

Northern Cheyenne Tribe Priority Climate Action Plan

April 1, 2024

The Northern Cheyenne Environmental Protection Department's vision is to:

“Work together to protect, preserve, and enhance our land, air, and water by sustaining our natural habitats and species ... for the benefit of present and future generations.”



Prepared for:
U.S. Environmental Protection Agency
Climate Pollution Reduction Grant Program

Prepared By:
The Northern Cheyenne Tribe
in conjunction with
The Sheward Partnership
sustainability consultant

**Northern Cheyenne Tribe
Priority Climate Action Plan**

April 1, 2024

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1.1 Tribal history and Environmental Background

The Northern Cheyenne Tribe has a laudable history of protecting the health of the ecosystems within their control. The Tribe's values and way of life intertwine seamlessly with greenhouse gas reduction measures which will benefit the Tribe and set a precedent for other Native environmental measures. In order to understand the vision of the Tribe today, and their historic connection to their home it is important to have some overview of the Northern Cheyenne's history.

The Northern Cheyenne Tribe is located in a very remote and rural part of southeast Montana with few businesses and limited employment, housing, education, transportation, and health care resources. Despite many hardships, the Tribe and its members retain 99 percent ownership and control of its Reservation land base. This is the result of determined effort, much sacrifice, and skillful leadership and negotiations over many generations.

Beginning in the mid-1800s, there were numerous attempts to remove the Northern Cheyenne from their home territory and relocate them to other parts of the west. Following many armed conflicts with the U.S. military to retain its homeland (including the 1876 Battle of Little Big Horn) many Northern Cheyenne were forcibly relocated to Oklahoma. Soon thereafter, Chief Dull Knife and Chief Little Wolf led bands of Northern Cheyenne in fighting their way back from Oklahoma to their traditional homeland in present day Montana. The Northern Cheyenne Tribe was unique, as many other relocated tribes did not fight back to their historic homeland. This journey came at great cost to the Tribe—death, imprisonment, and other deprivations—as the Tribe was assaulted along the way home by thousands of hostile militia members and European settlers. In the late 1870s and early 1880s, the Northern Cheyenne began to re-establish themselves in areas near the Tongue River, settling on Lame Deer Creek, Muddy Creek, Rosebud Creek, and the Tongue River. Recognizing the importance of this area to the Cheyenne people, Presidential Executive Orders in 1884 and 1900 established the current Northern Cheyenne Reservation. Unfortunately, the many sacrifices the Tribe made to keep their land base intact and uncompromised are reflected in the generally impoverished conditions of the community today.

In the mid-20th century, mining companies began to express interest in developing what are known to be valuable, large-scale reserves on the Northern Cheyenne Reservation. The first coal sale on the Reservation took place in 1966. By 1971 lease options were held by mining companies to virtually the entire unallocated portion of the Reservation. However, review of these leases revealed that the financial terms were below fair market value and the leases were issued in violation of various federal laws, including the National Environmental Policy Act (NEPA).

In 1973, the Tribal Council formally petitioned for cancellation of the lease agreements, and in 1974 the Secretary of the Interior issued a decision suspending coal development on the Reservation. Ultimately, pursuant to legislation passed by Congress at the Tribe's request, the leases were cancelled. At the same time, the Tribe began to fear that individual Tribal members would attempt to lease allotted lands for coal development and requested that Congress terminate the grant of mineral rights to allottees and reserve mineral rights on the Reservation "in perpetuity for the benefit of the Tribe." Congress took action conditioned on a judicial determination that the allottees did not have vested rights to the mineral deposits under the 1926 Northern Cheyenne Allotment Act. In *Northern Cheyenne Tribe v. Hollowbreast*, 425 U.S. 649 (1976), the United States Supreme Court confirmed that the 1926 Act did not give allottees vested rights to the mineral deposits on the Reservation, and the Tribe formally regained control of the mineral rights underlying the Reservation.

Also in the 1970s, as a result of the plan to construct two 750-megawatt coal-fired generators approximately 20 miles north of the Reservation the Tribe became the first governmental entity to voluntarily classify its own air shed as "Class 1" under the federal Clean Air Act, a designation that had previously been applied only to national parks and wilderness areas.

In the 1980s, the Tribe successfully challenged a massive sale of federal coal surrounding the Reservation on the grounds that the sale breached the trust responsibility to the Tribe, violated federal coal leasing regulations, and violated the National Environmental Policy Act (NEPA). In 1996, the Tribe joined forces with other groups to successfully challenge the proposed extension of a mining permit for the proposed Montco coal mine.

More recently, the Tribe has continued to protect its environment and its territory. In 2006, the Tribe led successful litigation to protect water quality in the Tongue River from impacts associated with coalbed methane operations. The Northern Cheyenne was one of the first tribes to participate in the Land Buy Back Program to consolidate fractionated land interests, which resulted from the *Cobell v. Salazar* settlement. Over the course of several years, the Tribe successfully purchased and consolidated 20,166 acres to Tribal ownership. In 2013, the EPA approved Treatment as a State under the Clean Water Act for the Tribe and its water quality standards. From 2013 - 2015, the Tribe actively participated in opposing the Tongue River Railroad proposal, which was designed to support future coal extraction east of the Reservation on Tribal aboriginal lands. The proponents of the railroad abandoned the proposal just after the Tribe submitted voluminous comments opposing the project to the U.S. Surface Transportation Board. In 2014, at the Tribe's request, Congress passed the Northern Cheyenne Lands Act, which corrected a federal error allowing off-Reservation coal interests ownership of millions of tons of coal under 5,000 acres of Reservation land and provided other land-related benefits to the Tribe. Since 2017, the Tribe has been a lead plaintiff in two lawsuits arising out of the United States end of a coal leasing moratorium instituted by the Obama administration, and associated environmental review carried out by the Trump administration. As a result, coal leasing was at a virtual standstill for several years. In 2020, the EPA approved the Tribe's application for Treatment as a State under the Clean Air Act. In 2022, the EPA approved the Northern Cheyenne's Tribal Implementation Plan. The Tribe was the first in the EPA's Region 8 to obtain such approvals. In 2022, the Tribe obtained federal approval of its newly enacted Northern Cheyenne Tribal Land Leasing Act under the HEARTH Act, which provides for Tribal permitting of wind, solar and business leases on Tribal land, including a Tribal process to evaluate the environmental, cultural, and other aspects of lease proposals.

As a result of all of the above and many other efforts, the Northern Cheyenne Tribe now owns 100% of its subsurface interests and nearly 100% of surface interests. This is a monumentous and unique

accomplishment, as not many federally-recognized Indigenous territories own this much of their surface and subsurface rights. This historical struggle is a direct expression of the value in which the Northern Cheyenne people hold their remaining homeland. Many Tribal members regard this stewardship as a sacred trust inherited from their forebears.

In sum, the Northern Cheyenne Tribe demonstrably prioritizes the health and well-being of its territories over the economic benefits of resource extraction. The Tribe is committed to maintaining these ecologies, including human and non-human life forms and ecologies, and responsible human-citizen relationship with them.

1.2 PCAP Overview

The following Priority Climate Action Plan (PCAP) includes the required elements of a Green House Gas (GHG) Inventory, Priority GHG Reduction Measures, Benefits Analysis, GHG reduction estimates, and Review of Authority to Implement.

The GHG inventory is focused on data available from Tribal government sources. Gathering data from hundreds of private residences is not feasible. The data available from the Tribal Government and the team's discussions with Tribal members led to the following Priority GHG Reduction Measures. A more thorough list of possible emissions reduction and potential carbon sequestration projects will be included with the Comprehensive Climate Action Plan (CCAP).

As these projects move forward the Tribe will continue to study other possible funding sources and focus more directly on workforce planning with a goal to increase in-house expertise on climate and GHG issues. This study will be included in the CCAP report (under this grant) and hopefully its measures can be made reality through the Phase 2 CPRG implementation grants.

1.3 PCAP Approach

Northern Cheyenne leadership and constituents worked with tribal consultants The Sheward Partnership (TSP) sustainability consultants and the Ziontz Chestnut law firm to prepare the GHG Inventory and the selection and analysis of GHG reduction measures.

The Northern Cheyenne Environmental Protection Department (EPD) and TSP coordinated data collection from the Tribal agencies and suppliers most closely tied to the Tribe's GHG emissions. EPD, with support from Tribal leadership, sought voluntary disclosure of data from those non-governmental entities with relevant information.

EPD worked with key stakeholders from Tribal and federal agencies, and from existing outside consultants and advisers to oversee and coordinate overall development of the PCAP. These key stakeholders convened an in-person meeting on February 28 to review the PCAP and CPRG process and discuss Priority Actions. The Actions described in the report were a direct result of that discussion and the consensus reached by the group.

Moving into the CCAP and CPRG phases of the project the EPD Project Manager will utilize the support of the consultants as needed. It is the Tribe's goal to ensure the Tribal community is fully engaged and consulted throughout this process. The Tribe will engage the broader public (emphasizing Tribal members,



on and off reservation, and non-member residents on the Reservation) through public meetings (in person and virtual) and opportunities for comment. The CCAP will summarize and, where appropriate, incorporate and respond to the feedback received.

2.4 Tribal Organization and Record

The Tribe's Environmental Protection Department (EPD) was created and located in Lame Deer, Montana on the Northern Cheyenne Reservation and serves as the governmental agency that regulates the environment on the Reservation for the benefit of the Tribe. The EPD includes several core programs that actively manage and monitor air quality, surface and ground water, wetlands, non-point source pollution, environmental compliance, habitats, youth programs, brownfield assessments and mitigation, climate change adaptation, reservation community education, and advancement on the Northern Cheyenne Reservation.

Since 2016, the Tribe has passed many Tribal Council resolutions to implement goals to develop renewable energy.

- In 2019, the Tribe established a committee of the Tribal Council called the "Sustainable Energy Committee" which was reaffirmed by Tribal Council action in 2021.
- The Tribe has added a Renewable Energy Manager to the Tribal workforce.
- The Tribe installed a 97-kw solar array that powers the Littlewolf Capitol Building and another solar array for a community building.
- The Tribe installed a meteorological tower on Garfield Peak to measure the available wind resources.
- The Tribe secured a \$3 million U.S. Department of Energy grant to develop a community solar project to reduce members' reliance on fossil fuels.
- The Tribe completed a report funded by the Department of Commerce about the solar, wind and micro-hydro energy opportunities on the Reservation and solicited proposals from the industry to assist with development of the Tribe's renewable energy opportunities in a formal Request for Proposal (RFP) process led by the Tribal President and Council.
- The Tribe submitted an initial proposal to Puget Sound Energy for the sale of power from a large-scale wind project and has advanced to the second round.
- The Tribe received a \$1.5 Million FEMA Building Resilient Infrastructure and Communities (BRIC) to fund a three-year microgrid scoping project.

2.5 Tribal PCAP Management and Development Team

Northern Cheyenne Environmental Protection Department

Charlene W. Alden

Scott Williams

Northern Cheyenne Development Corporation

Donna Fisher

Northern Cheyenne Tribal Council

Melissa Fisher

Donavin Limberhand

Norma Gourneau

Debra K. Charrette

Eva Foote

Northern Cheyenne Investigative Services

John J. Grinsell

Northern Cheyenne Tribal Health

Kayla Grinsell

Northern Cheyenne Tribal Housing Authority

Rod Trahan

Northern Cheyenne Disaster and Emergency Services

Angel Lei

Chief Dull Knife College

Bill Briggs

2.3 Collaborations

Ziontz Chestnut Law Firm

Brian Chestnut, Partner

Liliana Elliott, Associate Attorney

The Sheward Partnership, Sustainability Consultants

David Mazzocco, Senior Sustainability Project Manager

Grey Fowles, Building Science Manager

Bradley Gay, Architect, Sustainability Project Manager



3.1 GHG Inventory

The Sheward Partnership collected data provided by the Northern Cheyenne Tribal government and entered that data into the Community Greenhouse Gas Inventory Tool (CGGIT) provided by the EPA. The data and subsequent calculations are divided into three scopes.

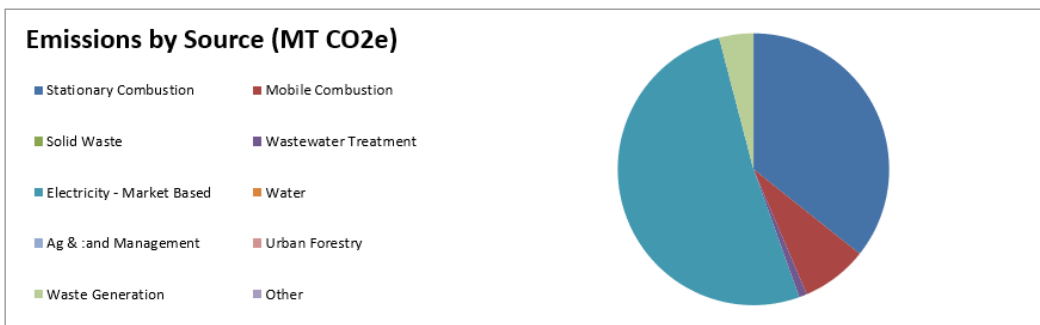
Scope 1: all the direct emissions made on-site and controlled by the Tribal government.

Scope 2: all indirect emissions purchased from external sources by the Tribal government.

Scope 3: all other emissions associated with the Tribal government.

The results of the study show that collectively the Tribal government is estimated to have emitted 1,931 metric tonnes of carbon dioxide equivalent (CO₂e) in the calendar year of 2022. For context, this is equivalent to the CO₂e of 179 average American homes, 839 barrels of oil, 358 passenger vehicles, or 10.2 railcars of coal.

The majority of the CO₂e emissions were from 3 main sources: electricity 51%, propane heating 36%, and vehicles 8%. Solid waste and wastewater treatment combined account for 5% of overall CO₂e.



Scope 1 Emissions

Building Propane Heating Emissions:

The Tribal government has 22 buildings that have natural gas connections, all serviced by Morning Star Propane. The 2022 energy bills for each building are measured in gallons. The total natural gas usage for 2022 was 120,012 gallons which produced 689 MT CO₂e of greenhouse gas.

Vehicle Emissions:

Accounting for the total annual miles driven by the Tribal government in an official capacity within the Reservation boundary for the year 2022 is impossible. Several factors prevent an accurate accounting including:

- Annual mileage is not recorded for each vehicle.
- Vehicles are driven outside the Reservation boundaries.
- Vehicles are driven after hours in non-official capacities.
- Some vehicles are no longer operational but may still be included in the tribal vehicle rosters.

To complete the vehicle emissions calculations a statistical analysis was made to estimate the total vehicle miles traveled. A list of 141 “official use” Tribal vehicles was compiled from various Tribal entities. Of the 141 vehicles, 28 of them were excluded from the study for the following reasons.

- 3 are construction vehicles in which there was no way to accurately account for the mileage.
- 7 recreational vehicles with no mileage reported.
- 4 are vehicles that are 2023 or 2024 models and were not active for the 2022 year.
- 14 are vehicles with no known model year.

The mileage for each of the remaining vehicles is estimated using the following methodology.

- The United States Department of Transportation's average vehicle mileage for Montana in 2022 was calculated as 11,430 miles¹.
- All vehicles with a model year of 2016 or newer are attributed 11,430 miles.
- All vehicles with model years older than 2016 use the following formula to estimate the annual mileage.

$$\text{Estimated Annual Mileage} = \frac{11,430 \text{ miles}}{(2016 - \text{vehicle model year})}$$

- The result shows an average vehicle mileage for the included vehicles is 2,548 miles for the year 2022.

The fuel type for each vehicle is estimated using the following methodology.

- All heavy-duty vehicles were assumed to be using diesel.
- All passenger cars, light trucks, vans, and SUVs were assumed to be gasoline.

The total annual estimated miles driven for the year 2022 was 287,965 miles which produced emissions of 152.2 MT CO₂e.

It is recommended that the Tribal government keeps track of the annual mileage for each vehicle. This will reduce some of the potential errors in the statistical estimation in the future.

Wastewater Emissions:

The CGGIT wastewater CO₂e calculation is based on the number of people using each of 5 different wastewater system types. The calculation appears to assume that any person entered as a value into one of the system types is using that system 24/7/365. However, the scope of this study only includes the

¹ https://www.bts.gov/archive/publications/state_transportation_statistics/summary/table_05_03

Tribal government’s impact. The following calculation is used to go from the total Tribal population listed in the Control Sheet of the CGGIT to the number of Tribal government employees that would be equivalent to using the wastewater system 24/7/365.

4,450	Tribal population provided by the Tribe
60%	% of the population in the workforce (estimation)
2,670	Updated Population Total
55%	Employment rate ²
1,602	Updated Population Total
45.6%	The state of Montana document says that nationally 45.6 percent of jobs held by Native American residents on reservations are with a local, tribal, state or federal government. ³
731	Updated Population Total
40%	% of those workers that work for the Tribe (estimation)
292	Total Employees
24%	% of the time that an employee is working (40-hour week)
70	Total 24/7/365 Equivalent Employees

The 70 people are distributed to the two different wastewater system types located on the Reservation: open pit systems, which are considered aerobic treatment facilities (3.2 people), and septic systems (66.4 people).

The total annual estimated metric tonnes of CO₂e from wastewater is 18.33.

Scope 2 Emissions

Building Electrical Emissions:

The Tribal government has 74 buildings that have electrical connections all served by Tongue River Electrical CO-OP. The total electrical usage for 2022 was 3,428 MWh which produced 992.6 MT CO₂e of greenhouse gas.

The NWPP eGRID Subregion produces 638.34 CO₂e per MWh. This value is from the EPA and is built into the CGGIT calculator.

Research was conducted to determine a more specific CO₂e per MWh for Tongue River Electrical CO-OP, however, the carbon accounting team could not find any documentation online that lists all the specific values for carbon dioxide, methane, and nitrous oxide (CO₂, CH₄, and N₂O respectively). If the data can be found, the 638.34 CO₂e per MWh will be updated.

Scope 3 Emissions

² https://lmi.mt.gov/_docs/Publications/LMI-Pubs/Special-Reports-and-Studies/ReservationEmploymentFactSheet.pdf

³ <https://doe.state.wy.us/lmi/1199/a2.htm>

Solid Waste Emissions:

The solid waste for the Tribal government for 2022 is reported as 2,347 tons. The resulting emissions of CO₂e is 78.86 metric tonnes. This is based on 74.1 CO₂e per metric tonne of solid waste⁴. The solid waste is transported outside of the Reservation boundaries.

Total Northern Cheyenne Tribe Emissions (MT CO ₂ e)								
	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	Total MT CO ₂ e	Percent of Total
Scope 1	838.79	19.25	1.74	-	-	-	859.78	45%
Scope 2 - Location Based	986.80	2.53	3.30	-	-	-	992.62	
Scope 2 - Market Based (for informational purposes only)	986.80	2.53	3.30	-	-	-	992.62	51%
Scope 3	-	-	-	-	-	-	-	0%
Total Gross Emissions	1,825.59	100.64	5.03	-	-	-	1,931.26	96%
Total Net Emissions	1,825.59	100.64	5.03	-	-	-	1,931.26	96%

Emissions by Source (MT CO ₂ e)								
Source	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	Total	Percent of
Stationary Combustion	686.61	0.92	1.74	-	-	-	689.26	36%
Mobile Combustion	152.18	-	-	-	-	-	152.18	8%
Solid Waste	-	-	-	-	-	-	-	0%
Wastewater Treatment	-	18.33	-	-	-	-	18.33	1%
Electricity - Location Based	986.80	2.53	3.30	-	-	-	992.62	
Electricity - Market Based (for informational purposes only)	986.80	2.53	3.30	-	-	-	992.62	51%
Water	-	-	-	-	-	-	-	0%
Ag & Land Management	-	-	-	-	-	-	-	0%
Urban Forestry	-	-	-	-	-	-	-	0%
Waste Generation	-	78.86	-	-	-	-	78.86	4%
Total (Gross Emissions)	1,825.59	100.64	5.03	-	-	-	1,931.26	100%
Total (Net Emissions)	1,825.59	100.64	5.03	-	-	-	1,931.26	100%

⁴https://sustainable.stanford.edu/sites/g/files/sbiybj26701/files/media/file/scope_3_emissions_from_waste_march_2023.pdf

3.2 GHG Reduction Measures and Benefits Analysis

The preceding inventory shows a not-unexpected distribution of GHG emissions; electricity, propane and gasoline. The following Priority Actions are targeted to address these same GHG emission sources. (Note that the Priority Action Items are organized so that each includes a discussion of EPA recommended content specific to that action item. Benefits, GHG reductions, and workforce development are listed for each item individually.)

Priority Action 1: Deployment of Large-Scale Renewable Energy Projects

Description: Currently the Northern Cheyenne Tribe depends on electricity provided by the NWPP Subregion which is generated by 85.6% fossil fuel and destructive energy sources⁵. The Tribe is currently exploring the deployment of commercial scale, 400-megawatt (MW) wind and solar energy generation on the Reservation to minimize their GHG impact and provide sustainable renewable energy to both the Reservation and to cities across the High Plains and Pacific Northwest.

The Tribe will partner with a highly skilled and experienced renewable energy company to design, construct, deploy, and operate both wind and solar projects on the Reservation. The projects will feed into the nearby Colstrip substation, located to the North of the Reservation, which will afford the Tribe the ability to market its energy development through a robust existing substation. While the project is in the early development stages, the Tribe has dedicated significant time and resources to understanding how it can use its lands to offset the greenhouse gas emissions generated by non-renewable energy development. The Tribe will look for opportunities to allocate a portion of the energy developed in these projects to offset emissions from their electrical loads. Additionally, by marketing this energy through the Colstrip substation, the Tribe would be providing green, sustainable energy to cities in Montana or the Pacific Northwest, thus reducing GHG emission both on and off the Reservation.

This renewable energy generation projects will offer increased energy independence, resiliency, and provide community benefits such as on the job training and employment for tribal members. The Northern Cheyenne live in an Environmental Justice Disadvantaged Community, as identified by the EPA⁶, and a project of this nature would benefit a community with low employment rates and low economic development made worse by the pending closure of the nearby coal plant in Colstrip.

There are a range of regulatory and coordination issues the Northern Cheyenne and their consultant team will navigate to build, own, and operate wind and solar electricity generation and the associated microgrids. These include:

- Environmental permitting to assess the existing conditions and suitability of a given site to house energy facilities.
- Archaeological and historic preservation studies and approvals will be undertaken to ensure cultural sites are avoided and respected.
- Electric utility interconnection studies to ensure the new energy generation does not have a negative impact on existing grid services.

Projects: The Priority Action can be subdivided into the following projects:

⁵ <https://www.epa.gov/egrid/power-profiler#/NWPP>

⁶ <https://ejscreen.epa.gov/mapper/>

- 350 MW capacity wind turbines
- 50 MW capacity photovoltaic (PV) array
- Utility interconnect
- Transmission lines

Costs: Total project cost is estimated to be \$700 million. The Northern Cheyenne are partnering with investment groups, and using FEMA Bric Funding to make this project feasible. The Tribe needs outside funding of their own, such as the CPRG Implementation Grant, to make the project a feasible, beneficial use of their land and resources.

Schedule: This project is currently in design, and the Tribe is negotiating with potential partners. Once the funding is in place the team will begin the interconnect permitting process. This approval will take 1-2 years for the wind project, followed by 2-4 years of construction. The PV project is subject to a different approvals process, and less construction complexity. The PV project could be expected to be completed in 2 years or less after contracts and permits are in place.

Work Force Development:

Wind: An undertaking of this magnitude will involve several years of specialized construction teams working on the Reservation. There will be several hundred temporary workers on site who will all require support services (food, housing, etc.) during their time on the Reservation. This will create an estimated 30-50 jobs for Tribal members and other economic benefits.

After the project is complete 10-15 certified wind technicians will be required for operations and maintenance for the life of the turbines. Chief Dull Knife College, a public tribal land-grant community college in Lama Deer MT, is positioned to support this training. Additionally, there are at least two other major wind projects in the vicinity which will also require wind technicians, a training center for this certification, and a base for ongoing re-certifications.

Photovoltaic: The PV project is, relative to wind turbine installation, more conventional. Its construction requires laborers, specialized subcontractors, and trained electricians (following a 5-year apprenticeship) that may directly support Tribal members. The commercial scale array will also require ongoing operations and maintenance staff.

Benefits Analysis:

Direct GHG benefits:

- Create renewable energy sources
- Reduce GHG impacts of electricity use

Co-benefits:

- Reduce public health risks from power outages.
- Provide resilient, local, affordable power systems.
- Create construction jobs
- Workforce training in the emerging green energy tech sector
- Revenue generation that can be applied to other GHG-reducing initiatives
- Promotion of environmental justice for community that has been adversely impacted by fossil fuel economy

GHG Reduction Estimate:

The project will produce a quantifiable reduction in the use of high GHG grid supplied electricity by creating a new large-scale new renewable energy source for use both on and off the Reservation. The 400 MW wind and photovoltaic system will produce an estimated 1,336 giga-watt hours of electrical power annually. This will offset 1,385,328 metric tonnes of CO₂ equivalent every year it operates. The expected operational life is 40 years.

Summary Table:

Description	Create a new 400MW renewable energy source linked to the national power grid
Implementing Agency	Northern Cheyenne Environmental Protection Department
Benefits	Large scale renewable energy source with no GH emissions for use both on the Reservation and across the High Plains and Pacific Northwest
Estimated GHG Reductions	1,385,328 MT CO ₂ e annually for 40 years 55,413,120 MT CO ₂ e total
Estimated Cost	\$700 million
Estimated \$ / MTCO₂E	\$12.6 \$ / MTCO ₂ E
Progress Metrics	Partnering agreement / contractual relationship Permitting in place Energy produced

Priority Action 2: Community-Scale Renewable Energy with Reservation Micro-Grid Distribution

Description: Currently the Northern Cheyenne Tribe depends on electricity provided by the NWPP Subregion which is only 13.8% wind and solar⁷. The Tribe is interested in community scale photovoltaic (PV) arrays to minimize their GHG impact and provide affordable, reliable power for their needs.

This installation will be combined with a Reservation scale electrical micro-grid. A microgrid is a local energy network that can operate independently or in parallel with the main power grid.

This microgrid and renewable energy generation projects will offer some measure of energy independence, increasing resiliency, and reduced periods without basic utility needs. This is a direct public health issue. Power outages on the Reservation quickly become dangerous due to the below average

⁷ <https://www.epa.gov/egrid/power-profiler#/NWPP>

quality housing and the demanding Montana climate. The Northern Cheyenne live in an Environmental Justice Disadvantaged Community as identified by the EPA⁸.

The two discrete microgrid systems will align with the county divisions, and development densities on the Reservation. Each microgrid will provide 5 MW of photovoltaic power, 5 MW of lithium ion battery storage, and 3 MW of propane fueled emergency back up generators.

This system is estimated to provide 80%-90% of all buildings on the Reservation with reliable, renewable power.

There are a range of regulatory and coordination issues which the Northern Cheyenne and their consultant team will navigate to build, own, and operate microgrids. The Tribe has an established relationship with ProtoGen Incorporated, an energy and microgrid development consultant, to help guide them through the regulatory and project management issues. These coordination tasks include:

- Environmental permitting to assess the existing conditions and suitability of a given site to house energy facilities.
- Archaeological and historic preservation studies and approvals will be undertaken to ensure cultural sites are avoided and respected.
- Electric utility interconnection studies to ensure the new energy generation does not have a negative impact on existing grid services.

Projects: The Priority Action can be subdivided into the following projects:

- Photovoltaic modules
 - ground mounting system
 - transformers / inverters
 - meters panels fuses
- Storage and support
 - battery storage
 - emergency backup generators
- Microgrid
 - distribution infrastructure
 - NWPP grid connection

Costs: Each microgrid system is estimated to Cost \$25M. The total project cost, as described, is \$50M.

Schedule: This project is currently under design (using FEMA BRIC funding). Design and procurement will take 2 years. Construction will take 2-3 years.

Work Force Development: The micro grid installation and interconnections will involve years of specialized construction teams working on the Reservation. There will be many temporary workers on site who will all require support services (food, housing, etc.) during their time on the Reservation.

The PV project construction requires laborers, specialized subcontractors, and trained electricians (following a 5-year apprenticeship) that may directly support Tribal members.

Both the microgrid and the PV array will require ongoing operations and maintenance staff. The current

⁸ <https://ejscreen.epa.gov/mapper/>

estimate is that 5 to 6 full time, permanent jobs will be created on the Reservation, and that they will be a mix of administrative and field positions.

Benefits Analysis:

Direct GHG benefits:

- Create renewable energy sources
- Reduce GHG impacts of electricity use

Co-benefits:

- Reduce public health risks from power outages.
- Provide resilient, local, affordable power systems.
- Create construction jobs
- Workforce training in the emerging green energy tech sector
- Reduce utility bills of impoverished community

GHG Reduction Estimate: The project will produce a quantifiable reduction in the use of high GHG grid supplied electricity by offsetting residential energy use with established renewable energy technology. The two 5 MW PV arrays will generate 22 gig-watt hours annually, which will offset 22,710 metric tonnes of CO₂ equivalent every year it operates.

Summary Table:

Description	Build new, resilient renewable energy based micro-grid electrical infrastructure
Implementing Agency	Northern Cheyenne Environmental Protection Department
Benefits	Reduced GHG emissions / reduction of fossil fuel use Decreased energy bills Eliminate health risks from utility outages and exposure to extreme outside temperatures
Estimated GHG Reductions	22,710 MTCO ₂ E annually for 30 years 681,300 MTCO ₂ E total
Estimated Cost	\$ 50 million
Estimated \$ / MTCO₂E	\$73 / MTCO ₂ E
Progress Metrics	Permitting in place Energy produced

Priority Action 3: Create New Energy Efficient Housing and Community Building Prototypes

Description: Many of the Northern Cheyenne buildings on the Reservation do not adequately protect their occupants from the long, harsh Montana winters, potential major storm events, or internal pollution sources (cooking and other appliances, finish materials, mold, etc.). This is both an energy use issue and a

critical public health issue. The Northern Cheyenne Tribe, and its members, are identified by the EPA as an Environmental Justice Disadvantaged Community.

Based on the current greenhouse gas (GHG) inventory 87% of the Tribe's CO₂ equivalent emissions are from building electricity and heating needs. Reducing building energy use is the Tribe's highest priority.

The Tribe has proposed developing new, highly insulated, high-performance, affordable homes and community buildings for tribal members. The home designs would respond to the specific needs of the Northern Cheyenne in several ways, including but not limited to:

- Unique tribal needs would be considered to create housing types that allow for multi-generational families to share a safe, warm home. Aging-in-place and universal accessibility guidelines will be considered.
- Climate-specific, high performance, easily built building envelopes will be designed to provide the most economically feasible response to the demands of the South Eastern Montana climate.
- Reduced utility bills.
- High efficiency, non-fossil-fuel heating and ventilation systems will be used to minimize energy use. The design will follow Passive House (PHIUS) strategies and recommendations, reducing energy use by up to 85%⁹.
- Increased indoor-air-quality. The design team plans to use a continuously operating heat-recovery ventilation system with high MERV filtration to reduce indoor pollutants and increase available fresh air. Much of the Wind River Reservation has asthma rates above the 95th percentile nationally, per the EPA's EJ Screen.
- Increased resiliency. Highly insulated, low energy use buildings can more easily "ride out" power failures during inclement weather by minimizing heat energy losses to the exterior. This is a major public health issue on the Reservation throughout the long winter season.)
- Develop community amenity buildings that support families and aging populations such as daycare and community buildings. Locate these buildings to promote local development density and minimize driving.
- Construction methods for combining the advantages of prefabrication with site specificity will be explored. Creating long-term, skilled, on-reservation jobs is a priority. This project may provide a toe-hold in the burgeoning pre-fabricated building industry.

The Tribal leadership has identified the need for 3 types of housing. They described the first as "wrap around housing" where apartments would be co-located with social services to serve tribal members who have recently returned from incarceration or treatment facilities. These individuals may need assistance to successfully reestablish themselves. The second is multi-generational family housing, designed to comfortably include a large 3-generational family, with both large gathering spaces and separate private areas. The Tribe has identified a clear need for this type of home for both those in need of financial assistance, and to retain young professionals on the Reservation. These market rate and subsidized housing types will be intermingled to help create healthy sustainable neighborhoods. The final type of housing needed is an "assisted living" community. The Tribal Housing Authority currently operates an independent living community for Tribal elders but cannot currently offer options for those with greater medical needs.

⁹ <https://www.phius.org/passive-building/what-passive-building/passive-building-principles>

The Tribal Housing Authority is currently conducting a Reservation wide housing assessment (using federal HUD funding) to quantify housing needs. For the purposes of this PCAP the Tribe has identified 25-30 units of mixed income multi-generational housing as a potential Phase One.

In order to successfully complete this project the Tribe will need to make significant investments in the Reservations infrastructure (beyond the renewable energy items discussed previously). Tribal leadership believes that the existing aquifer / ground water resources are being exhausted, and the Tribe has suffered through periods without adequate water supply in recent years. Additionally, new infrastructure for the management of sewage is needed across the Reservation to reduce health risks and decrease methane emissions. These infrastructure projects are a necessary part of the new mixed income, higher density housing that the Tribe needs.

Projects: The Priority Action can be subdivided into the following projects:

- Phase 1 Housing Project
Design and construction of 25-30 multi-generational mixed income homes
- Potable Water Infrastructure
Conduct study assessing and locating available ground water
Design and construct new extraction, storage, and distribution infrastructure
- Sanitary Sewage Treatment
Design and construct new sanitary sewage treatment infrastructure for Phase One the Housing Project.

Costs: The forthcoming Potable Water Assessment, the Design of the Phase One housing project, and its attendant infrastructure upgrades will give a much more accurate total project cost.

The project as described will exceed \$25 million dollars. Low-income housing development, and the infrastructure projects may be eligible for HUD grants and other funding outside of the CPRG Implementation Grant.

Schedule: The tribe plans to begin the Phase One design process as soon as is possible following award of federal funding, ideally the CPRG Implementation Grant.

The process will begin with a programming conversation to ensure that the housing design responds to the unique cultural and climatic needs of the Northern Arapaho, rather than being a typical subsidized housing solution. The design and documentation phase will last approximately 9 months. Bidding, contract negotiation, procurement and mobilization will take at least 3 months, and construction should be expected to last 18 months or more.

Work Force Development: The construction of multiple residences, apartments, community buildings, and supporting infrastructure will provide employment opportunities on the Reservation for skilled craftsman, and unskilled labor. The inclusion of apprenticeship or training programs in the construction trades will be a priority in the selection of the construction management team.

Benefits Analysis:

Direct GHG benefits:

- Reduce inefficient electrical usage, deploy high efficiency electrical HVAC systems and appliances
- Eliminate propane / natural gas usage for new homes

Co-benefits:

- Increase community health through improved resiliency, and less dependence on existing grid power
- Increase community health through improved indoor air quality
- Create construction jobs
- Workforce training in emerging technologies
- Provide non-traditional, multi-generational housing opportunities
- Provide new, desirable housing within the community
- Lower utility bills of impoverished community
- Provide new social service facilities

GHG Reduction Estimate: The proposed new homes and social service offices will be fossil fuel free, with air source heat pump heating systems, and all high-efficiency electric appliances. Estimating the GHG reduction measures for the totality of this undertaking is difficult to quantify for many reasons, including individual privacy rights. During the design phase the team will use advanced building science calculations to estimate both (1) the energy use of the proposed design, and (2) that of a typical existing home, quantifying the annual electrical and fossil fuel savings of the proposed design, and its GHG reduction.

For the purposes of this PCAP the Tribe has identified 25-30 units of mixed income multi-generational housing as a potential Phase One.

Summary Table:

Description	Build new energy efficient, climate responsive housing to meet needs of Northern Cheyenne Tribal members.
Implementing Agency	Northern Cheyenne Tribal Housing Authority
Benefits	Reduced GHG emissions per household / elimination of fossil fuel use Decreased energy bills Increased community health (exposure, asthma, etc.)
Estimated GHG Reductions	TBD
Estimated Cost	Phase 1: more than \$25 million
Estimated \$ / MTCO₂E	TBD
Progress Metrics	Number of units built and occupied Building Energy Use

Priority Action 4: Weatherization / Electrification of All Existing Homes on The Reservation

Description: As discussed in the description of Priority Action 3, adequate, safe, warm homes are a major public health issue on the Reservation. Many currently occupied homes do not provide safe protection from the demanding Montana climate.

The Tribe owns and administers 286 low-income housing units and, based on 2020 census data, an estimated 1,030 additional privately owned residences on the Reservation. Every single Northern Cheyenne family would benefit from a home inspection focused on improving the buildings insulation, air sealing, and water proofing systems. The Tribe will manage follow-up action on priority issues, assuring completion and quality.

Following inspection and weatherization evaluation the Tribe will promote adoption of air source heat pump heating systems and high efficiency electrical appliances for homes in need. This Action item is symbiotic with the electrical service improvements suggested in Priority Action 2.

Projects: The Priority Action can be subdivided into the following projects:

- Weatherization and Heating system Inspections
 - Individual on-site evaluations
 - Report of findings
 - Recommendations
- Inspections
- Installation
- Verification

Costs: Based on available estimates and recognizing that weatherization needs will vary widely from house to house, an estimate of \$30,000 per house for inspection, weatherization, and air source heat pump installation is reasonable.

There are approximately 1,300 residences on the Reservation, so the total project cost will be approximately \$39 million.

There are multiple possible funding sources for home weatherization available grants and rebates ranging from federal HUD and programs to local utility providers. The team will research and identify these in the development of the CCAP report.

Schedule: Immediate. Begin home inspections as soon as is possible following award of federal funding. Begin improvements as quickly as possible thereafter.

Work Force Development: Home weatherization tasks will provide employment opportunities for trained home inspectors and for skilled tradespeople to implement the recommended updates. There are possible curriculum development and training program partnerships with Chief Dull Knife College.

Benefits Analysis:

Direct GHG benefits:

- Reduce inefficient electrical usage, deploy high efficiency electrical HVAC systems and appliances
- Reduce propane / natural gas usage

Co-benefits:

- Increase community health through improved interior temperature regulation
- Increase community health through improved indoor air quality
- Create construction jobs
- Workforce training in emerging technologies
- Reduce utility bills of impoverished community

GHG Reduction Estimate: The metric used by the Tribe to measure the success of this action will be the total number of residential units that have been inspected and improved. All homeowners who consent to an inspection should have one.

More quantitatively, with the property owner’s permission the Tribe will track residential energy use before and after the weatherization / electrification items have been implemented.

Summary Table:

Description	Inspect and upgrade existing reservation housing as needed Provide high efficiency air source heat pumps and upgraded appliances where necessary
Implementing Agency	Northern Cheyenne Tribal Housing Authority
Benefits	Reduced GHG emissions per household / reduction of fossil fuel use Decreased energy bills Increased community health (exposure, asthma, etc.)
Estimated GHG Reductions	TBD
Estimated Cost	\$39 million
Estimated \$ / MTCO₂E	TBD
Progress Metrics	Number of homes inspected Number of homes with completed weatherization / electrification measures installed Energy use tracking metrics (before / after) for selected residences.

Priority Action 5: Replace Tribal Owned Fleet Vehicles with Hybrid and Electric Vehicles

Description: Based on the current GHG inventory 8% of the Tribe’s total emissions are due to car and truck usage. The Northern Cheyenne Indian Reservation is a remote, low-density area requiring significant travel times.

The Tribal government is interested in phasing in electric, hybrid, and potentially biodiesel or compressed-natural gas / methane fleet vehicles. (Large trucks may not be available as electric / hybrids, but propane, compressed natural gas, or biodiesel may be feasible.) The Tribe will add electrical charging infrastructure at public buildings, supporting further private adoption of electrical vehicles.

The Tribe buys fleet vehicles regularly, as needed, but cannot afford to replace their fleet more rapidly without assistance. Excluding large “heavy duty vehicles” the Tribe’s fleet consists of 8 passenger cars and 77 light trucks (vans, standard sized pickups, SUVs).

The Tribal government has historically used former fleet vehicles to community members in need of safe, reliable transportation, providing additional economic and quality-of-life benefits to the community.

Projects:

- Car fleet replacement
- Truck Fleet replacement
- Charging stations

Costs:

- New EV or Hybrid car: \$45,000¹⁰
- New standard size hybrid pickup truck: \$65,000¹¹
- Charging Stations: \$2,000 each

Total Fleet vehicle replacement: \$5.4 Million
Charging stations (assuming 15): \$30,000

Note that some fleet vehicles are replaced by the Tribe every year and the above costs are for the total vehicle cost to replace the entire inventory, NOT just the premium to move from a standard vehicle to an EV / Hybrid. This premium, depending on vehicle model selected, is decreasing as EVs and Hybrids become more common.

Schedule: Ongoing as fleet vehicles require replacement.

Work Force Development: The installation and maintenance of EV charging stations will create employment opportunities. The update of fleet vehicles to established hybrid and emerging EV technologies will help the existing maintenance and mechanical staff remain competitive.

Benefits Analysis:

Direct benefits:

- Reduce GHG emissions due to gasoline use.

Co-benefits:

- Provide more diverse skillset / training for fleet vehicle mechanics and maintenance staff.
- Provide public infrastructure for alternative fuel vehicles.
- Provide save affordable used vehicles to community members as fleet vehicles are replaced.
- Encourage EV use by demonstrating their viability

GHG Reduction Estimate:

The baseline assumption in the EPA GHG inventory tool are that passenger cars use 24.1 MPG gasoline and light trucks use 18.5 MPG. If the passenger cars owned and operated by the Tribe are replaced with electric vehicles, and they are powered by onsite renewable sources then their functional emissions will be zero. If the light trucks are replaced with hybrid trucks using currently available technology they can

¹⁰ Subaru Solterra AWS (electric) \$45,000; or Toyota Rav4 Prime (hybrid) AWD \$44,000 38/94 MPG

¹¹ Ford F-50 Hybrid \$68,000 25 mpg; or Toyota Tundra Hybrid \$58,000 20/24 mpg

be expected to average around 22 MPG. (The tribe will consider fully electric light trucks depending on the expected use of each vehicle.) These assumptions result in an annual projected savings of 2,622 gallons of gasoline and 23.3 MTCO₂e annually.

Summary Table:

Description	Replace existing gasoline fleet vehicles with electric and hybrid vehicles
Implementing Agency	Northern Cheyenne Tribal Council Northern Cheyenne Environmental Protection Department
Benefits	Reduced GHG emissions from Tribal owned Vehicles Increased EV infrastructure to incentivize private adoption
Estimated GHG Reductions	23.3 MTCO ₂ e annually 233.0 MTCO ₂ e total over ten year expected life.
Estimated Cost	\$5.4 Million
Estimated \$ / MTCO₂E	\$23,200 \$ / MTCO ₂ E
Progress Metrics	Number of vehicles purchased Number of charging stations installed

3.3. Review of Authority to Implement

The Northern Cheyenne Tribe, as a sovereign, federally recognized Indian nation has the authority to enact GHG reduction measures on the Northern Cheyenne Reservation for the benefit of the Tribe's members. The Northern Cheyenne Tribal Council (Tribal Council) is empowered under the Tribe's constitution to "[t]o protect and preserve the property, wildlife, and natural resources of the Tribe and to regulate the conduct of trade and the use and disposition of property upon the reservation¹²." The Tribal Council was included in the development of the PCAP and helped to develop the GHG reduction measures through key stakeholders' meetings, so it is reasonable to assume that the Council would pass resolutions to carry out these measures as many of them were identified at the Council's direction.

Additionally, under the Northern Cheyenne Tribal Leasing Act which was approved by the United States under the authority of the HEARTH Act, and other federal statutes, the Tribe has broad authority to engage in the leasing of lands and the issuance of environmental permits on lands beneficially owned by the Tribe. In furtherance of this authority, the Northern Cheyenne Tribal Code affords many governmental departments the authority to carry out the specific GHG reduction measures identified in this PCAP. Where a project occurs within the Northern Cheyenne Reservation for the benefit of the Tribe's members the Tribe, its Council, and its governmental departments have broad authority to carry out these measures.

Priority Action 1: Deployment of Large-Scale Renewable Energy Projects

As a federally recognized Indian tribe with broad, sovereign authorities, the Northern Cheyenne Tribe is positioned to review and implement all GHG reduction measures including those that would require the construction of a renewable energy project. The Northern Cheyenne Environmental Protection Department has broad authority to oversee the construction and operation of a renewable energy project on the Reservation and can conduct environmental review where appropriate, most prominently the Northern Cheyenne Leasing Act which includes a robust environmental review component.

Priority Action 2: Community-Scale Renewable Energy with Micro-Grid Distribution

Please see discussion of authorities to implement applicable to Priority Actions 1, 3, and 4.

Priority Action 3: Create New Energy Efficient Housing and Community Building Prototypes and Priority Action 4: Weatherization of All Existing Homes on The Reservation

Residential: The Northern Cheyenne Tribe has the authority to construct residential buildings on the Reservation for the benefit of the Tribe's members. To enact and construct this specific measure, the Tribe would adhere to the authorities and guidance provided in the Northern Cheyenne Leasing Act, federal statutes promulgated by the U.S. Department of Housing and Urban Development, the International Building Code, and the Tribe's Landlord and Tenant Code (Ordinance DOI-011 (06)). The Tribal Council has broad authority, under the Northern Cheyenne Constitution, to enter into agreements with private partners and carry out the requirements of federal grant assistance. NCT Const. Art. IV (e). Therefore, the Northern Cheyenne Tribe, and its governmental departments, possess the authority to execute all aspects of a green, efficient housing project on the Northern Cheyenne Reservation.

Community Structures: The Northern Cheyenne Tribal Council has the authority to enter into agreements and contracts with private entities to build community improvements on the Northern Cheyenne

¹² Northern Cheyenne Constitution, Article IV (k).

Reservation for the benefit of the Tribe's members. To begin a project of this nature, the Council would need to pass a resolution authorizing the private entity, or federal program, to begin development on the Reservation. Given the Council's involvement in the development of this GHG reduction measure, it is likely that the Council would execute this resolution and resolutions can be passed quickly by the Council. The Tribe follows the International Building Code and is currently developing its own Tribal Building Code and would apply these standards to all construction on the Northern Cheyenne Reservation.

Priority Action 5: Replace Tribal Owned Fleet Vehicles with Hybrid and Electric Vehicles

Within the Northern Cheyenne Reservation, for Northern Cheyenne operated facilities and agencies, the Northern Cheyenne Tribe has the authority to review and then implement mobile source vehicle improvements to lower GHG emissions. The Northern Cheyenne Tribe, through the Tribal Council and Northern Cheyenne Environmental Protection Department, has broad authority to provide its employees with mobile vehicles to carry out the responsibilities of employment. The Northern Cheyenne Tribe has certain driving laws which would be considered for this specific GHG reduction measure.

