**All Measures**

*Table – Total of all Measures*



*Table – Summary of all Measures*



**Measure 1 – Built Environment**

**GHG Reduction Estimate Method**

The request for Measure 1 focuses on energy audits and efficiency improvements for single-family residential homes and replacing fireplaces with EPA certified woodstoves.

GHG reductions for energy efficiency improvements use the CARB model for Weatherization of Low-Income Dwellings provided by the State of California’s Air Resources Board. The model estimates emissions using calculations based on the type and number of homes. This CPRG request assumes energy audits and efficiency improvements for 650 homes.

The CARB does not account for differences in building type or quality – it assumes a constant level of inefficiency and potential improvement. The actual improvement may vary from home to home.

Separately, this measure includes purchasing and installing EPA-certified wood stoves for 350 homes. The homes in question either use fireplaces or non-certified wood stoves as a central heat source. GHG estimates come from CARB’s model for Woodsmoke Reduction, which calculates reductions using emissions from the current woodstove/fireplace to the emissions for the new EPA-certified woodstove.

The Nez Perce Tribe currently has 262 homes with fireplaces as the primary heat source and 325 with uncertified wood stoves or inserts. This estimate assumes all 262 homes with fireplaces and 88 homes with uncertified wood stoves are converted to EPA-certified wood stoves. Upgrading homes with fireplaces is a priority because fireplaces are less efficient and present greater air quality issues than wood stoves.

We did not calculate the actual wood burned by Nez Perce Tribal members and relied exclusively on the assumptions in the CARB model. It is possible that Tribal members burn more or less wood than estimated by CARB.

**Models/Tools Used**

* CARB Weatherization of Low-Income Dwellings
* CARB Woodsmoke Reduction
* Excel to calculate the GHG reductions

**Measure Implementation Assumptions**

|  |  |  |  |
| --- | --- | --- | --- |
| **Assumption** | **Homes** | **Data Source** | **Context** |
| Audits/upgrades | 650 | Nez Perce | Homes included for energy upgrades and weatherization |
| Wood stoves | 350 | Nez Perce | Homes included using fireplaces (264) and non-certified wood stoves or inserts (86) |

*Table – Energy Audits and Upgrades*

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*Table – Woodstoves*

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**GHG Reduction Estimate Assumptions**

* Residential homes receiving energy audits and efficiency upgrades = 650
  + CARB Total energy savings per home per year = 2,430 kWh
  + eGRID emissions factor for NWPP (updated 2022) – 605.9 lbs CO2e/MWh
  + CARB census Tract = Single Family
  + CARB Energy Pricing = Residential
* Residential homes receiving EPA-certified wood burning stoves = 350
  + Fireplaces to be converted to EPA-certified wood burning stoves = 262
  + Wood stoves to be converted to EPA-certified wood burning stoves = 88
  + CARB GHG reductions per year from fireplace conversion = 4.15 MTCO2e
  + CARB GHG reductions per year from fireplace conversion = 1.50 MTCO2e

**Reference Case Scenario**

There are 7,353 single-family homes on the Nez Perce Reservation of varying age, construction type, and construction quality. All of these homes will benefit from energy audits and improvements. The current request is for 650 of those homes. Energy audits will identify opportunities to weatherize buildings and reduce energy use. Weatherization upgrades may include but, are not limited to, sealing leaks in building envelope and heating/cooling systems, improving insulation, upgrading appliances, sealing or replacing doors and windows, minor wall/roof repairs, evaluating alternative heating and cooling options such as electric heat pumps, mini splits, installing ceiling fans, and insulating water heaters. Some of these improvements will have the added benefit of reducing the occupants’ exposure to the increasing amount of wildfire smoke.

Burning firewood is a cultural practice for Tribal members and a traditional and primary source of heat for many homes on the Reservation. Removing stoves and replacing them with non-wood burning heat sources is not a viable option because of the cultural importance. Therefore, we looked at the impacts of converting to certified alternatives.

**Measure-Specific Activity Data**

This measure assumes that weatherization will reduce energy use for single family homes and thereby reduce overall GHG emissions. The corresponding reduction and energy use is based on the CARB model for Weatherization of Low-Income Dwellings. Actual improvements will vary based on the type of home and the mitigations implemented. Specific data used includes the total number of homes and CARB estimates for kWh and the eGRID MTCO2e factor for the NWPP subregion.

Emissions from fireplaces and non-certified wood stoves is based on the CARB model for Woodsmoke Reduction and data includes the total number of fireplaces and woodstoves, EPA certified wood stoves or inserts as the replacement, and CARB estimates for MTCO2e.

**GHG Emissions Reduced**

*Table – Energy Efficiency Improvements*



*Table – Woodstove Emissions Reduction*



*Table – Total Emissions Reduction Measure 1*



**Measure 2 – Renewable energy installation**

**GHG Reduction Estimate Method**

The request for Measure 2 focuses on solar installation at the Clearwater River Casino & Lodge and the Field Office in Joseph, OR. Both locations would be fully powered by solar upon completion of this project.

Estimated costs for purchasing and implementing solar panels and arrays are based on industry averages. Other costs include purchase and installation of Tesla PowerWalls and Tesla Megapacks.

GHG reductions are based on eliminating electricity purchased from the local grid. We used 2023 utility data (kWh) for each location as the baseline for reductions and assumed there would be no change in demand. Additionally, propane used at the Joseph Field Office and will be discontinued

**Models/Tools Used**

* eGRID Summary Data for the NWPP subregion (2022 data)
* *EPA Emission Factors for GHG Inventories 2024* was used to calculate MTCO2e for propane
* Excel to calculate the GHG reductions based on kWh and the eGRID factors over the implementation period

**Measure Implementation Assumptions**

*Table - Timeline for implementation*

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**GHG Reduction Estimate Assumptions**

* Solar installation locations = Clearwater Casino & Lodge and Field Office in Joseph, OR
* 2023 baseline for both locations – 3,102,500 kWh
* eGRID emissions factor for NWPP (updated 2022) – 605.9 lbs CO2e/MWh
* Total kWh replaced by solar – 3,102,500
* 2023 baseline for Propane use in Joseph, OR – 1,897 gallons
* Emissions factor for Propane – 0.027 MTCO2e per gallon
* kWh replaced by solar – 100%
* Gallons of propane replaced by solar – 100%
* No change in electricity demand in future years
* No change in eGRID emissions factor for NWPP in future years

**Reference Case Scenario**

The Nez Perce Tribe is installing solar panels and arrays, along with Tesla PowerWalls and Megapacks, to make the Tribe fully energy independent. This is a long-term project and this request for CPRG funding is one component of the overall project.

Energy use by the buildings in future years is assumed to remain flat (or unchanged) from the 2023 baseline. We did not account for any year-over-year increases in demand, nor any decrease in demand related to efficiency improvements that may be implemented between 2025 and 2030 (or 2050).

Additionally, the GHG estimates do not account for any “greening” of the energy grid. Our understanding is that the State of Idaho does not have a green energy goal and did not include any requests for renewable energy in their PCAP.

**Measure-Specific Activity Data**

This measure assumes that all electricity produced via solar power has zero carbon emissions and fully eliminates the eGRID-estimated emissions from commercially purchased electricity. Solar efficiency is assumed at 100% and that the Tesla PowerWalls and Megapacks provide sufficient storage capacity to power buildings without requiring supplemental energy from the grid.

This project will replace 3,102.5 MWh of purchased electricity by 2030 using solar panels and arrays.

**GHG Emissions Reduced**



**Measure 3 – Fleet Electrification**

**GHG Reduction Estimate Method**

This request is a part of Measure 3 outlined in the PCAP. This part of the CPRG application will install four Level II and two Level III chargers. Installing these chargers starts to build the foundation for the EV charging network needed to develop an all-electric fleet.

The Nez Perce Tribe currently has two chargers and the GHG estimates are based on reports provided by Chargepoint for those two chargers. These chargers and the six new chargers will be available to a combination of employees and the public.

The estimates include emissions reduced by employees and the public charging EVs. Reductions from transitioning the fleet at the Joseph Field Office (based on the Nez Perce Tribe’s fleet transition plan) are also included, though the funding for the fleet transition is not included in this request.

**Models/Tools Used**

* Excel model to calculate the GHG reductions using 2022 as the baseline year for MTCO2e
* Charging meter use report from Chargepoint showing MTCO2e
* EPA GHG emissions factors from the 2024 GHG Emission Factors Hub for vehicle type and model year

**Measure Implementation Assumptions**

*Table - Timeline for implementation*

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**GHG Reduction Estimate Assumptions**

* Charger installation locations – Clearwater River Casino & Lodge and Field Office in Joseph, OR
* Level II chargers = 4
* Level III chargers = 2
* EV charger emissions reduction = 5.5 MTCO2e per year (based on 2022 data from a Chargepoint report for the existing Nez Perce Tribe EV chargers)
* Timeline for transition to all electric fleet
* EPA GHG emissions factors from the 2024 GHG Emission Factors Hub for vehicle type and model year
* Annual emissions factors per vehicle based on vehicle type and annual miles travelled:
  + Light-duty Truck = 5.8 MTCO2e
  + SUV = 8.9 MTCO2e
  + Sedan = 5.2 MTCO2e

**Reference Case Scenario**

The Nez Perce Tribe intends to convert its entire fleet to electric vehicles and doing so requires installing a network of meters. The Joseph Field Office is not close to cities that may have charging stations. Installing chargers at that location is a critical first step to converting the Fleet.

Adding chargers at the Clearwater River Casino & Lodge will allow visitors to charge their EVs. The Casino is also a frequent midway point for through-travelers to fill up with gas. Installing chargers here will bridge a large geographical gap between charging stations.

All the chargers will be available to a combination of the public and employees. The use data and subsequent emissions are based on reports provided by Chargepoint from existing Nez Perce Tribe chargers.

Fleet vehicles range in model years. EPA data for emissions based on model year along with average miles for each vehicle type (e.g., Light-duty truck, SUV, Sedan) was used to derive an annual emissions factor for each vehicle. That data is reflected in the table in the GHG Emissions Reduced section.

Additionally, the GHG estimates do not account for any “greening” of the energy grid. Our understanding is that the State of Idaho does not have a green energy goal and did not include any requests for renewable energy in their PCAP.

**Measure-Specific Activity Data**

This measure assumes that emissions reductions 2022 emissions because there is insufficient data to project the amount of charging in future years. It also assumes that the emissions reduction from use of those chargers will remain flat, which is a conservative estimate.

GHG emission reductions reflect a reduction in miles travelled using gasoline fueled cars and light-duty trucks. Chargepoint provides the Nez Perce Tribe with reports that show the kg of CO2e that are reduced from use of the stations. That data was used to estimate the reductions.

**GHG Emissions Reduced**

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