventory to encompass all sources of emissions, and develop additional GHG reduction measures. The EPD will also continue its outreach and engagement with the community and tribal departments to identify GHG reduction measures, and apply for GPRG and other funding to implement projects to reduce GHG emissions.

4. Appendix

4.1 Emission Reductions Estimate Method

Create a Pilot Project to Electrify Tribal Vehicles

According to the EPA Greenhouse Gases Equivalencies Calculator, a gasoline-powered vehicle emits 4.20 MT CO₂ per year, while an electric vehicle emits 1.16 MT CO₂e per year. Replacing 20 gasoline-powered vehicles with 20 EVs, would reduce emissions by 60.8 MT CO₂e.

EV Charging Stations Installation

On Average a level 2 charging station, charges 25 miles per hour of charging time. Assuming that each charging station is used 8 hours a day, 5 charging stations would provide electricity for 365,400 miles per year. Using the current average fuel efficiency of 24.1 miles per gallon for passenger gasoline-powered vehicles (EPA, 2024a), and the emission rate of 8.887×10^{-3} metric tons CO₂/gallon of gasoline (EPA, 2024 c), annual reduction in emissions from this measure is 209 MT CO₂.

Energy Audits and Retrofits

The Tribe aims to enhance energy efficiency of Tribal homes through the use heat pumps to reduce the use of propane, oil and wood heaters. According to the EPA's household carbon footprint calculator (EPA, 2023), the average household CO₂ emissions from propane is 2.6 MT CO₂, and 70% of annual propane consumption is used for space heating, making the emissions from heating with propane 1.8 MT CO₂ per home. Propane emissions from 10 homes can be reduced by 18 MT CO₂. The average CO₂ emissions from fuel oil is 5.6 MT CO₂ (EPA,2023), 87% percent of fuel oil consumption is used for heating, making the emissions 4.9 MT CO₂ per home, oil emissions from 10 homes can be reduced by 49 MT CO₂. For wood, the annual household use is 25.8 MMBTU (Energy Information Administration, 2023a), and according to EPA emission factors (EPA, 2024d), the total GHG emissions from wood is 2.5 MT CO₂e per home. We assumed that 100% of wood is used for heating, making the total emissions from 10 homes 25 MT CO₂e.

Solarize Tribal Homes

According to Energy Information Administration, in 2020 the average household in the western United States consumed approximately 8,608 kWh of electricity per year (Energy Information Administration, 2023b). For 30 homes the total electricity used is 258,240 kWh, the total electricity emissions from 30 homes is 94 MT CO₂ (EPA, 2024).

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