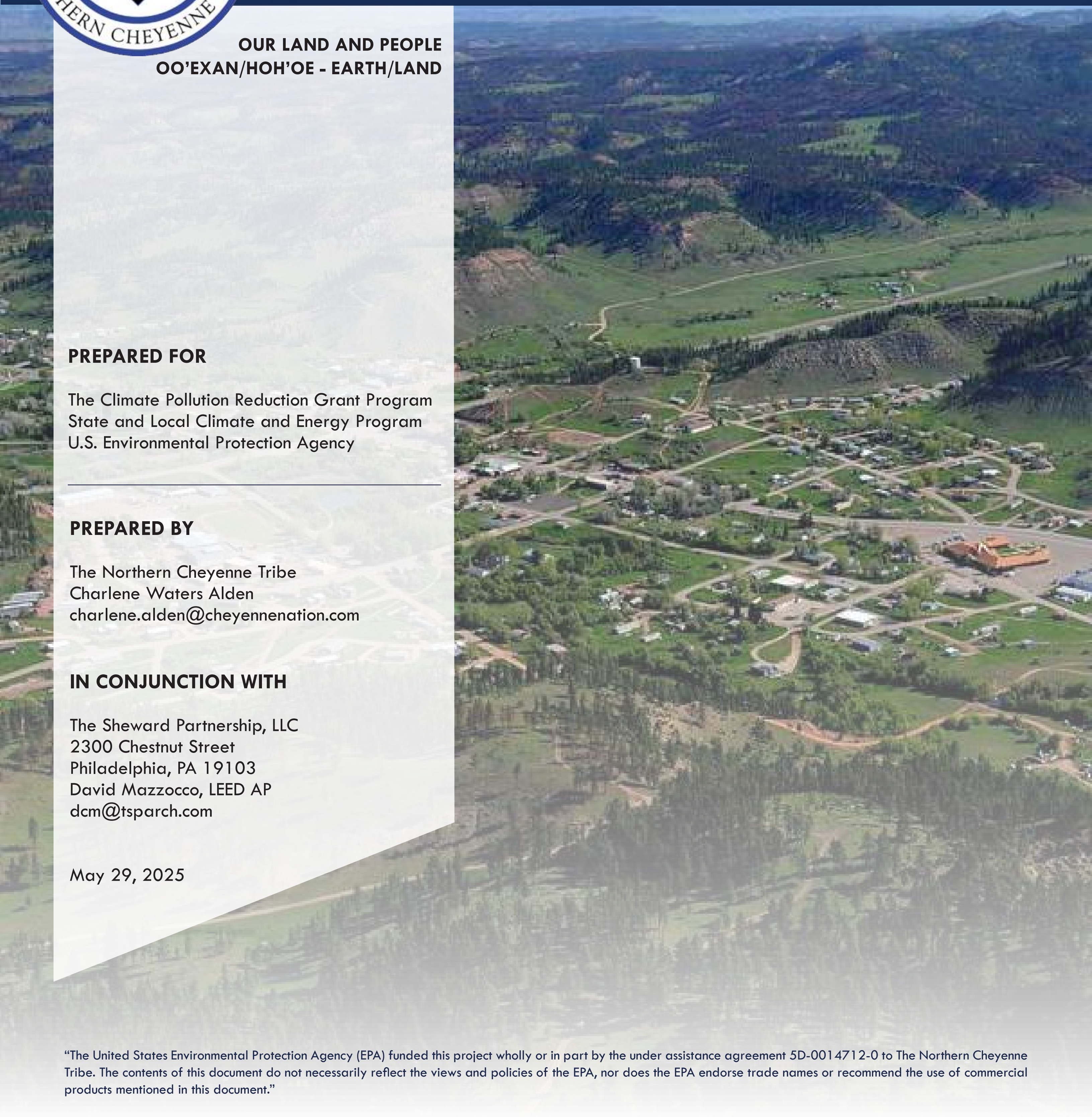
NORTHERN CHEYENNE TRIBE
COMPREHENSIVE CLIMATE ACTION PLAN



OUR LAND AND PEOPLE
OO'EXAN/HOH'OE - EARTH/LAND

PREPARED FOR

The Climate Pollution Reduction Grant Program
State and Local Climate and Energy Program
U.S. Environmental Protection Agency

PREPARED BY

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Message to Our Community

The Northern Cheyenne Tribe's Department of Environmental Protection is responsible for managing and monitoring multiple environmental and natural trust resources on the Reservation, including leading the Tribe's climate change planning and adaptation. The mission of the Environmental Programs is to make available the resources needed to protect the health, welfare, and environment of the Tribal membership and the Reservation by providing a tribal environmental presence.

The Northern Cheyenne Tribe occupies a small reservation located in southeastern Montana. The eastern portion of the Reservation lies in Rosebud County, the western portion in Big Horn County. The much larger Crow Reservation abuts Northern Cheyenne lands to the west, while the Tongue River forms the Northern Cheyenne Reservation’s eastern boundary. In all, the Reservation encompasses some 444,775 acres, or 699 square miles. Additionally, the Tribe owns tracts of unpopulated land just south of the Reservation in Montana, and near the sacred Bear Butte in South Dakota.

Although relatively small as western Indian reservations go, the Northern Cheyenne Reservation is unusual because the Tribe or its individual members own and control almost the entire Reservation land base. Only about 2 percent of the land is fee land (i.e., not held in trust- capable of being bought and sold), and only about 1 percent of the land is owned by non-Indians. None of the Indian-owned land is leased to non-Indians. Tribal and allotted grazing lands are leased to Northern Cheyenne ranchers.

The Cheyenne’s 99 percent ownership and control of the Reservation land base by Northern Cheyenne Tribal members is not a historical accident, but the result of determined effort, much sacrifice, and skillful leadership and negotiations by a succession of earlier generations. It is a tangible expression of the value in which the Northern Cheyenne people hold their remaining homeland, which many Tribal members regard as a sacred trust inherited from their forebears.

Some facts about the Northern Cheyenne’s relationship with its resources:

1. The Tribe owns 100% of the coal on the Reservation.
2. Until the last decade or so, the Tribe has been pursued by the coal industry to develop the Tribe’s coal and declined to do so. There are no plans to develop the coal on the Reservation.
3. Coal and coalbed methane development has surrounded the Reservation. Since the 1970’s, the Tribe has taken many steps to stop or mitigate the adverse impacts from such development.
4. Hundreds of Tribal members have worked in the coal industry, whether at coal mines, the Colstrip power plant, or in associated coal-related businesses. This has been and continues to be an important source of revenue for many families on the Reservation.
5. Northern Cheyenne has a Class I airshed, even though we are only 21 miles away from a coal burning power plant.
6. The Tribe is currently attempting to create a green energy economy for its people by pursuing small, medium, and large projects.
7. The Tribe has received some state coal tax revenue to fund some of its programs.

We must be aware of and promote the advancement of climate solutions goals set forth by Tribal leadership/membership in keeping our pristine water, air, land, fish, wildlife, and ecosystems and reduce our dependence on fossil fuels.

Charlene Waters Alden, Director
Northern Cheyenne Environmental Protection Department

Executive Summary

The Environmental Protection Agency's (EPA) Climate Pollution Reduction Grant (CPRG) program provided $5 billion in grants to states, local governments, tribes, and territories to develop and implement plans for reducing greenhouse gas (GHG) emissions and other harmful air pollution, with funding released in two phases: noncompetitive planning grants and competitive implementation grants. Under the CPRG planning grants, the EPA awarded the Northern Cheyenne Tribe $371,750 in federal funding. The CPRG program requires the Tribe to develop a climate action plan (CAP), beginning with a priority CAP (PCAP), and culminating in a comprehensive CAP (CCAP). The CPRG scope and thus the GHG inventory, as defined by the grant award, focuses solely on Northern Cheyenne Tribal government assets within the Northern Cheyenne Reservation and not the entire Tribe. Thus, the GHG inventory and CCAP purposely omits private residences, with the exception of Tribal owned housing where the government is paying for the utilities.

Comprehensive Climate Action Plan

A climate action plan is a comprehensive framework document for measuring, tracking, and reducing greenhouse gas emissions and adopting climate adaptation measures to guide a climate change response. These documents serve as an effective, proactive tool to guide government and community actions in addressing the impact of climate change in their communities, many of which are regionally and locally specific. CAPs include targets for reducing greenhouse gas emissions and detailed steps for meeting and tracking those targets and include elements such as resiliency strategies and clean energy targets. CAPs are also iterative and require a long-term commitment to carry out the actions outlined within.

To complement climate change mitigation strategies, CAPs are also extremely beneficial to assist entities in the pursuit of other goals, especially those that provide public health benefits, cost savings, and environmental protection for Tribal members. While the EPA awarded the grant to the Northern Cheyenne government, it is the Tribe's intent that the goals set forth in this plan benefit all Tribal members. This document should serve as a reference when exploring new projects, preparing grant proposals, or making community decisions to best position the Tribe in the pursuit of the funding necessary to deal with issues critical to the Tribe and its members. These goals include safe, healthy, resilient, and energy efficient housing, protecting its land and natural resources, developing energy sovereignty, its way of life, and afford Tribal members advances in equity and economic opportunities.

The Northern Cheyenne Environmental Department is administering the Grant for the Tribe and hired The Sheward Partnership (TSP), Philadelphia, PA, and outside legal counsel for sustainability and legal consulting, respectively. It successfully submitted the first required deliverable, the PCAP, in April 2024. The PCAP allowed Northern Cheyenne to effectively identify the major greenhouse gas emissions produced by Tribal operations and then identify preliminary reduction measures to address which the Tribe then used to enter the CPRG implementation grant competitions (open and tribal) in March and April 2024.

The CPRG requires the CCAP provide an overview of the Tribe's significant GHG sources/sinks and sectors, establish near-term and long-term GHG emission reduction goals, and provide strategies addressing the highest priority sectors in response to the increasingly severe impacts of climate change on its people, natural resources, and infrastructure. Each CCAP must include:

- GHG Inventory
- Business as Usual (BAU) GHG Emissions Projections
- Near-Term and Long-Term GHG Reduction Targets
- GHG Emission Reduction Measures
- Benefits Analysis
- Review of Authority to Implement

- Intersection with Other Funding Availability
- Workforce Planning Analysis

Greenhouse Gas Inventory

CPRG allowed the Tribe to complete its first GHG inventory during the PCAP and identify 2022 as the baseline year from which to compare future emission reductions. The CCAP updated the inventory using 2023 data and outlines the methodology and analysis used to identify emission sources, define gaps, missing information, and/or determine areas for further study.

CPRG requires the GHG inventory focus on emissions from across the Tribe's economies in six key sectors as applicable: electricity generation and/or use, industry, transportation, buildings, agriculture/natural and working lands, and waste and materials management. Based on the Tribe's assets and available data, the Inventory included only the electricity use, transportation, buildings, and waste management sectors.

The results of the Inventory show that collectively the Tribal government emitted an estimated 2,905.12 metric tonnes of carbon dioxide equivalent (MT CO_2e) in the 2023 calendar year. Overall, the Tribe's emissions are very low, especially in the context of other tribes, municipalities, and states. The primary emissions by gas are overwhelmingly from Carbon Dioxide (96%) with the remainder comprising only Methane and Nitrous Oxide. By Sector, the majority of emissions originate from the Market Based Electricity (43.75%) and Commercial and Residential Building (37.94%) Sectors, while Transportation makes up 16% due to the Tribe's rural location.

In 2023, coal-fired power plants provided the largest share of Montana's electricity generation, accounting for 45% of in-state generation and have a major impact on the Tribe's GHG emissions and air quality. As the Tribe's demand is so small compared to the greater region, its choices will have little impact on overall GHG emissions and the fight against climate change, yet it must deal with the impacts from climate change on a daily basis. Ultimately, national policy and outside market factors will be the driver to force these utilities to adopt cleaner and/or renewable fuel sources or close altogether to have any substantial impact.

Near-Term and Long-Term GHG Reduction Targets

While the Tribe is not a major contributor to the gases that cause climate change, Northern Cheyenne knowingly recognize that developing a greenhouse gas reduction target is not a solution to this global crisis, rather it is one that plays directly to its belief to live as one with the environment. Within this context, the Tribe's way of life is not and should not be the main focus; however, pursuing a carbon neutrality goal will have an enormous, positive impact on the health and well being of the Tribe and its members.

The Tribe set a progressive goal of becoming carbon neutral by 2035, defined as no net release of greenhouse gases to the atmosphere. This means balancing out total carbon emissions with energy efficiency measures, alternative energy sources and transportation options, and removal of greenhouse gases from the atmosphere via carbon sequestration projects on the Reservation.

GHG Emission Reduction Measures

Developing a GHG emissions inventory was critical in determining focus areas to develop Reduction Measures. It indicated 77% of the Tribe's GHG emissions are from building electricity and heating needs. It is worth noting the impact of the carbon intensive local electricity grid on the emissions. While building efficiency will help reduce this impact, the bulk of reductions will come via either improvements to the energy blend in the local grid or introducing renewable generation within the Reservation. Realizing this, the Tribe decided to take control of this variable ultimately for its economic as well as environmental benefit.

After vetting with key Tribal government stakeholders, including Tribal Council leadership, the CCAP emissions reduction strategies focus predominantly in the Electricity Generation and Commercial and Residential Buildings Sectors and are areas where the Tribe has the greatest potential to see reductions. Despite the CPRG program limiting scope to just Tribal Government functions, Northern Cheyenne looked to include Reduction Measures that also benefit the entire community for the purpose of caring for all its members. The Reduction Measures thus have 2 separate, but related focus areas, *Tribal Government Focused Reduction Measures* and *Tribal Community Focused Reduction Measures*, summarized in the following table:

REDUCTION MEASURE SUMMARY BY SECTOR	
MEASURE	**SECTOR**
Tribal Government Focused Reduction Measures	
Measure 1: Replace Tribal Owned Fleet Vehicles with Hybrid and Electric Vehicles	*Transportation*
Measure 2: Weatherization of Existing Buildings	*Electricity Generation and Commercial and Residential Buildings*
Measure 3: Solid Waste Reduction/Recycling	*Waste And Materials Management*
Tribal Community Focused Reduction Measures	
Measure 4: Deployment of Large-Scale Renewable Energy Projects	*Electricity Generation and Commercial and Residential Buildings*
Measure 5: Community-Scale Renewable Energy Microgrid Distribution and new DOE "Zero Energy Ready" Housing	*Electricity Generation and Commercial and Residential Buildings*
Measure 6: Coal Deposit Easement	*Natural and Working Lands*

Key Terms[1]

Adaptation (climate change): Adjustment or preparation of natural or human systems to a new or changing environment which moderates harm or exploits beneficial opportunities.

Carbon Footprint: total amount of greenhouse gases emitted into the atmosphere each year by a person, family, building, organization, or company. It includes greenhouse gas emissions from fuel that an individual burns directly, such as by heating a home or riding in a car. It also includes greenhouse gases that come from producing the goods or services that the individual uses, including emissions from power plants that make electricity, factories that make products, and landfills receiving trash.

Carbon Sinks: resources that absorb or sequester carbon dioxide from the atmosphere. In the U.S. greenhouse gas emissions inventory, the EPA refers to these sinks as the Land Use, Land-Use Change, and Forestry (LULUCF) sector. These resources include forests, coastal wetlands, agricultural soils, trees in urban areas, and landfilled yard trimmings and food scraps.

Climate: "average weather," or the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands of years. The classical period is three decades, as defined by the World Meteorological Organization (WMO). These quantities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense is the state, including a statistical description, of the climate system.

Climate Change: any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period of time (decades or longer). Climate change includes major changes in temperature, precipitation, or wind patterns, among others, which occur over several decades or longer. Climate change may result from natural factors and processes and from human activities that change the atmosphere's composition and land surface.

Comprehensive Climate Action Plan (CCAP): a narrative climate planning report that provides an overview of all GHG sources/sinks and sectors following industry standard protocols. The CCAP will establish near-term and long-term GHG emission reduction targets and identify GHG reduction measures to achieve those goals.

Energy Transition: a continuing process requiring long-term energy strategies and planning, with a country-tailored focus on applying appropriate energy technologies to reach net-zero emissions. (*source: https://www.undp.org/energy/our-work-areas/energy-transition)*

Global Warming: the recent and ongoing global average increase in temperature near the Earth's surface. Global warming can occur from a variety of causes, both natural and human induced.

Greenhouse Gas (GHG): any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). GHG is often measured in Carbon Dioxide Equivalent (CO_2e) to compare the emissions from various greenhouse gases based upon their global warming potential (GWP).

Greenhouse Gas (GHG) Inventory: a summary of all GHG emission sources and sinks by sector and the associated emissions quantified using commonly accepted protocols. The CCAP must include a comprehensive inventory of GHG emissions and sinks for the following sectors: industry, electricity generation/use, transportation, commercial and residential buildings, agriculture, natural and working lands, and waste and materials management.

Low Income / Disadvantaged Communities (LIDACs): communities with residents that have low incomes, limited access to resources, and disproportionate exposure to environmental or climate burdens. Although the Inflation Reduction Act does not formally define LIDACs, EPA publishes publicly available data sets that identify LIDACs based on different

[1] Source: EPA.GOV Glossary of Climate Change Terms, unless noted otherwise

vulnerability indices: the Climate and Economic Justice Screening Tool and the Environmental Justice Screening and Mapping Tool. These tools identify LIDACs by assessing indicators for categories of burden: air quality, climate change, energy, environmental hazards, health, housing, legacy pollution, transportation, water and wastewater, and workforce development.

Mitigation (climate change): A human intervention to reduce the human impact on the climate system; it includes strategies to reduce greenhouse gas sources and emissions and enhancing greenhouse gas sinks.

Planning Area: this is an area in which the tribal government manages, plans, or makes policy affecting the services and activities associated with built, human, and natural systems.

Priority Climate Action Plan (PCAP): a narrative climate planning report that includes a focused list of near-term, high-priority, and implementation-ready measures to reduce GHG pollution and an analysis of GHG emission reductions.

Resiliency: a capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment.

Sector: general grouping used to describe any resource, ecological system, species, management area, etc. where climate change may have an effect. For example, Transportation, Utilities, Water Resources, Forest Resources, Human Health, or Cultural Resources and Traditions.

Tribe: a U.S. federally recognized Indian tribe, band, nation, or other organized group or community, including any Alaska Native village. For the purposes of this report, this term broadly refers to the Tribal body submitting the CCAP (i.e., an individual Tribe, a consortium of Tribal nations, etc.).

Vulnerability: the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed; its sensitivity; and its adaptive capacity.

Weather: atmospheric condition at any given time or place. It is measured in terms of such things as wind, temperature, humidity, atmospheric pressure, cloudiness, and precipitation. In most places, weather can change from hour-to-hour, day-to-day, and season-to-season.

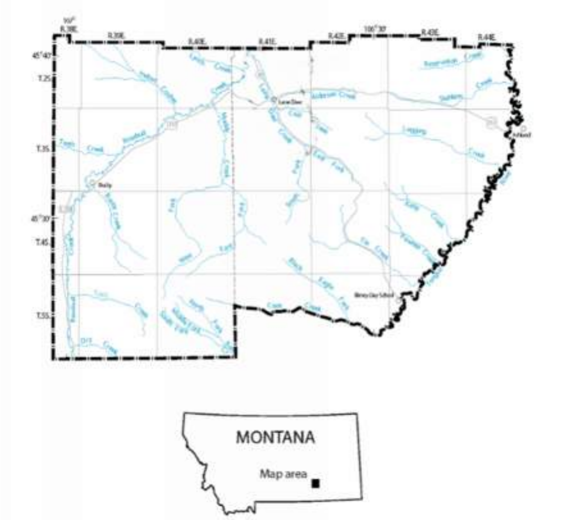
1 Overview

About The Northern Cheyenne Tribe

For generations, the environment has played a central role in the Northern Cheyenne culture. Our people believe that plants, animals, and people all have spirits that originated with and descended from creator-god, (Maheo'). Sweet Medicine (Motse'eoeve') a prophet who appeared to the Cheyenne people taught us how to live; principles of conduct, hunting, when to plant and harvest, how to use fire, and created the societies that govern our people. Our people are spiritual beings traveling through the earthly realm and tasked to care for and leave earth/land in a beneficial way for future generations.

History

Northern Cheyenne's relationship to the land and its history is a tangible expression of the value in which the Northern Cheyenne people hold for their remaining homeland; lands which many Tribal members regard as a sacred trust inherited from their forebears. Today, it is of vital importance that the Tribe maintain the environment for future generations.



Northern Cheyenne Reservation location and boundaries. Source: https://www.usgs.gov/media/images/northern-cheyenne-indian-reservation-study-area

The Northern Cheyenne Tribe of the Northern Cheyenne Reservation is a federally recognized Indigenous Tribe located in southeastern Montana on the approximately 699 square mile Northern Cheyenne Reservation, consisting of five districts: Lame Deer (tribal headquarters), Busby, Ashland, Birney, and Muddy Cluster. The Tribe currently has more than 11,000 enrolled Tribal members, with about 4460[2] living on the Reservation. The Northern Cheyenne Reservation location is a very remote and rural with few businesses and limited employment, housing, education, transportation, and health care resources. Despite many hardships, the Tribe maintains a strong, historic connection to its homeland and its members retain about 99 percent ownership and control of the Reservation land base. This is the result of determined effort, much sacrifice, and skillful leadership and negotiations over many generations.

[2] https://www.minneapolisfed.org/indiancountry/resources/native-community-data-profiles

Beginning in the mid-1800s, there were numerous attempts to remove the Northern Cheyenne from its ancestral 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) the U.S. forcibly relocated many Northern Cheyenne to Oklahoma. Soon thereafter, Chief Dull Knife and Chief Little Wolf led bands of Northern Cheyenne in fighting their way back from Oklahoma to traditional homelands in present day Montana. The Northern Cheyenne Tribe was unique, as many other relocated tribes did not fight back to their homeland. This journey came at great cost to the Tribe—death, imprisonment, and other deprivations—as thousands of hostile militia members and European settlers assaulted the Tribe along the way home. 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 its land base intact and uncompromised are reflected in the low economic development and opportunities within the community today.

Chiefs Little Wolf and Dull Knife (“Morning Star”)
Source: William Henry Jackson - http://siris-archives.si.edu/ipac20/ipac.jsp?uri=full=3100001~!9529!0&term=#focus

In the mid-20th century, mining companies began to express interest in developing what are known to be valuable, large-scale coal reserves on the Northern Cheyenne Reservation. The first coal sale on the Reservation took place in 1966. By 1971 mining companies held lease options 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 U.S. cancelled the leases. 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 federal government’s trust responsibility to the Tribe, violated federal coal leasing regulations, and violated NEPA. In 1996, the Tribe joined forces with other groups to successfully challenge the proposed extension of a mining permit for the 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. Northern Cheyenne was one of the first tribes to participate in the federal 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 aboriginal tribal lands. The proponents of the railroad abandoned the proposal just after the Tribe submitted voluminous comments 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. Beginning in 2017, the Tribe was a lead plaintiff in two lawsuits arising out of the United States' sunsetting 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 momentous and unique accomplishment, as few federally recognized tribal nations own this much of their surface and subsurface rights. This historical struggle is a direct expression of the value the Northern Cheyenne peoples hold for their remaining homelands.

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.

Tribal Structure

This study includes information and data provided by the following Northern Cheyenne Tribe administered entities:

Northern Cheyenne Tribe Government
(www.cheyennenation.com)

The Northern Cheyenne Tribe is a sovereign, federally recognized tribal government with three branches of government, executive, legislative, and judicial, governed by a constitution. The Little Wolf Capital Building in Lame Deer, MT, houses these functions. The Executive Branch consists of a President, Vice President, a Tribal Secretary, and Tribal Treasurer. The Legislative Branch consists of eleven Tribal Council members (including the Vice President) representing the 5 districts. The Judicial Branch consists of the Northern Cheyenne Tribal Court, the Northern Cheyenne Tribal Appellate Court, and the Northern Cheyenne Constitutional Court. Within the government, the Tribe has many departments each with a director overseeing the department and each director reports to the Tribal President. The departments include the following:

Little Wolf Capitol Building, Lame Deer, MT

Northern Cheyenne Development Corporation

The Northern Cheyenne Development Corporation (NCDC) is a BIA-approved entity established to be the Business and Economic Development Branch of the Northern Cheyenne Tribe. Its goals are to:

- Develop a sense of entrepreneurship in the Tribe and its' members;
- Pay its own operating expenses and capital obligations and accumulate financial reserves;
- Allocate surplus funds to the Tribe; and
- Provide employment and contracting opportunities to Tribal members and Tribal entities.

Northern Cheyenne Environmental Protection Department
(www.northerncheyenneepd.com)

The NCT established the Environmental Protection Department (EPD) in 1990 to ensure environmental protection within the boundaries of the Reservation. EPD works to protect the Northern Cheyene Tribe's water, air, and lands by administering water quality, wetland, air quality, and Brownfields programs. The efforts include the following:

- Air: In 2015, the Northern Cheyenne Tribe adopted air pollution standards more stringent than the EPA's national standards as a way to ensure a nearby coal-fueled power plant would scrub contaminants from its emissions. EPD evaluates and addresses ambient air quality standards for sulfur dioxide (SO_2), particulate matter (PM10), and nitrogen dioxide (NO_2).
- Water: The EPD water department provides services to monitor and protect water quality to the Tribe by adopting water quality standards to protect public health and welfare, enhance water quality, and serve the purposes of the Clean Water Act. By assessing and using regulatory controls, it can preserve, protect, and maintain the chemical, physical, and biological integrity of the surface waters and wetlands of the Northern Cheyenne Reservation.

- Brownfield: The Northern Cheyenne Tribe operates an EPA Brownfields program to ensure assessment, cleanup, and redevelopment of contaminated properties within the Reservation. The EPA created the Tribal Brownfields Response Program to assist tribes with environmental legacies and issues within Indian country.

Northern Cheyenne Utilities Commission

Northern Cheyenne Utility Commission (NCUC) operates four community water systems within the Reservation (EPA Region 8). NCUC also provides wastewater service to these communities. By resolution of the Tribal council, NCUC is not allowed to “sell” water. The fees it charges are for the service provided and for the cost of infrastructure. Currently, customers pay a flat monthly charge for the services they receive, and that fee does not change month to month based on the amount of the service used.

Northern Cheyenne Health Board

Northern Cheyenne Board of Health (NCBH) is a tribal health organization, overseeing all behavioral health programs and services on the Reservation. The mission of the NCBH is to provide complete care to the community with a culturally coordinated approach.

Northern Cheyenne Tribal School

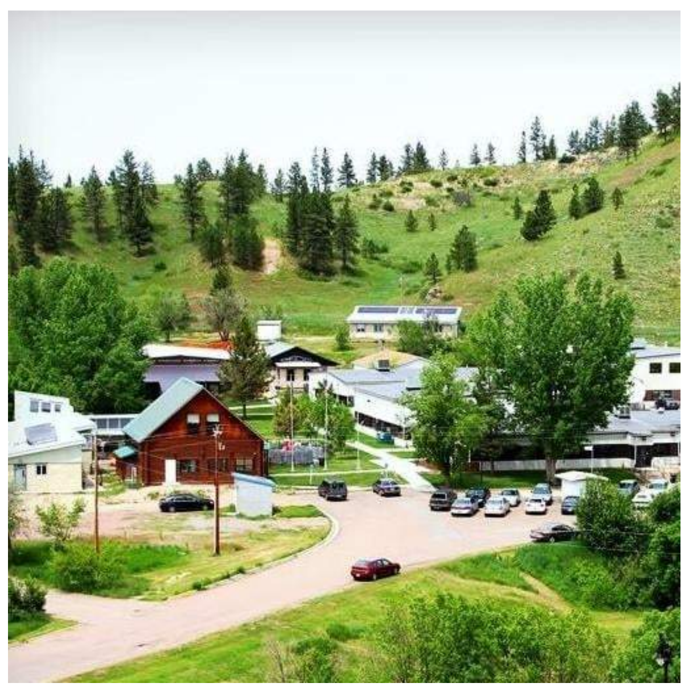
Northern Cheyenne Tribal School (NCTS) is a Tribally controlled K-12 school in Busby, Montana, and affiliated with the Bureau of Indian Education (BIE). It is one of two Tribally controlled schools in the state with grade levels K-12. The Northern Cheyenne Tribal School provides a safe and nurturing community that celebrates diversity and culture.

Northern Cheyenne Tribal Historic Preservation Office

The Tribal Historic Preservation Office is the Archaeological and Historic Properties division of the Northern Cheyenne Tribe. This office is dedicated the accomplishing the goals as a Cultural Resource Management team.

Chief Dull Knife College

(www.cdkc.edu)



Tribal Ordinance originally chartered Chief Dull Knife College (CDKC) in September, 1975, as the Northern Cheyenne Indian Action Program, Incorporated, and granted funding by the Indian Technical Assistance Center of the Bureau of Indian Affairs. The Northern Cheyenne Tribal Council appointed six directors to manage the affairs of the corporation. In 2001, the Tribe renamed the College as Chief Dull Knife College to emphasize the significance of Dull Knife as a chief and respected historical leader of the Northern Cheyenne people. Reflecting Chief Dull Knife’s determination, the College’s primary mission is to provide educational and cultural leadership to its constituents.

Although the original curriculum of the College was to train students for mining jobs near the Reservation, the College has quickly expanded its offerings to include post-secondary transfer programs. The College offers a variety of associate degrees, certificate programs, and maintains articulation agreements with Montana University that facilitate seamless transfer for students. The College has also been able to expand opportunities for upper level students to complete advanced degrees on-line.

Climate Change: Observed Trends and Future Projections

Ongoing effects from Climate Change on the Reservation

Northern Cheyenne aim to preserve air, water, and land so its plants, animals, and people will continue to prosper. However, while rural tribal communities like Northern Cheyenne are not major contributors to greenhouse gas emissions, climate change has had and will continue to have a disproportionate impact on its land and way of life.

Intense extreme weather and climate-related events, as well as changes in average climate conditions, are expected to continue to damage infrastructure, ecosystems, and social systems that provide essential benefits to Northern Cheyenne's community. Indigenous peoples are vulnerable to infrastructure disruptions at the all levels of their community including individual households (for example, housing and sanitary water supply), within larger regional, integrated systems (such as for power, transportation, and telecommunication), and within human systems that rely on such infrastructure to provide other essential services (such as emergency medical response). This vulnerability is partly due to long-standing, unmet infrastructure needs and deferred maintenance challenges. For example, many Indigenous communities lack sufficient water delivery and treatment facilities, and the operating capital needed to maintain and/or improve those facilities.[3]

August 2021 wildfire near Lame Deer, MT
Source: www.nwaonline.com/news/2021/aug/13/montana-towns-feeling-heat-as-fires-approach/

The Tribe has witnessed drought, heatwaves, wildfires, extreme precipitation, and erosion on its lands. This cycle of extremes has impacted Tribal member's health, well-being, and lifeways, including increased wildfire risks and asthma, and strain on its infrastructure – such as potable water in Lame Deer which currently cannot meet demand due to potable water sources running dry. This has had a wide range of social and economic impacts including public health impacts, losses to key subsistence resources, and economic impacts on Tribal enterprises and the regional and local economy.

More than 40% of the Tribe's population is under the age of 18 and at least one-third of households are overcrowded.[4] Life expectancy on the Reservation is 55 years, 23 years less than the average American lifespan. According to the Climate and Economic Justice Screening Tool[5], most of the Reservation is in the 86th percentile for low-income households, meaning that households on the Reservation have an income that is less than or equal to twice the federal poverty level. Compounding this, the Northern Cheyenne Reservation is in the 97th percentile for a lack of indoor

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[3] https://nca2018.globalchange.gov/chapter/15/#fn:50

[4] www.minneapolisfed.org/indiancountry/resources/native-community-data-profiles

[5] https://edgi-govdata-archiving.github.io/j40-cejst-2/en/#9.14/45.5333/-106.4991. Note, the January 20, 2025, Executive Order (Initial Rescissions of Harmful Executive Orders and Actions) rescinding Executive Order 14008, which established the Justice40 Initiative requiring the creation of a Climate & Economic Justice Screening Tool (CEJST) identifying communities with significant environmental, social, and/or economic burdens as "disadvantaged communities" that would receive targeted investment of federal benefits from certain climate, energy, and environmental programs. As of January 22, 2025, CEQ's CEJST is no longer available on the White House website. This link (and as referenced throughout the document) is an unofficial archive copy provided by the Public Environmental Data Project who is committed to preserving and providing public access to federal environmental data.

plumbing and in the 99th percentile for average annual energy costs divided by household income. With limited economic development, poor housing, and high utilities costs, the Tribal members living on the Reservation are extremely susceptible to the expected high flood risk, wildfire risk, and expected building loss due to forecasted impacts of climate change.

CPRG Overview

As communities across the United States increasingly experience harmful impacts of climate change, the U.S. Environmental Protection Agency (EPA) looked to create an opportunity to invest in a cleaner economy that can spur innovation and economic growth while building more equitable, resilient communities.

Through the Inflation Reduction Act of 2022 (IRA), Congress provided many tools to pursue greenhouse gas (GHG) pollution reductions, including the Climate Pollution Reduction Grants (CPRG) program. In implementing this and many other programs under the IRA, EPA seeks to achieve 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 create the required changes and mindset shift to address climate change. These changes also create opportunities to revitalize the U.S. energy and manufacturing sectors, create millions of good-paying jobs throughout the country, and address historic environmental injustices and inequities.

The CPRG program includes two-phases. First, the Program requires entities to develop a Priority Climate Action Plan (PCAP) and Comprehensive Climate Action Plan (CCAP). Second, recipients are to implement the measures identified in the Plan. Actions developed shall be consistent with the following programmatic priorities:

- Improve understanding of current and future GHG emissions so that tribal governments can prioritize actions that reduce such emissions and harmful air pollution (criteria air pollution and toxic air pollutants) where citizens live, work, play, and go to school.
- Adopt and implement ambitious policies and programs to reduce GHG emissions and accelerate decarbonization across multiple important sectors (such as electricity generation, transportation, commercial and residential buildings, agriculture/natural and working lands, and waste management).
- Collaborate closely with other entities (states, municipalities, air districts, other tribes) as appropriate to develop coordinated plans based on best practices.
- Explore opportunities to leverage sources of funding and financing from the Inflation Reduction Act of 2022, Bipartisan Infrastructure Law of 2021, American Rescue Plan Act of 2021, and Creating Helpful Incentives to Produce Semiconductors and Science Act of 2022.
- Prioritize actions and policies that will be durable, replicable, and provide certainty in pollution reductions.
- Reduce climate pollution while building the clean energy economy in a way that benefits all Americans, provides new workforce training opportunities, and effectively addresses environmental injustices in disadvantaged communities.
- Adopt robust metrics and reporting programs to track emission reductions and important co-benefits throughout their community.

Consistent with its long history of being a responsible steward of the natural world, the Tribe pursued the CPRG grant. The Tribe lacked a central planning document to help with future development and conservation opportunities. By developing a climate action plan, the Tribe hoped to sensibly move toward a responsible future whether it be when developing its infrastructure or other programs. The EPA awarded a CPRG to The Northern Cheyenne Tribe (EPA Region 8) in 2023 to assess and plan for overall GHG emissions on the Northern Cheyenne Reservation. The grant program provides flexible support to tribes, many of whom have never undertaken climate mitigation planning activities.

CCAP Purpose and Scope

Climate Action Plans Defined

A climate action plan is a comprehensive framework document for measuring, tracking, and reducing greenhouse gas emissions and adopting climate adaptation measures to guide a climate change response. These documents serve as an effective, proactive tool to guide government and community actions in addressing the impact of climate change in their communities, many of which are regionally and locally specific. Climate action plans include targets for reducing greenhouse gas emissions and detailed steps for meeting and tracking those targets as well as include elements such as resiliency strategies and clean energy targets.

Climate Action Plans are iterative and require a long-term commitment to carry out the actions outlined within. Therefore, when developing a Plan, the Tribe commits to administer, implement, and update the Plan over time. The Tribe must adopt robust metrics and reporting programs to track emission reductions and important co-benefits throughout its Tribal land and beyond.

Comprehensive Climate Action Plan (CCAP)

The CPRG program requires developing a climate action plan, beginning with the PCAP, and culminating in a comprehensive plan. A CCAP should provide an overview of the Tribe's significant GHG sources/sinks and sectors, establish near-term and long-term GHG emission reduction goals, and provide strategies and identify measures addressing the highest priority sectors to help the tribe achieve those goals. Each CCAP must include:

- **GHG Inventory.** Baseline survey of previous GHG emissions from across the Tribe's economies in six key sectors as applicable: electricity generation and/or use, industry, transportation, buildings, agriculture/natural and working lands, and waste and materials management.
- **Business as Usual (BAU) GHG Emissions Projections.** The CPRG requires emissions projections for the near term (e.g., 2030–2035) and long term (e.g., 2050) of GHG emissions (and sinks, if feasible) in the absence of plan measures (e.g., a "business-as-usual" projection).
- **Near-Term and Long-Term GHG Reduction Targets.** The Plan must include near-term (e.g., 2030-2035) and long-term (e.g., 2050) GHG emission reduction targets (on a gross or net GHG emission basis). Although EPA is not requiring a specific reduction target, plans should not be inconsistent with the United States' formal commitments to reduce emissions 50% relative to 2005 levels by 2030 and to reach net-zero emissions by 2050.
- **GHG Emission Reduction Measures.** The Plan must include a full suite of implementation measures necessary to meet the GHG reduction targets specified in the CCAP, addressing the main GHG emission sectors as appropriate: industry, electricity generation and/or use, transportation, commercial and residential buildings, agriculture, natural and working lands, and waste and materials management. For each measure, the CCAP must identify the quantifiable GHG emissions reductions (or enhancement of carbon sinks), key implementing agency or agencies, implementation schedule and milestones, expected geographic location if applicable, milestones for obtaining implementation authority as appropriate, identification of funding sources if relevant, and metrics for tracking progress. It must also include cost information for each measure and identify the tons of pollution (GHGs and co-pollutants) reduced annually and over the lifetime of the measure.

- **Benefits Analysis.** Quantify estimates of co-pollutant reductions (e.g., PM2.5, NO_x, SO_2, VOCs, air toxics, etc.) associated with GHG reduction measures for the suite of measures included in the CCAP. The Plan also requires grant recipients to track, minimize, and mitigate, to the extent possible, any potential disbenefits resulting from implementation of GHG reduction measures included in the CCAP as well as an assessment of additional benefits.
- **Review of Authority to Implement.** Indicate for each measure included in the CCAP whether the tribe has existing authority to implement the measure, or whether it must obtain such authority. The CCAP must include a schedule of milestones for actions needed by key entities (e.g., administrative agency, tribal council, etc.) for obtaining any authority needed to implement each listed program or measure.
- **Intersection with Other Funding Availability.** The CCAP must identify what other funding programs are available to the recipient or previously secured by the recipient from federal or other public or private sources that the tribe could leverage to pursue the objectives of the CCAP.
- **Workforce Planning Analysis.** Grant recipients must conduct an analysis to identify workforce opportunities, shortages, and gaps to ensure the tribe has the workforce with the required skills and knowledge needed to implement the Plan. The analysis must identify potential solutions and, as appropriate, tribal, state, regional, and/or local resources equipped to help address those challenges. Plans may note existing funding or programs that can help support the workforce needs of the plan.

The CCAP requires tribe's set key goals and policies as it relates to GHG emissions and climate change. EPD and TSP will facilitate this conversation and help Tribal Council work through this process.

Scope

The CPRG scope and thus the GHG inventory, as defined by the grant award, focus solely on Northern Cheyenne Tribal government assets and its available data sources within the Northern Cheyenne Reservation. Note, that since this particular grant limits the scope to the Tribal government itself and not the entire Tribe, it limits the stakeholders to just those under Tribal government jurisdiction and as such the GHG inventory and CCAP purposely omits private residences, with the exception of Tribal owned housing where the government is paying for the utilities.

Assets to determine significant GHG sources/sinks and sectors included in the study are as follows:

- Government offices, facilities, and buildings
- Health care clinics
- Tribal businesses and casinos
- Tribally-owned housing units (where the government is paying for the utilities)
- Tribal vehicles, machinery, and equipment
- Tribally owned agriculture or livestock programs
- Tribally owned fossil fuel leases
- A review of any potential Tribally owned carbon sinks or carbon capture

Approach to Developing the CCAP

The EPD is administering the Grant for the Tribe and hired The Sheward Partnership (TSP), Philadelphia, PA, and outside legal counsel for sustainability and legal consulting, respectively. It successfully submitted the first required deliverable, the PCAP, in April 2024. It is the Tribe's goal to ensure the Tribal community is fully engaged and consulted throughout this process.

Northern Cheyenne 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 entities with relevant information.

EPD, TSP, and outside legal counsel worked with key stakeholders from Tribal agencies, and from existing outside consultants and advisers, to oversee and coordinate overall development of the Plan. For the PCAP, these key stakeholders convened an in-person work session in Billings, MT, on February 28, 2024, to review the PCAP and CPRG process and discuss Priority Actions. The Actions described in that report were a direct result of that discussion and the consensus reached by the group.


Northern Cheyenne Tribe PCAP Work Session, Billings, MT

For the CCAP, EPD, TSP, and the tribe's legal counsel met with Tribal Council leadership, which included many new members, in Billings, MT, on March 19, 2025. As the CCAP requires the Tribe to set key goals and policies as it relates to GHG emissions and climate change, EPD and its consultants facilitated this conversation to help Tribal Council work through this process and discuss topics critical to framing the direction the CCAP will take, including the following for Tribal Council action:

1. *Does the Tribe wish to set a carbon reduction and/or neutrality goal and how does this tie into the Tribe's overall environmental mission?*
   Although the EPA does not require a specific reduction target, the CCAP should not be inconsistent with the United States' goals to reduce emissions 50% by 2030 and to reach net-zero emissions by 2050. Other Tribes have done this. To set the CCAP direction, the Tribe will need to set these goals immediately.
2. *Review and approve proposed Reduction Measures.*
   The Tribe and key stakeholders developed many Reduction Measures in the PCAP work session. The CCAP further defined the approaches and added new Measures to target all sectors.
3. *How will the Tribe manage implementing the GHG reduction measures proposed in the final CCAP?*
   For the CCAP to be successful, the Tribe must implement the Plan with leading individuals and/or agencies to facilitate coordination with other agencies and offices within the Tribe, as well as outside stakeholders to implement the Plan.

The results of this conversation formed the basis for the information contained in this Plan.

2 Greenhouse Gas Inventory

Data Collection and Methodology

As defined by the CPRG Program scope, the Northern Cheyenne Tribe documented GHG emissions from activities associated only with Tribal Government programs located within the Northern Cheyenne Reservation. The goal is to determine emissions estimates for all quantifiable air emission sources generated by Tribal operations located within the Reservation's exterior boundary, organized by source category and pollutant.

While tribes may use any available data such as the EPAs National Emissions Inventory to produce their inventories, these tend to not provide specific enough data sets especially within rural communities. In addition, tools available for GHG inventories are often very complex for large source entities like states or municipalities. Instead, Northern Cheyenne, in conjunction with TSP, collected data provided by the Tribe's associated programs to compile a detailed GHG Inventory. In focusing only on tribal activities, the process is more straightforward, therefore, the team utilized a simplified direct accounting approach utilizing the EPAs Tribal Greenhouse Gas Inventory Tool (TGGIT).

For the PCAP, the Tribe provided available data to TSP to perform a comprehensive inventory from 2022. For the CCAP, however, on October 22 and 23, 2024, EPD and TSP met with each Northern Cheyenne program's director and staff to review previous assumptions and accumulate 2023 data to update the inventory for comparison against the PCAP inventory to ensure consistency in the data provided and uncover any possible anomalies or discrepancies. Note, the Tribe does not have established baseline data for further comparison (see below).

The EPD collected data from the following sources to account for all economy-wide emissions:

- **Assets.** Working with representatives of each Tribal program, EPD compiled a complete list of all Tribally owned buildings and assets located on the Reservation, including any and all energy use types and relevant utility account numbers associated with each (see Appendix for the complete listing).
- **Electricity purchased**.[6] Provided by the utility Tongue River Electric Cooperative, Inc. (TRECO). The EPD gathered all known electrical accounts for Tribal assets and, through coordination with TSP, gathered signed consent forms from the owners of those accounts to allow TSP to obtain usage data from the utilities on the Tribe's behalf. TSP received this raw data in kWh and compiled it for emissions calculations.
- **Propane purchased**. Provided by the local distributors Morningstar Propane, Lame Deer, MT (a Northern Cheyenne Tribe owned company), and Town and Country Supply Association of Laurel, MT. TSP received this raw data in gallons and compiled it for input into the TGGIT tool.
- **Vehicles.** Working with representatives of each Tribal program, EPD compiled a complete listing of all vehicle types owned and driven by the Tribe in an official capacity within the Reservation boundary (see Appendix). The Tribe's fleet is comprised of passenger cars, light trucks (vans, pickups, and SUVs), heavy duty vehicles, construction

[6] The Tribe does not generate its own electricity. Renewable assets located on the Reservation are grid-tied at the time of this study.

equipment, and recreation vehicles. The inventory utilizes a Vehicle Miles Traveled (VMT) accounting for the entire fleet except construction equipment and recreation vehicles based on annual mileage provided per vehicle where applicable, or estimated mileage, as outlined below, utilized for vehicles with unrecorded annual mileage.

- **Solid Waste.**[7] Solid Waste production associated with waste generated within the Reservation borders by the Tribe in an official capacity but landfilled elsewhere. The EPD gathered data on total solid waste generated by the Tribe in tons and calculated total emissions based on 74.1 CO_2e per metric tonne of solid waste[8].
- **Wastewater.**[9] Public wastewater treatment systems managed by the NCUC, based on the estimated number of people utilizing the system in Tribal owned buildings in an official capacity. TSP utilized estimated wastewater generated as outlined below.
- **Agriculture and Land Management.** Total livestock (breed and number of head) owned and managed by the Tribe, as applicable.
- **Industrial Sources.** Oil and/or gas wells or other fossil fuel leases owned and managed by the Tribe, as applicable.

Utilizing the data collected by the EPD, TSP entered it into the TGGIT. The TGGIT divides the data and subsequent calculations into the three GHG emissions 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.

Data Estimation and Assumptions

While the methodology for a direct accounting approach provided a more accurate accounting, there were still inconsistencies and gaps in the acquired data that the team could not resolve, such as missing or inaccurate data for certain programs. Regardless, overall, the team could still easily determine a consistency in use across the Scopes to determine reduction strategies. Estimation of other data sources are as follows:

Market Based Electricity

Electricity emissions are highly dependent on the power generation mix used by the local provider. The Northern Cheyenne Tribe purchases power primarily from TRECO; however, the TGGIT calculator utilizes the EPAs Power Profiler[10] to select an eGRID subregion to calculate emissions (in pounds of CO_2e/MWh). Per the Power Profiler, the Northern Cheyenne Reservation sits at the overlap of 2 eGRID subregions: the Northwest Power Pool (NWPP) and Rocky Mountain Power Area (RMPA) Subregions. There is no clear designation between the grids based on each building's zip code. For the purposes of the inventory, the team assumed TRECO utilizes power via the NWPP. This eGRID Subregion produces 605.78 pounds of CO_2e per MWh as provided by the EPA (per 2023 eGRID data) and built

[7] The Tribe does not own or operate its own landfill or have a landfill within the Reservation boundary. The Tribe owns (under the NCDC) a solid waste transfer station for Tribal members use. Waste is collected by and is then transferred to two different landfills located off the Reservation (Rosebud County Landfill (C&D) and City of Hardin Landfill (trash)) by Tribally owned vehicles captured in the Inventory within the Transportation Sector.

[8] Calculations incorporate organics waste emissions from landfill utilizing methodology published in Stanford University's Scope 3 Emissions Program, Scope 3 Emissions from Waste Category Overview: Definition, Boundary, Methodology, and Preliminary Results. Last revised March 10, 2023.

[9] The NCUC manages potable water distribution and waste water treatment on the Reservation. The Tribe does not import water. The utility does not meter either of these uses, only charging a set monthly flat rate. The Inventory captures electricity usage from all pumps associated with both distribution systems. See wastewater emissions calculation methodology for additional details.

[10] www.epa.gov/egrid/power-profiler#/NWPP

into the TGGIT calculator. Note, the RMPA eGRID produces 1131.43 pounds of CO_2e per MWh, thus depending on which grid the tool utilizes has a large impact on overall electricity emissions.

There are other tools available to further define the regional electricity mix, such as *Electricity Maps*[11] which locates the Reservation within the Northwestern Energy Interconnection. This has a carbon intensity of 1397 pounds CO_2e/MWh (per 2023 data) due to utilizing primarily coal in its fuel mix. However, there are local utilities within this interconnection that have much lower emissions due to their dependency on non-fossil fuel sources such as hydro. Therefore, for the best results, the emissions calculator should utilize a CO_2e per MWh for the fuel blend provided by the local utility.

The Tribe conducted research to determine a more specific CO_2e per MWh for TRECO, however, it could not find any documentation online nor did the utility respond to requests from the Tribe to provide information that lists all the specific values for carbon dioxide, methane, and nitrous oxide (CO_2, CH_4, and N_2O respectively). If the utility provides this data, the Tribe will update the CO_2e per MWh in future revisions of the CCAP.

Vehicle Emissions

The Tribe owns over 160 vehicles, each assigned for use within one or more of the Tribal departments. Accounting for the total annual miles driven by the Tribal government in an official capacity within the Reservation boundary for the 2022 (PCAP) and 2023 (CCAP) was not possible. Several factors prevent an accurate accounting including:

- With the exception of the EPD and Chief Dull Knife College, the Tribe does not record annual mileage for each vehicle.
- Users regularly drive vehicles outside the Reservation boundaries.
- Users drive vehicles after hours in non-official capacities.
- Some vehicles are no longer operational or used very infrequently but still included in the Tribal vehicle rosters.

To complete the vehicle emissions calculations, TSP made a statistical analysis to estimate the total vehicle miles traveled for the remaining departments. EPD compiled a list of "official use" Tribal vehicles from the various Tribal programs. Of all the vehicles, the study excludes the following vehicles:

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

The tool thus utilizes mileage for each of the remaining vehicles estimated using the following methodology:

- The United States Department of Transportation calculates the average vehicle mileage for Montana in 2023 as 11,430 miles.[12]
- The tool attributes miles driven to all vehicles with a model year of 2016 or newer.
- All vehicles with model years older than 2016 use the following formula to estimate the annual mileage.

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

The result shows an average vehicle mileage for the included vehicles is 7301 miles for the year 2023.

The inventory estimates the fuel type for each vehicle using the following methodology:

- The study assumes all heavy-duty vehicles use diesel fuel.

[11] https://app.electricitymaps.com/zone/US-NW-NWMT/all

[12] www.bts.gov/archive/publications/state_transportation_statistics/summary/table_05_03

- The study assumes all passenger cars, light trucks, vans, and SUVs use gasoline.
- The Tribe's fleet does not include EVs and are thus not included in the study.

To track vehicle emissions more accurately in future GHG updates, the EPD recommends that all Tribal programs keep track of their annual mileage for each vehicle. This will reduce some of the potential errors in the statistical estimation in the future. The EPD approached each program to start this measure beginning January 1, 2025.

Wastewater

The TGGIT wastewater calculates CO_2e based on the number of people using five different wastewater system types. Northern Cheyenne's Tribal buildings utilize only two of these types: open pit systems (considered aerobic treatment facilities) and septic systems. 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 Tribal government's impact. TSP utilized the following calculation to determine a comparison between the total Tribal population listed in the TGGIT Control Sheet to the equivalent number of Tribal government employees that would use 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[13]
1,602	Updated Population Total
45.6%	The state of Wyoming 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.[14]
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 FTE Employees**

The study distributes 70 people to the two different wastewater system types located on the Reservation: open pit systems (3.2 people) and septic systems (66.4 people).

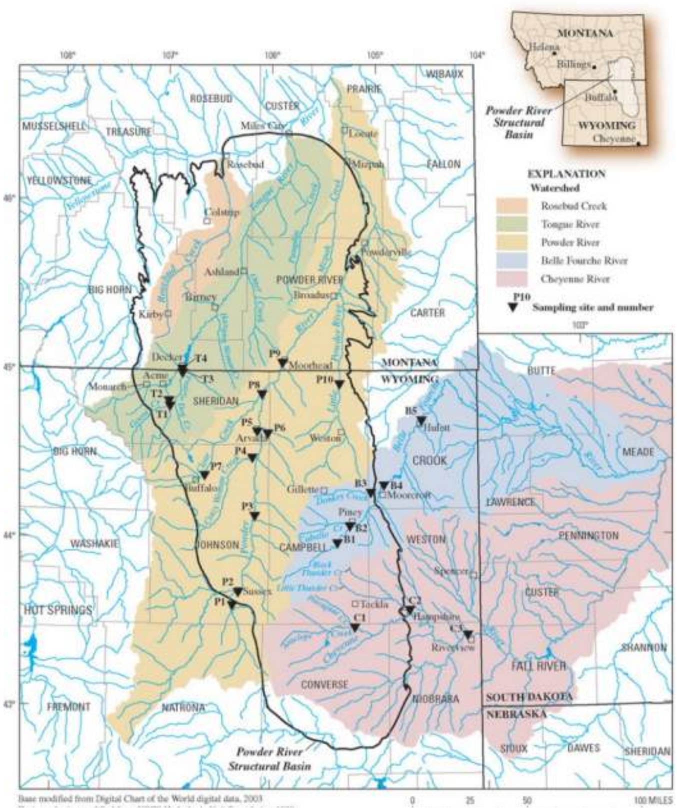
Existing Coal Reserves

The Powder River Basin (PRB) is currently one of the most active coal and gas fields in the United States extending between Wyoming and Montana and includes the Northern Cheyenne Reservation along it's northwest flank. Coal

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

[14] https://doe.state.wy.us/lmi/1199/a2.htm

beds are extensive in the Reservation within the *Tongue River Member* geological formation where up to 8 coal beds are present, some as thick as 80 feet[15].



Powder River Basin: Wyoming and Montana.
Source: https://www.fossilfuelconnections.org/powder-river-coal-basin

The coal bed resources represent a significant potential asset to Northern Cheyenne; however, the Tribe elected to not allot lands for coal development and instead reserved mineral rights on the Reservation "in perpetuity for the benefit of the Tribe." The Tribe has formally regained control of the mineral rights underlying the Reservation and now owns 100% of its subsurface interests and nearly 100% of surface interests and does not intend to operate leases for potential resource extraction. This historical struggle is a direct expression of the value in which Northern Cheyenne's people hold their remaining homeland. Many Tribal members understand this economic sacrifice to be necessary to protect the lands they regard as extrinsically tied to their cultural and spiritual traditions. Northern Cheyenne have repeatedly prioritized the health and well-being of its territories over the economic benefits of resource extraction. Unfortunately, this choice to protect the land base is reflected in the sparce economic development on the Reservation.

While not carbon dioxide removal, or "negative emissions technologies," Northern Cheyenne feel strongly about the fact it has maintained unused coal seams throughout the Reservation, representing a potential store of future GHG emissions. In this capacity, it is reducing the influence of future emissions by never removing the fuels in the first place; sequestering the carbon while it is still in coal form. The Tribe recognizes current GHG inventory best practices do not capture the negative emissions of this unrealized carbon in its operational inventory to lower its footprint. It is the Tribe's hope, however, that its policy to withhold its extraction could set a precedent for other Tribes to permanently lock away potential future emissions. The Tribe further explores this idea as part of the GHG Emission Reduction Measures below.

Baseline Year

Prior to the CPRG Program, the Tribe had not completed a GHG inventory or any other examination of its potential emissions in this capacity. As such, establishing a baseline year of or around 2005 was not possible due to the unavailability of historical data for the Tribe during that time.

Per the EPA, Tribes may select any reasonable baseline year given the availability of emissions data. The Tribe and its stakeholders decided to utilize 2022 for its baseline year as developed during the PCAP comprehensive GHG inventory. The Tribe had selected 2022 as it was post-Pandemic when activity resumed to near pre-Pandemic levels and data, due to recent improvements in record keeping, was robust and readily available for accurate data gathering.

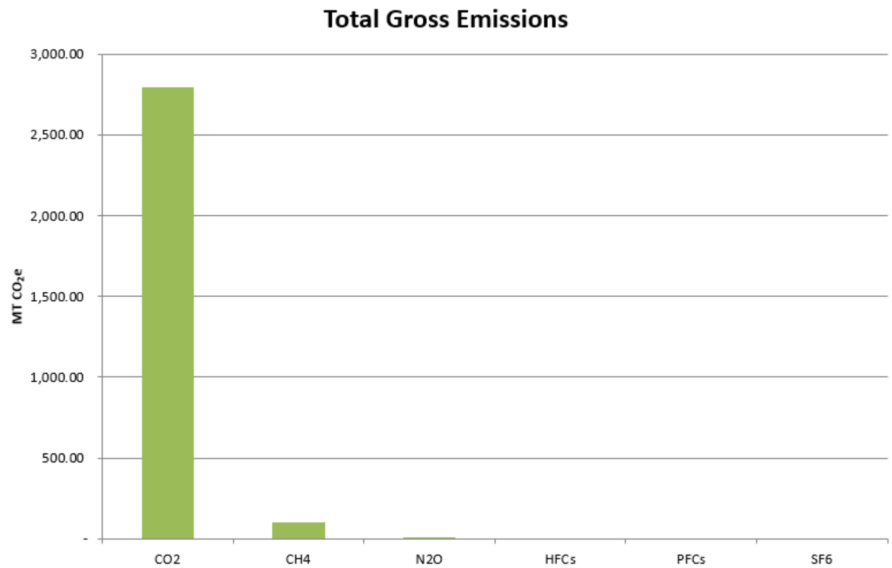
[15] https://inldigitallibrary.inl.gov/sites/sti/sti/2906944.pdf

Inventory Results

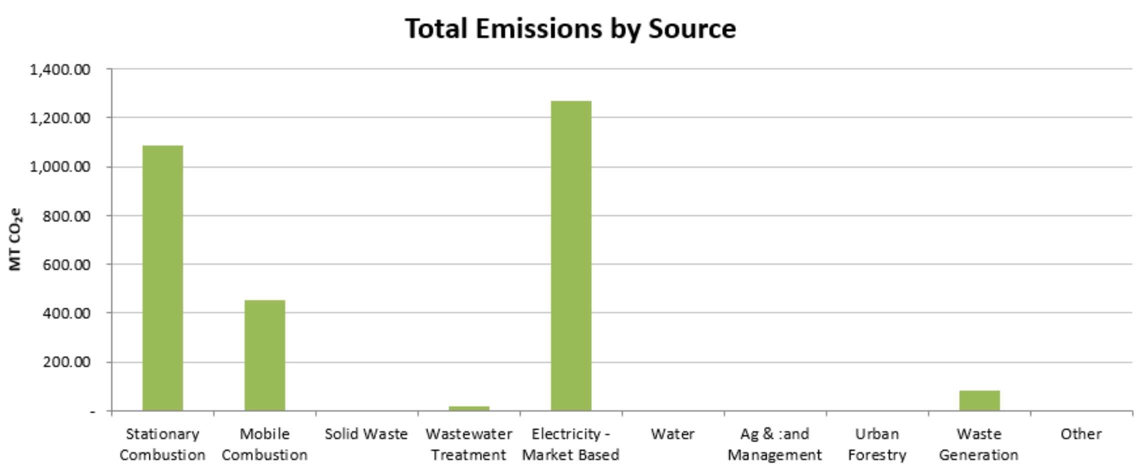
Emissions By Source and Sector

The results of the Inventory show that collectively the Tribal government emitted an estimated 2,905.12 metric tonnes of carbon dioxide equivalent (MT CO_2e) in the 2023 calendar year. For context, this is equivalent to the CO_2e of 390 average homes' energy use for one year, 6726 barrels of oil, 678 gas powered passenger vehicles driven for one year, or 3,227,051 pounds of coal burned.[16]

The primary emissions by gas are overwhelmingly from Carbon Dioxide (96%) with the remainder comprising only Methane and Nitrous Oxide.



The majority of the CO_2e emissions were from 3 main sources: electricity 44%, propane heating 37%, and transportation 16%. Solid waste and wastewater treatment combined account for less than 4% of overall CO_2e.



By Sector, the majority of emissions originate from the Market Based Electricity (43.75%) and Commercial and Residential Building (37.94%) Sectors, while Transportation makes up 16% due to the Tribe's rural location. The Tribe

[16] www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

does not have emissions in the Industry Sector as there are no Tribal managed industrial assets on the Northern Cheyenne Reservation, including, but not limited to, oil/gas drilling leases. Similarly, the Tribe does not manage agricultural assets that fall within the Natural and Working Lands Sector.

GHG EMISSIONS SUMMARY BY SOURCE AND SECTOR			
SOURCE	**SECTOR**	**BASE YEAR: 2022 (MT CO_2e)**	**INVENTORY UPDATE: 2023 (MT CO_2e)**
Scope 1			
Propane Heating (Note 1) (Stationary Combustion)	*Commercial and Residential Buildings*	689.26	1084.09
Mobile Combustion (Note 2) (Tribal Fleet only)	*Transportation*	152.18	451.25
Wastewater Treatment (Note 3)	*Commercial and Residential Buildings*	18.33	18.22
Scope 2			
Electricity (Market Based) (Note 4)	*Electricity Generation*	992.62	1270.93
Scope 3			
Waste Generation (Note 5)	*Waste and Materials Management*	78.86	80.64
Total Emissions		**1931.26**	**2,905.12**

Notes:

1. There are 34 buildings utilizing propane, consuming a total of 188,757 gallons.
2. The Tribal government drove its vehicles in an official capacity an estimated total of 934,474 miles.
3. The study distributes 70 people to the two different wastewater system types located on the Reservation: open pit systems (3.2 people) and septic systems (66.4 people) – see data estimation above.
4. The Tribal government operates a minimum of 83 accounts for a total electrical usage of 4389 MWh. Of all the buildings, **Northern Cheyenne Tribal School campus is by far the biggest electricity user at 896 MWh, or 20.4% of Tribal Government's total usage**.
5. The Tribal government reported it generated 2400 tons of waste in 2023.

EXPANDED INVENTORY OF GHG EMISSIONS BY GAS FOR EACH SECTOR AND SUBSECTOR				
EMISSIONS SOURCE/SINK	**GHG Emissions by Gas (MT)**			
	CO_2	**CH_4**	**N_2O**	**HFC, PFC, SF_6, NF_3**
Commercial and Residential Buildings				
Residential buildings	N/A	N/A	N/A	N/A
Commercial buildings	1079.91	1.44	2.73	-
Electricity Generation				
Energy industry (Market Based)	1263.47	3.23	4.22	-
Fugitive emissions from coal mining	N/A	N/A	N/A	N/A
Fugitive emissions from oil and gas	N/A	N/A	N/A	N/A
Transportation				
On-Road	451.25	-	-	-
Nonroad	N/A	N/A	N/A	N/A
Rail	N/A	N/A	N/A	N/A
Marine	N/A	N/A	N/A	N/A
Aviation	N/A	N/A	N/A	N/A
Industry				
Manufacturing industry/construction	N/A	N/A	N/A	N/A
Industrial processes	N/A	N/A	N/A	N/A
Product use	N/A	N/A	N/A	N/A
Agriculture				
Enteric fermentation	N/A	N/A	N/A	N/A
Manure management	N/A	N/A	N/A	N/A
Agricultural soils	N/A	N/A	N/A	N/A
Natural and Working Lands				
Land use	N/A	N/A	N/A	N/A
Other emission sources	N/A	N/A	N/A	N/A
Waste and Materials Management				
Solid waste disposal	-	80.64	-	-
Biological treatment of waste	N/A	N/A	N/A	N/A
Incineration and open burning	N/A	N/A	N/A	N/A
Wastewater treatment	-	18.22	-	-
Gross Emissions	**2794.63**	**103.53**	**6.95**	**0**
Sinks	**0**	**0**	**0**	**0**
Net Emissions (Sources and Sinks)	**2794.63**	**103.53**	**6.95**	**0**

Inventory Trends

Performing an updated Inventory for 2023 showed increases in total emissions due to filling gaps in available data from 2022, such as including data received from Northern Cheyenne Tribal School, as well as correcting errors in calculation methods for the vehicle inventory. Overall, however, the emissions trend is consistent between the two years when comparing energy usage between individual department and building types and its overall effect on the primary GHG emission sectors.

To determine the effectiveness of the proposed CCAP and Reduction Measures, the Tribe should update the GHG inventory every 5-years at a minimum to determine measurable reductions in the GHG emissions. The Tribe, via the EPD, will need to determine who will be responsible to do this, how to collect the data, and the processes used, including hiring a consultant as necessary.

3 BAU GHG Emissions Projections

BAU Projection Methodologies

Many Native American Tribes, such as Northern Cheyenne, historically have had limitations towards economic and physical growth the way this section anticipates, especially when compared to cities and states. Conversely, the trend has been towards a population decrease across many Reservations. In addition, there may be some unintended reductions in certain sectors outside of the Tribe's control due to national policy and mandates. For example, in the market based electricity sector, policies driving higher percentages of renewables in the local energy blend would have a significant impact on lowering Northern Cheyenne's GHG emissions due to the carbon intensive local power grid. However, while the utility parent companies have initiatives to increase renewable generation within their networks, the local generating assets plan to rely on coal for the foreseeable future despite national mandates as MT has not set clean energy targets for producers within the state. Additionally, the regional adoption of EVs, despite national trends, is hindered due to the Reservation's rural location without outside investment for proper infrastructure and to offset the generally prohibitive vehicle cost.

With this in mind, the business as usual projections for Northern Cheyenne uses a rather straight forward calculation method based on historical populations to project growth and its possible impact on the defined Sectors. However, finding data to perform the calculations is challenging due to the lack of historic information. Despite being the original inhabitants of the land that is today the United States, the US Census has not always accurately represented Natives Americans. It was not until the 2000 and later censuses that permitted all census respondents to identify as one of six races (i.e., White, Black, American Indian and Alaska Native, Native Hawaiian and Other Pacific Islander, Asian, Some Other Race) that lead to a steady reporting of American Indians and Alaska Natives in the ensuing population counts and the ability to identify with a recognized tribe.[17]

Based on Northern Cheyenne tribal membership data, the population on the Reservation has historically been very static. The most reliable historic population data available, however, was census data for Lame Deer, MT,[18] the seat of Northern Cheyenne's government and most populated community, which the team used to create overall projections. Using information between 2010 and 2025 indicated Lame Deer experienced an average 0.125% annual population growth.

Per recent statistics, the current Reservation population is 4460 people.[19] Applying the projected growth factor to the current Reservation indicates a projected population increase of 0.75% (4494 people) by 2030, and a 3.3% (4607 people) increase by 2050. Note the following variables that could measurably affect the Reservation population:

- If the local economy or housing improves, more Tribal members may move back to the reservation increasing the population faster;

[17] www.census.gov/about/history/census-records-family-history/census-records/censuses-of-american-indians.html

[18] https://worldpopulationreview.com/us-cities/montana/lame-deer

[19] www.minneapolisfed.org/indiancountry/resources/native-community-data-profiles

- If the local economy or housing takes a down turn, more people may leave the Reservation;
- If personal opportunities and/or education improves, more people may leave the Reservation to seek employment opportunities elsewhere.

The team utilized this growth factor to project emissions from the primary Sources identified in the Inventory.

BAU Projection Results

GHG EMISSIONS BAU PROJECTIONS BY SOURCE AND SECTOR					
SOURCE	**SECTOR**	**BASE YEAR: 2022** (MT CO_2e)	**INVENTORY UPDATE: 2023** (MT CO_2e)	**SHORT-TERM BAU PROJECTION (2030)** (MT CO2*e*)	**LONG-TERM BAU PROJECTION (2050)** (MT CO2*e*)
Propane Heating (Stationary Combustion)	*Commercial and Residential Buildings*	689.26	1084.09	1094	1121
Mobile Combustion (Tribal Fleet only)	*Transportation*	152.18	451.25	455	467
Wastewater Treatment	*Commercial and Residential Buildings*	18.33	18.22	18	19
Electricity (Market Based)	*Electricity Generation*	992.62	1270.93	1282	1315
Waste Generation	*Waste and Materials Management*	78.86	80.64	81	83
Total Emissions		**1931.26**	**2,905.13**	**2931**	**3005**

4 GHG Reduction Targets

Northern Cheyenne's story is one intertwined with respect for its land and the fight to preserve and control it. This relationship factors in every decision it makes. A progressive goal would only strengthen the mission Northern Cheyenne has become known for.

Like other small nations, the Tribe is not a major contributor to the gases that cause climate change, yet it must deal with the impacts from climate change on a daily basis. For Northern Cheyenne, developing a greenhouse gas reduction target is not one where it knowingly will be a solution to this global crisis, rather it is one that plays directly to its belief to live as one with the environment. Within this context, the Tribe's way of life is not and should not be the main focus; however, pursuing a carbon neutrality goal will have an enormous, positive impact on its future.

In developing a reduction goal, the Tribe believes it has reached maximum GHG emissions now. In concert with this, the tribe has have several programs already under development that will knowingly have a major, positive impact on emissions. Thus, an aggressive goal is achievable. The Tribe also understands that any reduction goal is non binding, meaning that it is not legally bound to this pledge. Nonetheless, should the Tribe approach the designated timeframe and not reach its' carbon reduction targets, the Tribe pledges to examine the reasons why and readjust its goals as necessary.

Aligning with this thinking, the Tribe set a progressive goal of becoming carbon neutral by 2035, defined as no net release of greenhouse gases to the atmosphere. This means balancing out its total carbon emissions with energy efficiency measures, alternative energy sources and transportation options, and removal of greenhouse gases from the atmosphere via carbon sequestration projects on the Reservation.

In achieving this goal, the Tribe hopes to promote Tribal sovereignty, community health and resiliency, and the natural environment through Indigenous solutions-based strategies and actions, partnership, and collaboration.

The Northern Cheyenne Tribal Council memorialized this pledge through the passage of Resolution No. DOI - 138 (2025) (see Appendix).

5 GHG Emission Reduction Measures and Implementation Scenario Projections

GHG Emission Reduction Measures Summary

Overall, the Tribe's GHG emissions are small, with only a few point sources within limited Sectors. This speaks to its mission to care for and leave the earth in a beneficial way for future generations. As a result, pinpointing emission sources to develop a plan for reductions with leadership input was a more straightforward process.

Prior to the CPRG, the Tribe had not developed plans, policies, or programs to directly address GHG emissions, but it is important to note the Tribe's overarching goal with performing this Inventory and Plan. While overall emissions and projected increases are comparatively low compared to other US entities, the Tribe wishes to utilize this information to enable it to rebuild the connection to its land, regain its energy sovereignty, establish resiliency measures, and afford Tribal members advances in equity and economic opportunities. Therefore, while major reductions in emissions may not have a broader, global impact, introducing and implementing strategies on the Reservation will have an undeniable impact on Northern Cheyenne people's health, safety, and financial security.

The GHG inventory indicates 77% of the Tribe's CO_2e emissions are from building electricity and heating needs. As such, the CCAP GHG reduction strategies focus predominantly in the Electricity Generation and Commercial and Residential Buildings Sectors and are areas where the Tribe has the greatest potential to see reductions. As identified by Tribal members, staff, and Council, reducing building energy use is the Tribe's highest priority primarily via increased energy independence, resiliency, and constructing energy efficient buildings and housing while creating jobs and an improved infrastructure that all contribute to the Tribe's equity and economic benefits.

It is worth noting the impact of the carbon intensive local electricity grid on the emissions as well. While building efficiency will help reduce this impact, the bulk of reductions will come via either improvements to the energy blend in the local grid or introducing renewable generation within the Reservation. Realizing this, the Tribe decided to take control of this variable ultimately for its economic as well as environmental benefit.

Starting with the PCAP, EPD, TSP, and outside legal counsel worked with key stakeholders from Tribal agencies and outside advisers to develop Priority Actions. The Tribe built upon these Priority Actions to pursue funding via the CPRG implementation grant competitions. The Tribe did not win funding from either of those competitions.

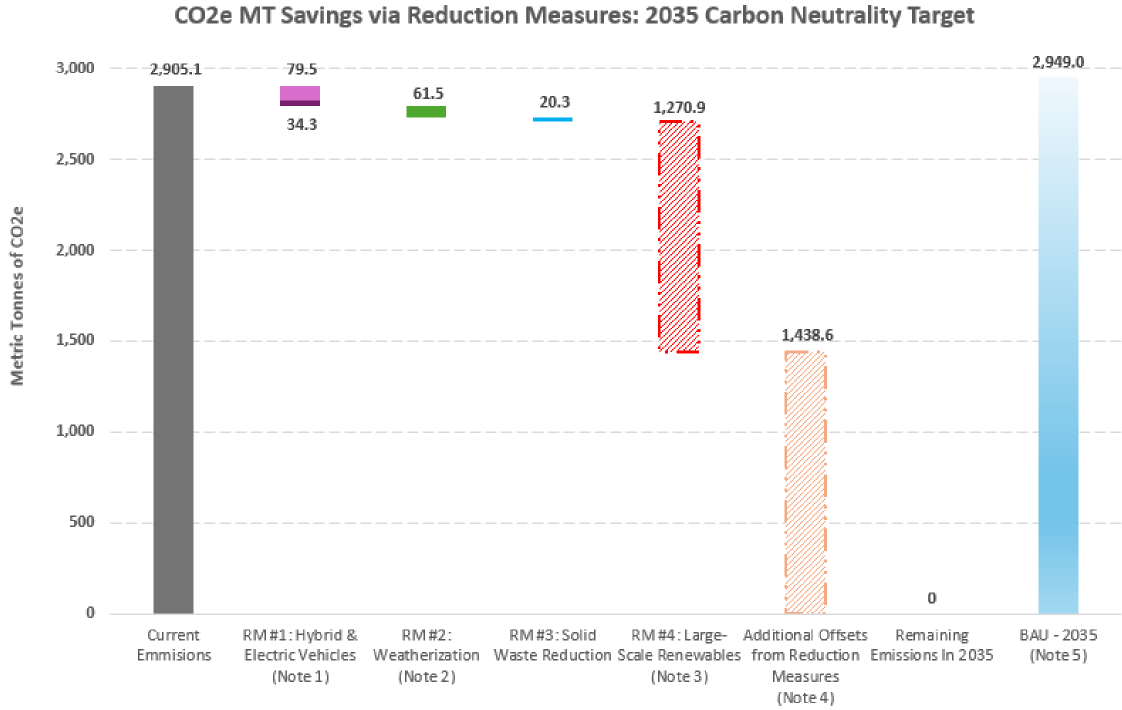
For the CCAP, EPD, TSP, and outside legal counsel met with Tribal Council leadership, in Billings, MT, on March 19, 2025 to set key goals and policies as it relates to GHG emissions and climate change. EPD and its consultants facilitated this conversation to help Tribal Council work through this process and discuss topics critical to framing the direction the CCAP will take, including developing Reduction Measures. The discussions resulted in the Tribe deciding to include the same PCAP Priority Actions in the CCAP and two additional Measures to focus on Solid Waste Management and to permanently withhold coal extraction as a precedent to permanently lock away potential future emissions. The CCAP lists each reduction measure as a separate focus for ease of managing and pursuing appropriate funding to implement.

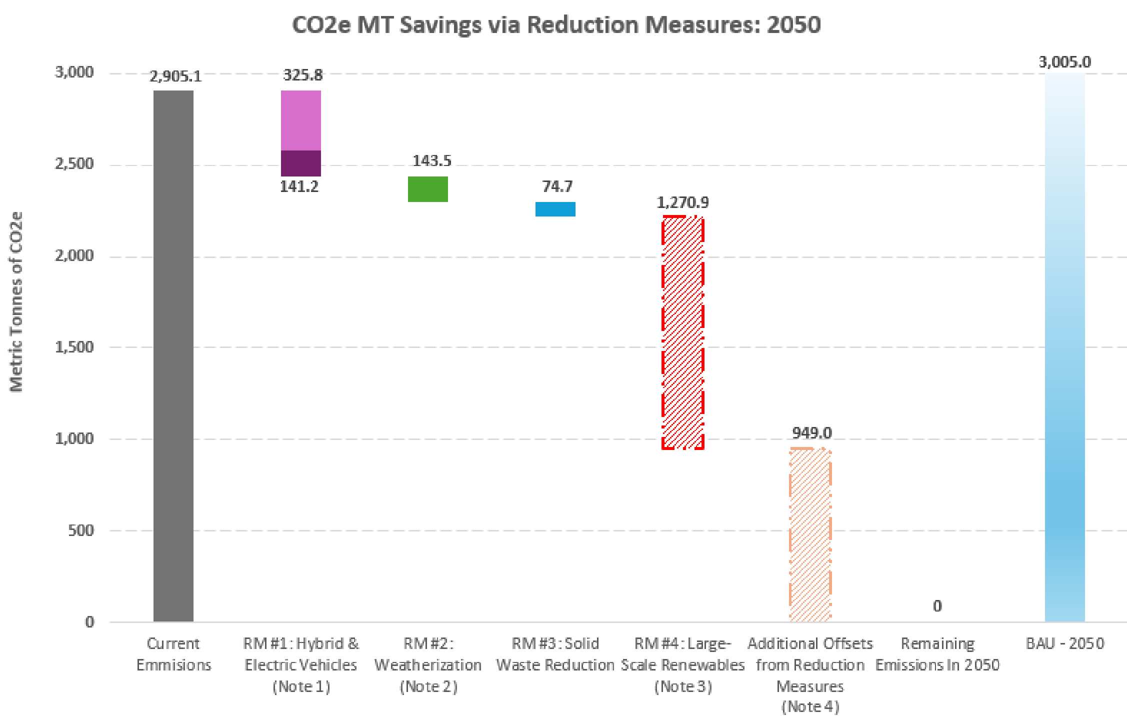
Despite the CPRG program limiting scope to just Tribal Government functions, the Tribe looked to include Reduction Measures that also benefit the entire community for the purpose of caring for all Tribal members in its climate planning. The Reduction Measures thus have 2 separate, but related focus areas: *Tribal Government Focused Reduction Measures* and *Tribal Community Focused Reduction Measures*.

REDUCTION MEASURE SUMMARY BY SECTOR	
MEASURE	**SECTOR**
Tribal Government Focused Reduction Measures	
Measure 1: Replace Tribal Owned Fleet Vehicles with Hybrid and Electric Vehicles	*Transportation*
Measure 2: Weatherization of Existing Buildings	*Electricity Generation and Commercial and Residential Buildings*
Measure 3: Solid Waste Reduction/Recycling	*Waste And Materials Management*
Tribal Community Focused Reduction Measures	
Measure 4: Deployment of Large-Scale Renewable Energy Projects	*Electricity Generation and Commercial and Residential Buildings*
Measure 5: Community-Scale Renewable Energy Microgrid Distribution and new DOE "Zero Energy Ready" Housing	*Electricity Generation and Commercial and Residential Buildings*
Measure 6: Coal Deposit Easement	*Natural and Working Lands*

Implementation Scenario Projections

The following provides a graphic summary of each Reduction Measure's impact on the Tribe's overall emissions and a possible pathway to reach its net-zero carbon goals. The projections show by 2035 reduced emissions from early implementation of Reduction Measures will align with the Tribe's carbon neutrality target. By 2050, when Reduction Measures are fully implemented, the Tribe can refocus previous offset strategies towards other goals.





Notes:

Note 1: There are two possible scenarios from this Reduction Measure's impact. The first assumes the EVs will utilize the existing utility grid to recharge (smaller value); while the second assumes EVs will utilize charging stations powered solely via renewables to offset the GHG emissions from the local utility grid by the time of the first EV purchase. The NWPP eGRID subregion is very carbon intensive and significantly impacts the ability of this Reduction Measure to help the Tribe meet its carbon reduction targets. Therefore, to fully realize the impact of this Reduction Measure, the full emissions reductions utilizes electricity produced via renewable sources to power the charging stations.

Note 2: Utilizes emission reductions from Project 2 (Tribal government buildings) only. See Reduction Measure 2 below for detailed description.

Note 3: Emissions reduction assumes the Tribe may assign carbon offsets from its large scale renewable energy project to offset the Government's total electric emissions depending on the program's final structure. This development project has the potential to offset 214,900 MT CO_2e. Northern Cheyenne as the local owner/administrator of the program, can claim carbon credits generated by this project towards its own Inventory while the community receives the economic benefit. It therefore has the potential to offset the Tribal Government's market based electricity emissions, as well as total emissions, starting in 2030 and beyond allowing it to easily meet its GHG reduction targets. See Reduction Measure 4 below for detailed description.

Note 4: The remaining emissions comprises primarily propane usage for heating in Government buildings. The Tribe may decide to allot additional renewable energy carbon credits (from the large scale renewable project and/or the Solar for All program) as well as available carbon sinks and credits on the Reservation towards the remaining emissions to achieve its carbon neutrality goal. Required offsets will decrease after achieving carbon neutrality in 2035 as additional Reduction Measures come on line.

Note 5: BAU and waterfall graph references 2035 to align with Northern Cheyenne's carbon neutrality goal.

GHG Emission Reduction Measures

Measure 1: Replace Tribal Owned Fleet Vehicles with Hybrid and Electric Vehicles

Measure Summary	GHG Emission Reductions in 2030 Compared to BAU (MT CO_2e)	GHG Emission Reductions in 2050 Compared to BAU (MT CO_2e)
Measure 1: Replace Tribal Owned Fleet Vehicles with Hybrid and Electric Vehicles	*Grid charging*: **34.3 MT CO_2e (7.6%)** *Renewable charging*: **113.8 MT CO_2e (25%)**	*Grid charging*: **141.2 MT CO_2e** (**30.2%**) *Renewable charging*: **up to 467 MT CO_2e (100%)**

Description

The Tribe will replace a series of vehicles in its administrative fleet with electric vehicles (EVs) paired with charging and maintenance capacity to support the pilot program. Through public procurement, the Tribe plans to establish vendor relationships for a phased vehicle purchase plan. It will pair this with developing and implementing electric vehicle maintenance and a renewable energy based charging infrastructure.

Adoption of electric vehicles and alternative, sustainable fuel sources is slow and faces multiple practical barriers within the Tribe's administration. By replacing vehicles and ensuring the infrastructure is in place to support them, the Tribe will make a case for progressive replacement of this fleet to reduce overall GHG emissions and pollution-related health impacts.

Based on the current GHG inventory, over 19% of the Tribal Government's total emissions are from the Transportation Sector. The Northern Cheyenne Indian Reservation is a remote, low-density area requiring significant travel times. For instance, public transit, bicycle, and pedestrian improvements won't have a sizable impact as it pertains to government functions as government business destinations are across the Reservation. Therefore, this Reduction Measure focuses on clean vehicle and fuel measures.

Excluding large "heavy duty vehicles" the Tribe's fleet consists of 8 passenger cars and 94 light trucks (vans, standard and mid-sized pickups, SUVs). Average vehicle model year is 2014 with roughly 30% of the fleet older than 10 years.

The Project will look to replace 25% of its fleet with EVs over a 5-year period, prioritizing older vehicles first where feasible.

This work directly addresses Justice 40 and Environmental Justice goals of the CPRG program by directly addressing the needs of a historically disadvantaged community in decreasing the production of GHG emissions and localized pollution impacting the health of our community. By providing access to capital and support for this program, the Tribe increases local adoption of electric vehicles in its otherwise rural and isolated community. Adding EV charging infrastructure at public buildings further supports private adoption of electrical vehicles. Related, the Tribal government historically provides former fleet vehicles to community members in need of safe, reliable transportation, providing additional economic and quality-of-life benefits to the community.

This Project aims to establish the essential infrastructure that supports the local and regional uptake of EVs, particularly in the Reservation's remote area, which might otherwise be slow to adopt such technologies.

Implementation

Implementation Authority

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 Cheynne 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 Cheynne Tribe has certain driving laws, including a Safety Belt Ordinance, which would be considered for this specific GHG reduction measure.

Implementing Agency

The EPD would manage the program implementation, coordinating with each of the respective Tribal departments to determine vehicles eligible for replacement.

Implementation Timeline

The Tribe buys fleet vehicles regularly, as needed, but market conditions and the need to phase in the appropriate EV charging infrastructure dictate that this Project occur over several years. The Tribe's initial target is to replace the majority of its older passenger cars and light trucks within a 5-year period; thus, replacing newer vehicles with EV/hybrids as needed and based on the success of this program, but cannot proceed without additional financial assistance towards the market premiums for EVs and installation of the supporting infrastructure. The implementation period will need to include application to and award of grant(s) to successfully complete this Project. After initial purchase, the Tribe intends to replace 50% of its vehicles by 10-years, and 100% by 20-years after implementation.

This is a relatively straightforward procurement and administration of public facilities projects. As a result, it is exposed to standard industry conditions and areas around labor availability and cost escalation. Vehicle purchase lead times may be impacted by low inventory and high-demand scenarios for vehicles in other areas. As a rural, underserved area the Tribe may be disproportionately impacted by this market condition in terms of costs and timeline.

Metrics for Tracking Progress

1. The Tribe will record and report miles driven per vehicle using odometer readings taken at purchase and with each reporting period. GHG reductions will be calculated using the methods described below.
2. In the long term, the replacement of the fleet with EV and alternative sustainable fuels will be an ongoing project. Statistics in total vehicles replaced and miles driven will be kept for the duration of the performance period to identify how this program influenced overall administrative policy and behavior.

Quantified GHG Emission Reduction

The durability of this reduction is directly related to the number of miles driven and the total number of vehicles replaced. Once a vehicle is replaced in service for EV conversion, the reduction is complete and ongoing for the vehicle's life. The overall impact of production and disposal of the vehicle are not included in this position.

Calculations

Calculations determined a percentage reduction based on a planned replacement phasing timeline as follows:

- 5-year, 25% replacement
- 10-year, 50% replacement
- 20-year, 100% replacement

Utilizing the MT CO_2e from the GHG Inventory as a baseline, the calculations pull the respective percentage EV replacement from both gasoline and diesel vehicles and assume the annual miles traveled will be the same as the vehicles the Tribe replaces.

There are two possible scenarios from this Reduction Measures impact. The first assumes the EVs will utilize the existing utility grid to recharge; while the second assumes EVs will utilize charging stations powered solely via renewables to offset the GHG emissions from the local utility grid by the time of the first EV purchase.

In the first scenario, the calculations assume a KW/mi efficiency of 0.53 combined with the CO_2e intensity per kW of the local utility grid (NWPP). This yields the following projected savings within the Sector:

- 5-year, 25% replacement: **7.6% reduction in CO_2e**
- 10-year, 50% replacement: **15.7% reduction in CO_2e**
- 20-year, 100% replacement: **30.2% reduction in CO_2e**

The second scenario assumes the Tribe would assign a portion of the available renewable energy via the large scale renewable Reduction Measure, or similar Tribe controlled source, to power 100% of the charging stations to fully realize the carbon offset potential. The schedule for the large scale wind deployment measure anticipates that the majority of the development will be online by 2030, aligning with this Measure’s procurement schedule and reflected in the calculations below.

- 5-year, 25% replacement: **25% reduction in CO_2e**
- 10-year, 50% replacement: **up to 50% reduction in CO_2e**
- 20-year, 100% replacement: **up to 100% reduction in CO_2e**

As noted previously, the NWPP eGRID subregion is very carbon intensive and significantly impacts the ability of this Reduction Measure to help the Tribe meet its carbon reduction targets. To fully realize the impact of this Reduction Measure, it is imperative that it use electricity produced via renewable sources to power the charging stations.

Other Localized Emissions Reductions and Improved Health Outcomes

EVs produce no tailpipe emissions, which means they do not emit harmful pollutants such as nitrogen oxides, particulate matter, and volatile organic compounds that can contribute to respiratory problems, heart disease, and other health issues. With no exhaust emissions, EVs help improve air quality, particularly in urban areas with expected traffic congestion. Better air quality leads to lower asthma rates, allergies, and other air pollution-related health conditions.

EVs are much quieter than petrol engines, reducing noise pollution in otherwise quiet and sacred Tribal areas. This can positively affect stress levels and overall quality of life for vehicle-dependent populations.

Costs and Intersection with Other Funding Availability

The Tribe buys fleet vehicles regularly, as needed, but cannot afford to replace its fleet more rapidly without assistance.

All costs are from reference projects and quotations reflecting real 2024 market conditions. There always exists the potential for significant impacts on the supply chain, availability and cost of electric vehicles, and related infrastructure and consumables. Recent inflationary and supply chain patterns reflect anywhere between 3% and 15% cost escalation per year on labor, supplies, and capital goods depending on calculation basis. Should these patterns continue, we anticipate severe increases in costs for this program. Global political and economic stability directly impacts this program's rare earth, lithium, and computer chip inputs exposes these costs to significant forecasted instability both in supply and cost.

Total estimated budget to fully implement this Project over a minimum 5-year implementation period is approximately $4,000,000. The costs roughly break down as follows:

- <u>Equipment</u>: $1,207,653 - 25 vehicle replacements (excluding heavy duty vehicles).
    - Costs are estimated from reference projects. RFP awards to viable EV dealerships will occur and will set annual prices for replacing a portion of the vehicle fleet year over year.
- <u>Equipment</u>: $150,000 - 26 single port 11kW EVSE Level 2 chargers.
    - Commodity equipment to provide plug-in capabilities where fleet management occurs.
- <u>Equipment</u>: $800,000 - 4 dual port 160kW EVSE Level 3 Stations
    - Commodity equipment to provide plug-in capabilities where fleet management occurs.
- <u>Contractual</u>: $70,000 EVSE Level 2 installation construction
- <u>Contractual</u>: $150,000 EVSE Level 3 installation construction TBD
- <u>Contractual</u>: EVSE maintenance and fleet management
- <u>Contractual</u>: Maintenance of roof top solar installs
- <u>Contractual</u>: EV Safety, Maintenance, Usage training for fleet management staff, operations staff

Additional funding available via the following resources:

EPA's Clean Communities Investment Accelerator (CCIA)

CCIA will provide financial assistance, largely be in the form of loans, in three priority project categories: distributed generation of clean energy, buildings (new net zero buildings, and substantially rehabilitation of existing buildings), and zero emissions transportation.
epa.us14.list-manage.com/track/click?u=37ecf9e8239a44dad38cc7eeb&id=2179c3e0f4&e=567a68fb42

Measure 2: Weatherization / Electrification of Existing Buildings

Measure Summary	GHG Emission Reductions in 2030 Compared to BAU (MT CO_2e)	GHG Emission Reductions in 2050 Compared to BAU (MT CO_2e)
Measure 2: Weatherization of Existing Buildings	*Project 1*: BAU does not include residential emissions *Project 2*: **61.5 MT CO_2e (2.6%)**	*Project 1*: BAU does not include residential emissions *Project 2*: **143.5 MT CO_2e (5.9%)**

Description

This Measure includes two separate but related projects focusing on energy efficiency improvements to existing private, single family residences and Tribal government and commercial buildings. Many buildings on the Reservation are not energy efficient and do not provide safe protection from the demanding Montana climate. This is both an environmental/energy use issue as much as a critical public health issue.

Project 1

As noted, the existing housing stock quality is poorly constructed and insulated, not energy efficient, and not resilient to the climate extremes present in the area. As a result, many Tribal members struggle to pay energy bills, and many currently occupied homes do not provide safe protection from the areas' weather extremes. Safe, efficient, and warm homes are a major public health issue on the Reservation.

While the GHG Inventory does not include private homes, the Tribe via the non-governmental Northern Cheyenne Tribal Housing Authority (NCTHA) does manage over 300 houses and apartments allocated to eligible Tribal families residing on the Northern Cheyenne Reservation. It is committed to preserving and enhancing existing homes and implementing various programs aimed at improving the quality of affordable housing for Tribal families. Increased energy efficiency for this portion of the Tribal population brings a net benefit to the entire Tribal community, and as a result the Tribe considers this reduction measures to be "in scope" for the purpose of caring for all its members. The Reduction Measure will target implementing some form of efficiency measures to a minimum 75% (225) of these homes.

In addition to the homes the NCTHA owns and administers, there are an estimated 1,030 additional privately owned single-family residences on the Reservation based on 2020 census data[20]. Many of these homes are outdated, inefficient, and overpopulated. Every single Northern Cheyenne family would benefit from a home inspection focused on improving the building's insulation, air sealing, and water proofing systems. Energy audits

[20] www.minneapolisfed.org/indiancountry/resources/native-community-data-profiles - total homes, less those managed by NCTHA and those considered 'multi-family.'

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 and mini-splits, installing ceiling fans, and insulating water heaters. The number of homes participating in this program depends on funding availability and homeowner willingness to participate but will target a minimum 15% (155) of privately owned, single-family homes on the Reservation.

Project 2

Energy efficiency of Tribally owned government and commercial buildings on the Reservation present an opportunity to save operating costs and reduce GHG emissions. Energy audits will identify opportunities to weatherize buildings, replace windows and doors with better insulated versions, evaluate alternative heating and cooling options (such as electric heat pumps), install water heater insulation, and other actions to reduce energy use.

The Tribe currently owns over 40 buildings within the Reservation, many of which suffer from the same poor envelope and efficiency issues as the housing stock. Not all of these buildings are regularly occupied, however. The project will target at least 10 of the regularly occupied buildings within 10-years, starting with the more public facing facilities to showcase and then replicate over time to the remaining buildings. Implementing this measure will conserve energy consumption typically with a short return on investment to lower the Tribe's energy bills and other costs.

This Project will model itself and build on prior projects such as the 2010 EPAs Climate Showcase Community Program where the EPD received a grant to perform energy retrofits on its administrative building as an energy-efficiency demonstration and training project. Contractors implemented retrofits and green power projects with support from Chief Dull Knife College students and community members. A training program covered three sessions on energy audits, energy efficiency, and small scale renewable energy. Participants conducted audits and participated in retrofits of the Tribal EPD Office as part of a field training component.[21]

Implementation

Implementation Authority

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.

Implementing Agency

Project 1: The NCTHA will oversee the implementation across its housing portfolio and conduct outreach efforts to private homeowners with assistance from the EPD and the Tribe's Sustainable Energy Manager.

[21] 19january2017snapshot.epa.gov/statelocalclimate/efficiency-and-ghg-reduction-northern-cheyenne-tribe-reservation_.html

Project 2: The EPD would manage the program coordinating with each of the Tribal departments to implement programs for each of their respective buildings.

Implementation Timeline

Immediate, after securing outside funding, focusing on the elderly and similar vulnerable populations first for home audits, and selected Tribal government buildings. The Project would start with homes managed by the NCTHA as well as older Tribal government buildings and use success stories to then begin outreach campaigns to other homeowners/users on the Reservation. The Tribe estimates Project 1 duration of 5-years and Project 2 up to 10-years but dictated by available funding sources.

The process would entail the following necessary steps:

1. Issue RFP, interview, and contract with energy auditor(s), preferably one(s) utilizing a local workforce (6 Months);
2. Interview and hire HVAC consultant(s)/contractor(s) to assist with system assessments (3 Months);
3. Interview and hire General Contractor(s) required to implement recommended envelope upgrades (3 Months);
4. Perform energy audits on select homes and buildings to start the program, expanding as funding allows;
5. Schedule upgrades as warranted and recommended by audit assessments.

Metrics for Tracking Progress

Project 1

To ensure weatherization projects are effective, NCTHA will monitor participating homeowner utility usage and costs to ensure they receive the desired benefits. Adjustments to the program, user behaviors, and approach will reflect the program's efficacy.

Project 2

Building on the process utilized by the EPD pilot project, entities whose buildings receive upgrades will enter their buildings into EPAs Portfolio Manager to add usage data and track ongoing GHG emission reductions. This methodology will determine the effectiveness of efficiency measures and ensure building efficiency improvements.

Quantified GHG Emission Reduction

Potential overall GHG emissions savings are highly variable based on the total number of buildings included in the program, the condition of the existing building, whether the audit requires envelope, lighting, and/or heating upgrades, and the proposed equipment efficiency factors. The following calculations take a very high level examination to determine potential savings.

Project 1

As noted, the Inventory does not include the residential sector, therefore, any potential GHG reductions for this Project are in addition to other potential Reduction Measures and contribute indirectly to the Tribe's overall reduction targets.

The calculations use an average monthly consumption for electricity and propane to determine the average monthly CO_2e emissions per residence[22] compared to implementing three possible energy saving scenarios. Overall reductions

[22] Electricity: www.eia.gov/electricity/sales_revenue_price/pdf/table_5A.pdf
Propane: www.eia.gov/consumption/residential/data/2020/state/pdf/ce4.6.lp.st.pdf

include the minimum target for both NCTHA and private homes participating in the program outlined above (total of 363 homes).

1 **Exterior Envelop Weatherization**: As a standalone measure, according to the National Association for State Community Services Program, installing energy conservation and efficiency measures in the low-income housing stock saves on average 30% in annual utility bills per household.[23] Due to the poor condition of some homes on the Reservation, the savings could be much higher, but the calculations use 30% as an average figure.

   Based on the number of participating homes, the Tribe could potentially see a reduction of 29 MT CO_2e, or a 4% CO_2e reduction per month.

2 **Replacing furnaces with a 1:1 electric resistance heater**: this scenario eliminates the use of propane, relying solely on electric resistance heating in combination with weatherization.

   Based on the number of participating homes, the Tribe could potentially see a reduction of 27 MT CO_2e, or a 4% CO_2e reduction per month.

   Note the carbon reduction impact of switching the heating source to electric from propane is minimal due to the carbon intensity of the NWPP subgrid. Implementing other Reduction Measures to install large scale renewable energy supply to the Reservation will significantly increase carbon reduction.

3 **Installing an energy efficient electric heat pump**: this scenario eliminates the use of propane, relying solely on electric heat pump for heating and cooling in combination with weatherization.

   Based on the number of homes participating, the Tribe could potentially see a reduction of 76 MT CO_2e, or an 11% CO_2e reduction per month.

   Similar to above, the carbon impact from switching the heating source to electric from propane is minimal due to the carbon intensity of the NWPP subgrid, however, the increased efficiency of heat pumps over resistant heating minimizes the grid's impact. Regardless, implementing other Reduction Measures to install large scale renewable energy supply to the Reservation will significantly increase carbon reduction.

Project 2

The EPD project via the EPAs Climate Showcase Community Program realized an annual 20.5 MT CO_2e reduction from it's efficiency upgrades. The Tribe's other commercial buildings are of a similar scale and could realize similar reductions depending on the efficiency measures selected.

If the Tribe were to complete 3 building retrofits by 2030, it could realize a 61.5 MT CO_2e, or 2.6%, annual reduction in the Commercial and Residential Building Sector. Auditing and implementing efficiency measures in the remaining buildings could realize and additional 143.5 MT CO_2e (5.9%) reduction in emissions by 2050.

Costs and Intersection with Other Funding Availability

As noted in the Large Scale Renewable Deployment Reduction Measure, it is the Tribe's hope that the pursuit of large scale renewable energy development will build revenues needed to fund Reservation-wide weatherization and energy assistance. The Tribe has yet to fully determine potential revenue from those projects, however there is also an understanding that it will require additional outside funding to make the program effective. Costs and funding opportunities for each project are below.

Project 1

[23] nascsp.org/liheap-and-wap-a-dynamic-duo-for-reducing-the-low-income-energy-burden/#:~:text=Weatherization%20services%20produce%20an%20average,bills%20by%2030%25%20on%20average.

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.

The program's target is a minimum of 363 homes; therefore, the minimum project cost will be approximately $11 million.

Under the Inflation Reduction Act, the U.S. Department of Energy Tribal Home Electrification and Appliance Rebates program will provide $218.25 million in non-competitive formula allocations to Indian Tribes and Alaska Native Corporations to develop, implement, and subsidize residential energy efficiency, electrification, and appliance upgrade projects. On November 17, 2023 DOE published its final formula allocations set aside for each tribe. Northern Cheyenne was allocated $692,068. A cost-match from the Tribe is not required. 20% of this allocation can be used for the Tribe to administer the grant.

Tribes can decide how best to utilize these funds. Tribes may either set up its own rebate program that would allow tribal members to apply to the tribe for a rebate, or the tribe may use the monies to make improvements to tribally managed housing or other residences directly. However, in either scenario, the program only affords tribes the opportunity to make a maximum of $14,000 worth of improvements per household in eligible energy efficiency and electrical home upgrades.

This chart outlines the maximum rebate per specific improvement. The usage of the rebate is also dictated by the income of the household. For a moderate-income household, only 50% of the total project cost can be covered by a rebate, while the full project cost can be covered for low-income households. This is one example of funding the Tribe may pursue to assist with this Project.

Maximum Rebate Per Improvement	
Electric heat pump HVAC system	$8,000
Electric circuit panel upgrade	$4,000
Electric wiring upgrades	$2,500
Electric heat pump water heater	$1,750
Insulation, air sealing, and ventilation	$1,600
Electric stove, cooktop, range, or oven and/or electric heat pump clothes dryer	$840
Total rebates of up to $14,000 per dwelling unit	

While subject to the caps noted in the chart, rebates can cover:

- **up to full project costs for low-income households (less than 80% area median income)**
- **up to half of project costs for moderate-income households (80 - 150% area median income)**

Additional funding available via the following resources:

- EPA's National Clean Investment Fund:
  This program offers loans and other financial assistance for energy efficient homes, electrification upgrades, and solar installations; battery electric trucks to small fleets and independent operators; housing and utilities.
  www.epa.gov/greenhouse-gas-reduction-fund/national-clean-investment-fund

Project 2

The 2010 EPA Climate Showcase Community Program provided $200,000 in federal funding that covered an audit to plan and fund energy-efficiency retrofits and green power projects to the EPD administrative building. This covered primary weatherization upgrade projects including audits and feasibility studies, retrofits including the installation of energy efficient windows and a tankless water heater, and developing training courses and outreach events with Chief Dull Knife College and local contractors for the local community.

The budget and parameters associated with this grant program serves as a scalable template for potential weatherization projects to the Tribe's remaining commercial buildings.

Measure 3: Solid Waste Reduction / Recycling

Measure Summary	GHG Emission Reductions in 2030 Compared to BAU (MT CO_2e)	GHG Emission Reductions in 2050 Compared to BAU (MT CO_2e)
Measure 3: Solid Waste Reduction / Recycling	**20.25 MT CO_2e (25%)**	**74.7 MT CO_2e (90%)**

Description

The Tribe will look to implement a recycling program for common items (paper, cardboard, metal, glass, plastics), e-waste, tires, appliances, and/or waste oil and determine the feasibility of establishing a composting program. The goal is to establish a 25% diversion rate, by weight, by 2030 and zero waste (90% diversion rate) by 2045.

Municipal solid waste landfills are the third-largest source of human-related methane emissions in the U.S., accounting for 15.5% of these emissions in 2021.[24] Waste releases methane gas as it decomposes, and emissions are a function of the total amount and makeup of the wastes as well as management facility location, design, and practices. Methane is more than 28 times as potent as carbon dioxide at trapping heat in the atmosphere and contributing to climate change.[25] The Tribe can affect GHG emissions by recycling and changing product use which reduces the amount of waste sent to landfills while also conserving natural resources (e.g., timber, water, and minerals), preventing pollution by reducing the need to collect new raw materials, and preserving open space by decreasing the need for landfills.

Solid waste makes up 3.4% of the Tribe's overall GHG emissions, however, recycling programs should be the cornerstone of any environmental program as an outward display of the Tribe's commitment to the environment. While not always cost-free, recycling often costs less than solid waste disposal services due to increasing tipping fees and can save the Tribe money on trash hauling costs. Recycling in Montana comes with barriers that most other states do not have. Due to the low population density and large geographical area, it is very difficult to find markets for materials that are both economically and environmentally desirable. The Tribe's low waste volume and remote location creates additional challenges to find available partners and haulers interested in taking collected recycling materials over long distance to the closest recycling broker or processing site. Therefore, the Tribe needs to provide the highest quantity and quality of available recycling materials to offer the best value for any partner.

Currently the NCDC manages the collection of solid waste on the Reservation for the entire Tribe, including Tribal government programs, but landfills it elsewhere. The Tribe does not own or operate its own landfill or have a landfill within the Reservation boundary. The Tribe owns (under the NCDC) a solid waste transfer station for Tribal members' use which collects waste and then transfers it to two different landfills located off the Reservation (Rosebud County Landfill (construction and demolition) and City of Hardin Landfill (trash)) by Tribally owned vehicles. The transfer facility currently collects tires and waste motor oil separately from the solid waste stream to

Northern Cheyenne Solid Waste Transfer Station, Lame Deer, MT

[24] www.epa.gov/report-environment/wastes#management

[25] www.epa.gov/gmi/importance-methane

process through outside recycling facilities. The Tribe currently does not collect common recyclables as a separate stream for processing.

Implementation

Implementation Authority

Within the Northern Cheyenne Reservation, for Northern Cheyenne operated facilities and agencies, the Northern Cheyenne Tribe has the authority to review and then implement solid waste improvements to lower GHG emissions.

Implementing Agency

NCDC, with the assistance from the EPD, would manage the program's implementation, coordinating with each of the respective Tribal departments and conduct outreach efforts to the entire Tribe to optimize the program's effectiveness.

Implementation Timeline

Lasting and effective recycling programs are each unique, but they share many commonalities and have the same basic foundation. Working with waste managers, respective departments, prospective venders, and other stakeholders is key to a successful program where they need to be involved as early as possible in the program's planning stages. To meet the outlined target date, the Tribe will need to immediately conduct the following steps:

1. **Select a Recycling Coordinator**: select a Tribal recycling coordinator to oversee the entire operation. This individual is responsible for designing the collection program, selecting a hauler or arranging in-house transportation of materials, facilitating education and outreach, and tracking progress. The recycling coordinator will be the central point of contact for all questions and concerns.
2. **Determine the Waste Stream**: determine the available materials to include in the recycling program by conducting a waste assessment to identify materials currently in the general waste stream.
3. **Select a Contractor/Hauler**: contact local recycling companies to determine if they are willing to take materials from the Reservation long distance to recycling processing centers and, if so, what materials they are willing to accept based on market demand.
4. **Practice Waste Prevention**: waste prevention means using less material to get a job done to end up with less waste to manage. In addition to environmental benefits, waste prevention saves money. Determine ways to lower waste first by reducing use, reusing, and donating.
5. **Include Staff, and Volunteers**: after the Coordinator starts the recycling program, obtain support from staff and volunteers to achieve a positive outcome.
6. **Set Up the Collection Program**: making recycling easy and convenient will greatly boost levels of public and vendor participation. Collection will depend on the hauler, but the program will require coordinating collection bins at key locations throughout the Reservation, storage, and pick-up and transfer.
7. **Facilitate Outreach and Education**: education is the best way to encourage the participation to recycle. Use signs, displays, and/or text to teach community members *Why* they should recycle, *What* they should recycle, *Where* they can recycle, and *How* they can recycle. Including signage and/or literature at the site showing how much has been recycled already or goals that you are trying to reach will help stimulate participation. Likewise, use signs to clearly indicate recycling bin locations and instructions.
8. **Monitor and Evaluate the Program**: conduct annual audits to determine progress compared against baseline data established during the initial waste assessment.

Metrics for Tracking Progress

The program will conduct annual audits to determine progress compared against baseline data established during the initial waste assessment. Audits will determine the potential waste stream contamination as well as identify potential recyclable materials that are in the waste stream for further improvement.

Quantified GHG Emission Reduction

While diverting materials from entering the landfill certainly reduces landfill GHG emissions, namely methane, recycling programs do carry a carbon footprint. In this case, there are emissions associated with trucking materials long distances to the nearest recycling processing location or brokerage, source separation, additional transport, and repurposing. Due to the uncertainties this process will entail until the Tribe identifies a specific vender, the potential reductions do not factor these emissions into the potential savings and only focuses on the reduction in landfill emissions.

Achieving a 25% diversion rate, by weight, by 2030 will create a 20.25 MT CO_2*e* reduction in GHG emissions from the BAU scenario.

If the Tribe were to initiate a zero waste policy by 2045, technically a 90% diversion rate, it would realize at least a 74.7 MT CO_2*e* reduction in GHG emissions from the projected BAU scenario by 2050.

Note, there is the potential for a broader GHG reduction impact as the Tribe's collection services and transfer station serves all Tribal members, not just governmental departments.

Costs and Intersection with Other Funding Availability

The NC solid waste program via the NCDC looked into implementing a recycling program in the past, but it proved to be too expensive. The Tribe is interested in establishing a program only if there is outside funding assistance available.

The Tribe will incur costs to develop a program to collect and transport materials to its transfer station that includes the purchase of separate recycling bins and collection vehicles. Costs will ultimately depend on completing a waste audit and working with prospective venders to determine the program scale and materials that will make up the basis of the recycling program.

There are several federal funding sources available specifically focused to assist tribes with starting and maintaining recycling programs; however, due to the US government's current focus to cut and/or freeze federal program funding at the time of this CCAP, the future of these programs is unclear and will require further research when the Tribe is ready to implement this Reduction Measure:

Tribal Environmental Program

The EPAs dedicated Tribal Environmental Program provides grants and technical assistance to support environmental protection, including waste management and recycling initiatives. Specifically, the Indian Environmental General Assistance Program (GAP) provides grant funding for the planning, development, and establishment of solid and hazardous waste programs on tribal lands.

www.epa.gov/tribal and
www.epa.gov/general-assistance-program-gap

National Environmental Education Foundation (NEEF)

NEEF provides funding and resources for environmental education, including recycling programs. NEEF offers tools, grants, and connections to help communities educate members on sustainability and recycling. NEEF offers grant programs for multiple initiatives, including recycling, on a rotating basis and provides the opportunity to sign up for announcements.

www.neefusa.org

State Tribal Waste Management Grants

Montana, via the Montana Department of Environmental Quality, offers funding and assistance to tribes within their boundaries for recycling/solid waste management programs.
deq.mt.gov/index

Resource Conservation & Development Councils

RC&D Councils work with local communities to promote sustainable resource management, including recycling and waste reduction. The Reservation lies within the Northern Plains Region where the Tribe can find its local Council to provide further assistance.

RC&D Councils are not governmental entities, so the typical policies and constraints of local, state, and federal government programs do not limit the types of issues they address or the means they use.
https://narcdc.org

Measure 4: Deployment of Large-Scale Renewable Energy Projects

Measure Summary	GHG Emission Reductions in 2030 Compared to BAU (MT CO_2e)	GHG Emission Reductions in 2050 Compared to BAU (MT CO_2e)
Measure 4: Deployment of Large-Scale Renewable Energy Projects	**Potential to offset all electricity emissions from Tribal Government: 1270.9 CO_2e**	**Potential to offset all electricity emissions from Tribal Government: 1270.9 CO_2e**

Description

Building on a long history of environmental protection and interest in clean energy sources, and efforts to preserve the Cheyenne traditional way of life, in 2016 the Northern Cheyenne Tribe launched a sustainable energy development initiative to promote a resilient and diversified new "green energy" economy. While Cheyenne traditional homelands territory is much larger, the Tribe's sustainable energy initiative initial target is to improve the quality of life on the Northern Cheyenne Reservation as it is the hope to use this as an important opportunity to build revenues needed to fund Reservation-wide weatherization and energy assistance as well as workforce training programs.

Currently the inventory assumes the Northern Cheyenne Tribe depends on electricity provided by the NWPP Subregion which is dependent on fossil fuels (41.8%) for electricity generation; however, it is also heavily dependent on large hydro-electric generation (38.7%)[26]. Although considered a renewable generating asset, large hydro does carry a significant ecological footprint which has had a major effect on Indigenous peoples and their lands. The Tribe is undertaking a comprehensive renewable energy initiative comprising wind and solar developments totaling 263 MW of capacity on the Reservation, 20 miles south of the 2.1 GW Colstrip coal plant scheduled for ramp-down. The Tribe's goal is to minimize its GHG and ecological impact and provide sustainable renewable energy to both the Reservation and to cities across the High Plains.

The Tribe is currently engaged with an energy infrastructure consultant helping to develop the renewable energy system parameters, develop financial studies, identify possible sites across the Reservation, and plan future integration with the local grid. 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.

[26] www.epa.gov/egrid/power-profiler#/NWPP.

Wind Energy Development

The Tribe is in the investigation stage of planning a potential 250 MW wind facility for development near Garfield Peak in the northeast quadrant of the Reservation, with operations targeted for as early as 2030. It is co-developing this project with a confidential tier-one developer and it requires the construction of a 40-mile 138kV transmission line to connect with Colstrip, utilizing existing rights-of-way and Tribal lands. By distributing this energy through the Colstrip substation, the Tribe would provide renewable energy to cities in Montana and the Pacific Northwest, thus reducing GHG emission both on and off the Reservation.

To track the wind project's progress effectively, the Tribe will monitor several key metrics. The interconnection application status serves as an early indicator of project viability. The Tribe will track transmission line permitting progress as a percentage of completion, alongside construction timeline adherence. The power purchase agreement status represents a critical milestone for project financing. Once operational, the Tribe expects annual energy production of approximately 750,000 MWh based on a 34% capacity factor.

Solar Energy Portfolio

The solar initiative consists of three distinct programs totaling 13 MWac, each serving different community needs and operating under separate funding mechanisms.

The first program, currently under construction with DOE funding, comprises 500 kWac of residential systems. Each installation ranges from 10-15kW, with select systems including battery storage. Success metrics include tracking the number of completed installations against targets, measuring average installation time per system, and monitoring the percentage of systems with battery integration. Monthly generation data and system performance ratios will be collected to ensure optimal operation.

The EPA Solar for All program funds an additional 2.5 MWac of residential systems, scheduled for installation between spring 2025 and 2029. Quarterly installation completion rates and total installed capacity will be tracked against project timelines. Budget adherence and the number of homes benefited provide key performance indicators for community impact.

The largest solar component involves two community-scale systems totaling 10 MWac, supported by FEMA BRIC grant funding. The design phase must conclude by December 31, 2025, with construction funding applications planned for March 2026. We will track design milestone completion dates, BRIC application status, environmental review progress, and interconnection study status. Construction cost estimates will be measured against initial projections to ensure fiscal responsibility.

Infrastructure Integration

The Tribe is evaluating the possibility of assuming control of electric utility operations. This decision process requires careful monitoring of several metrics, including the completion percentage of the utility takeover feasibility study and the number of identified integration challenges. The Tribe will track decision milestone timelines, staff training and hiring requirements, and maintain updated cost-benefit analysis results.

This renewable energy generation project will offer increased energy independence, resiliency, and provide community benefits such as on the job training and employment for Tribal members. Northern Cheyenne live in an Environmental Justice Disadvantaged Community, as identified by the EPA , 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.

Implementation

Implementation Authority and Responsibilities

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 Tribal President and Council have authority to authorize all aspects of a project of this nature. The Northern Cheyenne Environmental Protection Department and the Sustainable Energy Manager have 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.

Implementing Agency

The EPD will oversee the implementation of this Measure coordinating with Tribal government and other agencies as required.

Implementation Timeline and Milestones

The implementation schedule spans from present day through 2030, with several critical milestones:

- Completion of initial 500 kWac residential solar installations
- EPA Solar for All program implementation beginning spring 2025
- Community solar system designs by December 2025
- FEMA BRIC construction funding application in March 2026
- Community solar operations target of December 2028 (if funded)
- Wind facility operations target of 2030, pending Colstrip interconnection
- Infrastructure Planning future steps dependent on Solar for All and FEMA BRIC initiative outcomes and involves ongoing evaluation of Tribal takeover of electric utility operations.

Progress on utility integration will emerge from the Solar for All and FEMA BRIC initiatives, informing the Tribe's decision-making process regarding utility operations.

This comprehensive renewable energy initiative represents a significant opportunity for Tribal energy independence and economic development. Regular monitoring of established metrics will ensure proper project execution and allow for timely intervention if challenges arise. Success in these initiatives will position the Tribe as a leader in renewable energy development while providing substantial benefits to Tribal members.

Metrics for Tracking Progress

The Energy projects collectively are following the below processes to target progress:

Project: 250 MW Wind Development Phase Metrics

<u>Current Status</u>: Initial Development
<u>Status Updates</u>: Monthly

Tracking the following metrics:

1. Development Milestones
    a. Land lease agreements secured
    b. Environmental studies completed
    c. Cultural resource surveys completed
    d. Wind resource assessment validation
    e. Project design completion
2. Interconnection Progress
    a. Application Status
    b. Studies Completed
    c. Agreement Status
    d. Completion Date
3. Transmission Line Development (40-mile 138kV)
    a. Route approval
    b. Rights-of-way secured
    c. Permitting progress
    d. Engineering design
    e. Construction progress

Project: Solar Portfolio (13 MWac Total)

Project: 500 kWac DOE Residential Program
Current Status: Under Construction
Status Updates: Weekly

Tracking the following metrics:

1. Installation Progress
    a. Total systems installed
    b. Total capacity installed
    c. Systems with battery storage
    d. Average installation time
2. Performance Metrics
    a. Total generation to date
    b. Average system performance ratio
    c. Number of service tickets
    d. Average response time

Project: 2.5 MWac EPA Solar for All Program
Current Status: Planning Phase
Status Updates: Monthly

Tracking the following metrics:

1. Project Progress (2025-2029)
    a. Installations completed
    b. Total capacity installed
    c. Budget utilized
    d. Timeline compliance

2. Community Impact
    a. Homes benefited
    b. Average system size
    c. Estimated annual savings per household

Project: 10 MWac FEMA Community Systems

Current Status: Design Phase Target
Status Updates: Monthly

Tracking the following metrics:

1. Design Phase Progress (through 12/31/2025)
    a. Site assessment completion
    b. Engineering design completion
    c. Environmental review status
    d. Interconnection study progress
    e. Cost estimates vs. budget
2. BRIC Grant Milestones
    a. Design deliverables completed
    b. Construction funding application status
    c. Target submission date
    d. Award notification

Infrastructure Integration

Current Status: Evaluation Phase
Status Updates: Quarterly

Tracking the following metrics:

1. Feasibility Study Progress
    a. Technical assessment completion
    b. Financial analysis completion
    c. Regulatory review completion
    d. Operational plan development
2. Implementation Planning
    a. Integration challenges identified
    b. Challenges addressed
    c. Staff requirements identified
    d. Training program development
3. Decision Milestones
    a. Feasibility study completion date
    b. Stakeholder review period
    c. Final decision target date

Quantified GHG Emission Reduction

Wind Energy Development

Once operational (targeting 2030), the wind development's expected annual energy production is approximately 750,000 MWh based on a 34% capacity factor. The expected operational life is 40 years. This will offset 214,900 MT CO_2e every year it operates based on the NWPP emission rate of 631.7 pounds CO_2e/MWh. Note, the Tribal government's total emissions from the market based electricity sector is 1270.9 MT CO_2e (based on 4389 MWh). As the local owner/administrator of the utility, the Northern Cheyenne Tribal government can claim carbon credits generated by this project towards its own Inventory while the community receives the economic benefit. This development project has the potential to offset the Tribal Government's market based electricity emissions, as well as total emissions, starting in 2030 and beyond allowing it to easily meet its GHG reduction targets.

Solar Energy Portfolio

As noted, the Inventory does not include the residential sector, therefore, any potential GHG reductions for this Project are in addition to other potential Reduction Measures and contribute indirectly to the Tribe's overall reduction targets. It has not yet been estimated the number of homes receiving power from these installations, therefore estimated projected emissions reductions are on a per home basis.

The calculations use an average monthly consumption for electricity and propane to determine the average monthly CO_2e emissions per residence[27] then developed estimated reduction projections depending on the homes heating system (propane, electric resistance, or electric heat pump).

- **Baseline**: Average homes, assumed to use market based electricity and propane heating systems, estimated to generate 0.5 MT CO_2e per month.
- **Homes with Propane Heating System**: The average home could potentially see a 47.7% (0.24 MT CO_2e) reduction in GHG emissions per month due to offsetting the homes general electrical usage with renewable electricity.
- **Homes with 1:1 electric resistance heater**: The average home could potentially see a 100% (0.5 MT CO_2e) reduction in GHG emissions per month due to offsetting the homes general electrical usage with renewable electricity.
- **Homes with efficient electric heat pump**: The average home could potentially see a 100% (0.5 MT CO_2e) reduction in GHG emissions per month due to offsetting the homes general electrical usage with renewable electricity.

Costs and Intersection with Other Funding Availability

Total estimated project cost is $700 million based on initial design concepts, inclusive of design and capital construction costs. The projects will require outside funding to make them a feasible, mutually beneficial use of the Tribe's land and resources over the long term.

Project financing for the wind energy development is via the project developer that is pending the critical milestone of a signed power purchase agreement with the developer. The Tribe may also look to partner with other investment groups as the project develops.

Various agencies are proving funding for the remaining projects as follows:

- 500 kWac residential systems: U.S. Department of Energy

[27] Electricity: www.eia.gov/electricity/sales_revenue_price/pdf/table_5A.pdf
Propane: www.eia.gov/consumption/residential/data/2020/state/pdf/ce4.6.lp.st.pdf

- 2.5 MWac residential systems: EPA Solar for All programs
- 10 MWac community-scale systems: FEMA BRIC grant

Measure 5: Community-Scale Renewable Energy Microgrid Distribution and new DOE "Zero Energy Ready" Housing

Measure Summary	GHG Emission Reductions in 2030 Compared to BAU (MT CO_2e)	GHG Emission Reductions in 2050 Compared to BAU (MT CO_2e)
Measure 5: Community-Scale Renewable Energy Microgrid Distribution and new DOE "Zero Energy Ready" Housing	**BAU does not include residential emissions. Potential to offset 100.89 MT CO_2e per year above projections**	**BAU does not include residential emissions Potential to offset 178.43 MT CO_2e per year above projections**

Description

Northern Cheyenne currently does not have enough homes to meet its members' demand. Of the housing currently on the Reservation, the majority is substandard quality with many Tribal members living in surplus Air Force housing from the 1960s that are poorly constructed and insulated, not energy efficient, not resilient to the climate extremes present in the area, and have poor indoor air quality due to the presence of asbestos containing materials. The Tribe has seen a distinct rise in allergies and asthma in its members due to these IAQ issues. With inefficient homes comes very high energy bills[28] that have been a major contributor to homelessness and homes being overcrowded well beyond the intended occupancy. Currently, utility bills for many residents of the Northern Cheyenne Reservation can prove prohibitively expensive for members, especially older Tribal members on fixed incomes.[29] In addition, during power outages, which are common, Tribal members have perished in their homes due to the lack of heat during winter.

This Reduction Measure presents an opportunity to replace and increase its housing stock to efficiently house its members while reducing GHG emissions and continuing its quest for a green community and economy. This Reduction Measure plans to tackle these issues in two ways:

1. To provide renewable, reliable electricity to communities on the Reservation, and
2. To provide culturally appropriate, affordable, healthy, safe, and energy efficient housing designed for the harsh weather conditions in southeastern Montana.

Applying innovative technologies and architecture, these initiatives should serve as a model for Tribes and other communities where Northern Cheyenne Tribal Housing Authority will have a major role in implementing this Measure. Note, while the GHG Inventory does not include private homes, increased energy efficiency for this portion of the Tribal population brings a net benefit to the entire Tribal community. As a result, despite the CPRG award limiting scope to just Tribal Government functions, the Tribe considers this reduction measures to be "in scope" for the purpose of caring for all Tribal members.

Reduction Measure Major Features

The Tribe's primary GHG emissions are from building electricity and heating needs. Many of Northern Cheyenne's buildings on the Reservation do not adequately protect occupants from the long, harsh Montana winters, major storm events, or internal pollution sources (cooking and other appliances, finish materials, mold, etc.). This is both an environmental and energy use issue as well as a critical public health issue. Tribal members, Tribal staff, and

[28] The Northern Cheyenne Tribe is in the 98th and 99th percentile for annual energy cost as an average cost divided by household income per the Climate and Economic Justice Screening Tool (CEJST): https://edgi-govdata-archiving.github.io/j40-cejst-2/en/#9.14/45.5333/-106.4991 .

[29] The Northern Cheyenne Tribe is in the 84th and 86th percentile per the CEJST for low income where people in households have income less than or equal to twice the federal poverty level, not including students enrolled in higher ed: https://edgi-govdata-archiving.github.io/j40-cejst-2/en/#9.14/45.5333/-106.4991.

other key stakeholders determined that reducing building energy use and providing safe, affordable, healthy, and energy efficient housing is the Tribe's highest priority. The EPA identifies the Northern Cheyenne Tribe, and its members, as an Environmental Justice Disadvantaged Community.

The Tribe proposes developing new, highly insulated, high-performance, affordable homes for Tribal members with the pairing of a localized renewable energy microgrid and district energy system for energy generation, distribution, and home heating and cooling. These new homes will follow the US Department of Energy's Zero Energy Ready Home Program[30]. Zero Energy Ready Homes are high-performance homes that are so energy efficient that a renewable energy system could offset most or all the home's annual energy use. To achieve the high level of performance required to achieve this level, the home designs will follow Passive House principles for thermal, air, radiation, and moisture control. With the implementation of a district microgrid system, the combined effort will ultimately result in 25-30 new zero net energy homes on the Reservation. The intent is to build the homes within a community where power and heat generation assets are shared among all the properties. As the Tribe considers land communal rather than belonging outright to individual homeowners, the goals of the development are to utilize communal renewable energy and a fossil fuel free district energy system to provide all the home's power, heating, and cooling needs.

The home designs would respond to the specific needs of the Northen Cheyenne in several ways, including but not limited to:

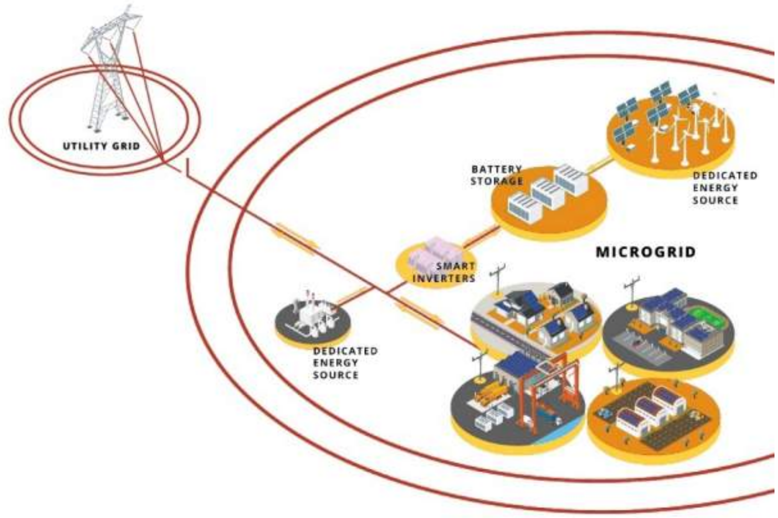
- Consider unique Tribal needs to create housing types that allow for multi-generational families to share a safe, healthy home. Home designs will consider aging-in-place and universal accessibility guidelines.
- Homes will include climate-specific, high performance building envelopes to provide the most economically feasible response to the demands of the southeastern Montana climate.
- Reduced utility bills.
- Homes will utilize high efficiency, non-fossil-fuel heating, and ventilation systems to minimize energy use. The design will follow Passive House (Phius) strategies and recommendations, reducing energy use by up to 85%.
- 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 Northern Cheyenne Reservation has asthma rates above the 97th percentile nationally, per the Climate and Economic Justice Screening Tool[31].
- 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.
- Explore construction methods that combine the advantages of prefabrication with site specificity. Creating long-term, skilled, on-reservation jobs is a priority. This project may provide a toe-hold in the burgeoning pre-fabricated building industry.
- 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.

To combat the areas' reliance on the NWPP eGRID subregion and its dependency on fossil fuels and destructive hydro-electric generation, the approach looks to reduce each home's GHG and ecological footprint via on site renewable electricity generation using an electrical microgrid and district energy system.

[30] www.energy.gov/eere/buildings/zero-energy-ready-home-program

[31] https://edgi-govdata-archiving.github.io/j40-cejst-2/en/#9.11/45.5332/-106.4987

Microgrid



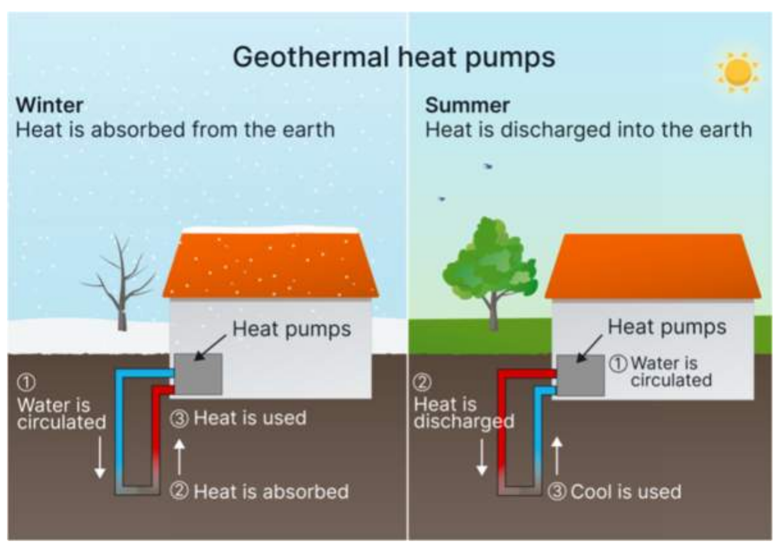
A microgrid is a group of interconnected loads and distributed energy resources that acts as a single controllable entity with respect to the primary utility grid. It can connect and disconnect from the grid to operate in grid-connected or island mode. Microgrids can improve customer reliability and resilience to grid disturbances and enable local power generation assets, such as renewables and battery storage, to keep the local grid running even when the larger grid experiences interruptions. In addition, microgrids allow local assets to work together to save costs, extend duration of energy supplies, and produce revenue via market participation. Microgrid projects continue to gain prominence in the energy sector due to the increased resilience, flexibility, and efficiency these localized energy systems offer, incentivized further by federal and state support for their development. Microgrid installations are expected to grow dramatically as distributed energy prices drop and worries heighten about electric reliability because of severe storms, cyberattacks, and other threats.

The microgrid envisioned will utilize solar PV arrays and battery storage to serve the residential loads behind a point of common coupling with the local electric distribution grid and distribute power across the community via underground electrical cabling for added resiliency against weather events. An initial feasibility study conducted as part of this project will determine total electrical loads, appropriate asset mix of PVs and storage, and approaches to ride-through an extended grid outage to meet community needs and be in compliance with local utility and state regulations which the team will use to develop the final budget and implementation schedule.

Note this approach is separate from, but in conjunction with, the Solar For All program Northern Cheyenne is currently engaged with on the Reservation.

District Energy

A district energy system utilizes a site-wide ground-coupled (aka "geothermal") wellfield and heat pump system for the heating and cooling needs. This ground-coupled water-based condenser system is used to transfer heat between buildings and among various system components. The primary benefits of this approach are the inherent energy efficiency benefits of moving thermal energy rather than creating it, and the flexibility to add both sources and sinks of thermal energy to the same shared infrastructure, with each drawing or rejecting heat to the central loop at any time as needed.



Source: https://montanarenewables.org/geothermal/

The geothermal system is a centralized heating and cooling infrastructure that allows heat exchange with the relatively constant temperature earth throughout the year without any intermittency; as a heat source (in the winter) or a heat sink (in the summer). The average annual effect on the ground temperature is minimal because of cyclical nature of the seasons and an ideal design will generally result in a seasonal balance of total heat extraction and total heat injection.

The network of underground piping is a closed loop system consisting of individual boreholes, piping loops, and interconnecting piping acts as a large heat exchanger, allowing the HVAC systems (primarily water source heat pumps) to take advantage of the moderate year-round ground temperatures to boost efficiency and reduce operational costs. Water circulates through the wellfield network to exchange heat between the earth and the buildings on the site. The entire system of piping (both vertical loops and horizontal interconnecting piping) is located below ground and provides excellent resiliency to weather events as only the pumping stations are above ground.

Building energy efficiency will thus be a primary driver to reduce consumption. Homes will follow the Passive House design standards to perform up to 85% better than average homes. Initial concepts include utilizing an offsite pre-fabricated structure manufactured from Fiber Reinforced Polymers (FRP)[32] and Advanced Building Construction methods[33] to meet required efficiency and air tightness standards as well as aid in scheduling construction around the harsh Montana winters. In addition to increased thermal properties, this system provides an additional layer of resiliency due to its inherent properties to withstand high winds and impact from extreme weather events, which are becoming more prevalent on the Reservation.

However, efficiency is not limited to building design, high performance envelops and systems. Building user behavior can increase the efficiency of the energy used in the buildings. Different strategies will need address and support this issue. Achieving and maintaining energy-efficient behavior without decreasing the comfort of building occupants will remain a primary focus.

The benefits of utilizing a communal renewable and district energy approach and their inherent efficiencies allows residents to minimize, even eliminate, utility bills to further incentivize living in this community and influence occupant behavior.

Implementation

Implementation Authority

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 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 reservation."[34] Tribal Council Resolution No. DOI-140 (2016), approved by the Council and signed by the President on May 26, 2016, which resolves that the Tribe "agrees to establish renewable and sustainable energy industries on the Northern Cheyenne Reservation as part of a long-range effort for a sustainable, viable economic venture that includes but [is] not limited to employment and training activities." That Resolution also sets forth the need for compatibility with Tribal cultural and spiritual beliefs, demonstration of

[32] Examples include Northstar Technologies: www.northstartgi.com/

[33] www.energy.gov/eere/buildings/what-advanced-building-construction-initiative

[34] Amended Constitution and Bylaws of the Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Article IV(1)(k).

financial feasibility, consideration of proposals from developers, and consideration of input from the general membership.

The Tribal Council has designated a Sustainable Energy Manager to make recommendations to the Council on actions necessary to expedite project implementation. The Tribe is one of the few Tribes in the United States with a full-time Sustainable Energy Manager position. The Manager will help to ensure consistent attention from Tribal leadership over time. With these measures in place, the Tribe expects that any lengthy or costly delays due to regulatory issues are very unlikely. Indeed, since 2016 the Tribe has repeatedly passed Resolution affirming these principles.

Additionally, under the Northern Cheyenne Tribal Leasing Act which was approved by the United States under the authority of the HEARTH Act, 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 Plan. 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.

Therefore, the Northern Cheyenne Tribe has the authority to construct energy developments and energy efficient residential buildings on the Reservation for the benefit of the Tribe's members. 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 €. Therefore, the Northern Cheyenne Tribe, and its governmental departments, possess the authority to execute the proposed actions detailed in this Plan on the Northern Cheyenne Reservation.

Furthermore, the Northern Cheyenne Environmental Protection Department has broad authority to oversee the construction and operation of projects on the Reservation and can conduct environmental review where appropriate.

Implementation Timeline and Milestones

The Tribe organized this Reduction Measure into the following phases:

- Zero Energy Ready 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 new housing

In order to successfully complete this project, the Tribe will need to make significant investments in the Reservation infrastructure - beyond the required renewable energy microgrid. For example, Lame Deer has water supply and distribution systems managed by the NCUC and is very inconsistent due to an aging infrastructure. NCUC only charges flat rate towards infrastructure improvements and not usage (house/buildings are not metered) and due to limited income, the Tribe is hesitant to raise rates. Tribal leadership believes that the existing aquifer / ground water resources are close to 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.[35] These infrastructure projects are a necessary part of the new mixed income, higher density housing that the Tribe needs. Although the requirement of new infrastructure poses a risk, the Tribe through the EPD and NCUC is prepared to expand these resources to meet the needs of the future residents living in these homes. However, the Tribe currently does not have a current tax structure or population with resources to pay the taxes to support these greater infrastructure upgrades.

The project includes microgrid design and site work as rough order of magnitude estimates due to pending decisions regarding location and suitability. The Project identifies a budget contingency to cover any variance to the total cost for site work and microgrid design decisions, permitting, environmental, etc. The Project also includes developing electric utility interconnection studies, permitting, licensing, and long-term operation plans and costs in deep collaboration with the selected design/build consultant.

Environmental permitting, historic preservation, and other natural resources and utility approvals depend on location and suitability decisions for the project. Funding for this Project will trigger decisions about location and suitability that will bring these factors into scope and cost control.

The Tribe plans to begin the housing design process as soon as it secures funding pending selection and contracting with an architectural firm. The process will begin with a programming conversation to ensure that the housing design responds to the unique cultural and climatic needs of Northern Cheyenne, rather than being a typical subsidized housing solution. The following parties' cooperation and participation will be necessary for the GHG reduction measure implementation:

- Northern Cheyenne Tribal Housing Authority
- Northern Cheyenne Tribe Council
- Northern Cheyenne Environmental Protection Department
- Chief Dull Knife College

These parties have played an integral role in the development of this GHG reduction measure and are prepared to participate and facilitate the implementation of this measure.

The Tribe identified the following milestones for this GHG reduction measure:

- Host a Kick-Off Design Meeting with Tribal staff and key stakeholders.
- Prepare the Schematic Design, Development, and Construction documentation for all homes and interior mechanical, electrical, and plumbing systems.
- Develop Microgrid concept, feasibility study, and budget.
- Meet with utilities and associated Tribal regulatory agencies.
- Determine the engineering required to design the wellfield and piping distribution to individual homes.
- Begin hosting regular meetings with Tribal and regional permitting agencies.
- Begin bidding process in phased packages.
- Conduct all site work, including roads, utility infrastructure, to get the site "pad ready" to accept homes. This milestone includes basecoarse paving of roads for deliveries and allow phased home occupancy.
- Bore Hole Drilling and installation of horizontal loop piping.
- Off site fabrication.
- On-site construction of individual home foundations.
- Home Component Delivery. Complete each home's exterior envelope cladding, and interior fit-out. Homes will be available for occupancy in a phased approach

[35] Reference Northern Cheyenne Utility Commission Rate Study Report, October 28, 2020: www.cheyennenation.com/nct/water/Northern%20Cheyenne%20Utility%20Commission%20Rates%20Study%20FINAL.pdf

- Install PV system, batteries, and related equipment procurement and installation for the localized microgrid.

Using the above Milestones, the implementation of this Reduction Measure will follow the proposed schedule with an expected duration of approximately 5 to 6-years:

ACTIVITY	DETAIL	START	DURATION	IMPLEMENTING AGENCY	CONTRACTOR INVOLVED
Design: Site/Civil	Civil Engineering for site design, including infrastructure (water, sewer, electricity, telecomm)	With Project Funding	9-Months	NCTHA	Outside contractor, TBD
Design: Project Management, Architecture/MEP/ Structural	Schematic Design, Development and Construction Documentation for all the homes and interior Mechanical, Electrical, and Plumbing (MEP) systems. Included within this milestone are kick-off design meetings and period reviews with the Tribe and stakeholders.	With Project Funding	9-Months	NCTHA, EPD	Outside contractor, TBD
Design: District Energy	Engineering required to design wellfield and piping distribution to individual homes	With Project Funding	1-Year	NCTHA, EPD	Outside Contractor, TBD
Design: Microgrid Development and Design.	Develop microgrid concept, feasibility study, and budget (incorporating all incentives and other factors to derive ultimate costs and benefits)	With Project Funding	30-Months	NCTHA, EPD	Outside Contractor, TBD
Design: Permitting	Start meeting with associated permitting agencies ASAP - particularly with borefield required for ground source heat pump system. Includes meeting with utilities (electric, sewer, and telecomm, and water as applicable). Not permitting, per se, but included in this timeline is registering and required reviews	6-Months after Project Funding	9-Months	EPD, Northern Cheyenne Tribal Council, NCTHA	Outside Attorneys

ACTIVITY	DETAIL	START	DURATION	IMPLEMENTING AGENCY	CONTRACTOR INVOLVED
	with Passive House Institute (Phius) on architectural design. Building permitting managed by the Tribe				
Design: Bidding	Initial assumption is to bid this in phased packages: **A)** Site work / infrastructure (inclusive of wellfield boreholes) **B)** Home fabrication (off-site) **C)** Home erection and interior fit-out	**A)** 9-Months after Project Funding **B/C)** 1-Year after Project Funding	**A)** 3-Months **B/C)** 3-Months	EPD, Northern Cheyenne Tribal Council	Outside Attorneys
Design: Microgrid Regulatory Process	Meet with utilities and associated regulatory agencies ASAP after NTP. Process varies by state and initial meetings will determine the ultimate project scope and schedule	With Project Funding	4-Years	EPD	Outside Attorneys
Construction: Infrastructure/Site work	Site staging and early site prep to occur late fall, with major work commencing in the spring 2026 after the winter season. All site work, including roads, utility infrastructure, to get the site "pad ready" to accept homes. Includes basecoarse paving of roads for deliveries and allow phased home occupancy	1-Year after Project Funding	2-Years	NCTHA	Outside contractors, outside attorneys
Construction: District Energy Borefield	Bore hole drilling and installation of horizontal loop piping - concurrent with sitework activities	18-Months after Project Funding	6-Months	NCTHA, EPD	Outside contractors
Construction: Home Fabrication	Off-site fabrication	18-Months after Project Funding	2.5-Years	N/A	N/A
Construction: Home Foundations	On-site construction of individual home foundations systems to be ready to accept	21-Months after Project Funding	1.5 Years	NCTHA	Outside contractors

ACTIVITY	DETAIL	START	DURATION	IMPLEMENTING AGENCY	CONTRACTOR INVOLVED
	building components upon delivery, incorporating 4-6 month break for winter				
Construction: Home Component Delivery, Erection, and Interior Fit-Out	Requires on-site workforce to erect, complete each home's exterior cladding, and interior fit-out (interior wiring, plumbing, HVAC, finishes, appliances)	21-Months after Project Funding	3-Years	NCTHA	Outside contractors
Occupancy	Phased occupancy as homes are completed	Starting 30-Months after Project Funding	2-Years	NCTHA	
Microgrid Installation	Panel, batteries, and related equipment procurement and installation. Note infrastructure (distribution cabling) will be installed as a part of the overall site construction and infrastructure work. Microgrid will essentially be 'plug and play.'	TBD	TBD	NCTHA, EPD	Outside contractor

Metrics for Tracking Progress

The EPD will administer and report on this measure with the EPD Program Manager overseeing its implementation to ensure the project meets identified tasks and milestones.

The Tribe, via the NCTHA, will collect individual home meter with each billing period and store it in a spreadsheet or data system per residence to provide as needed to the EPD. It will compare meter use against similar sized/occupant housing units in the community or averages thereof to identify localized reductions in energy use resulting from passive measures, resident behavior changes, and the efficiency of homes selected. It can then calculate GHG reductions based on this information.

The EPD will also record and maintain community microgrid energy statistics in a data system as an output of grid management. It can then calculate GHG reductions based on this information.

EPD will calculate jobs created, and the net economic impact of the project using the number of jobs actively impacted by implementing, maintaining, or supporting the microgrid and these homes during the Project's performance period and extrapolate to show potential reductions towards the Tribe's overall GHG reduction targets.

Quantified GHG Emission Reduction

Calculations

The calculations use an average monthly consumption for electricity and propane to determine the average monthly CO_2e emissions per residence[36].

1. **5-Year initial build-out**: During initial home occupancy after construction of the homes and district energy system is complete, but while the renewable microgrid is still in development, the homes will utilize the utility electrical supply to provide all electrical needs, including those for heating.

   This scenario eliminates the use of propane, relying solely on electric heat pump for heating and cooling in combination with weatherization. However, as opposed to the weatherization measures, this takes into account the efficiency factor of designing the home to Passive House standards who claim up to 85% efficiency over average homes. The calculations uses a 60% efficiency as a conservative factor. This efficiency lessens the impact of the NWPPs carbon intensity.

   Based on the number of homes, there is a potential annual reduction of 100.89 MT CO_2e, or a 39% CO_2e reduction, over baseline.

2. **Microgrid Operational**: When the proposed affordable home development is paired with the renewable microgrid after it comes online, the assumption is that this would supply 50% of the development's electrical needs with renewable electricity. Note, the Microgrid is grid tied for resiliency, balancing and load shed, so the project cannot fully benefit from the renewable energy.

   Based on the number of participating homes, the Tribe could potentially see an annual reduction of 178.43 MT CO_2e, or a 70% CO_2e reduction, over baseline.

Again, as the homes will source their remaining energy from the local grid, these calculations utilizes the current NWPP emission rates and will further benefit from electricity provided by the Tribe's proposed large scale wind development should it be allotted to this use.

Other Emissions Reductions

Reducing overall home energy use and eliminating propane for heating combined with on-site renewable electricity minimizes the reliance on the local grid heavily dependent on fossil fuels for electricity generation and carries a large GHG footprint per MWh produced.

Utilizing renewable energy generation in lieu of utility electricity reduces pollutant emissions other than GHG from burning fossil fuels, including Sulfur Dioxide, Nitrogen Oxides, Particulate Matter, and Mercury.

Costs and Intersection with Other Funding

As a federally recognized tribe situated in historically marginalized census tracts, the Northern Cheyenne community has long endured economic, political, and racial exclusion. This legacy has made securing substantial capital for critical projects like electricity generation and housing exceedingly challenging. The magnitude of investment needed, coupled with the anticipated returns regarding operating revenue shares, utility costs for Tribal members, royalties, management fees, and other overhead expenses, underscores the importance of independently operating this microgrid within the Tribe. However, these factors also render it unattractive for external investors and resource allocation.

[36] Electricity: www.eia.gov/electricity/sales_revenue_price/pdf/table_5A.pdf
Propane: www.eia.gov/consumption/residential/data/2020/state/pdf/ce4.6.lp.st.pdf

Outline Budgetary costs

The Tribe developed an overall budget as part of its application for the CPRG implementation grant (in both the Open and Tribal competitions) to include costs for required consultants as well as estimated construction costs. Line item details are as follows:

- Personnel: EPD intends to staff a full-time CPRG Project Coordinator Position using NCT HR policies and procedures. The CPRG Project Coordinator will coordinate project activities and ensure that the project schedule and deliverables are on track.
- Consulting for the Pre-Fabrication Homes: The homes used in the GHG reduction measure will be pre-fabricated. Therefore, the company from which the Tribe procures the homes from will provide consulting to the Tribe to determine the layout of the homes, the delivery method, and provide directions on erection on site. These costs are included in the construction costs below.
- Architectural and Civil Engineering: To facilitate the design and engineering of the homes, the Tribe will employ an architectural firm and civil engineering consulting. This service will be critical to the implementation of the measure as the homes must be culturally appropriate, compatible with the localize microgrid, energy efficient, and structurally sound at the site. The Tribe will produce a request for production for these services and will follow the Tribe's procurement procedures.
- Microgrid Feasibility and Design: To determine the feasibility and design of the microgrid, the Tribe will employ an outside contractor with expertise in localized, district scale microgrids. The Tribe will produce a request for production for this work and will follow the Tribe's procurement procedures to select a final contractor.
- Legal Fees: The Tribe will incur legal fees to ensure all of the actions taken to implement the GHG reduction measure are in line with applicable regulations and have the necessary permits. Attorneys will review contracts between the Tribe and outside contractors, procure and review necessary permits, and guarantee that all statutory requirements are met throughout the grant period.

See below for this Measures Consolidated Budget. Please reference the Appendix for a detailed summary.

BUDGET BY YEAR							
COST-TYPE	CATEGORY	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
Direct Costs	TOTAL PERSONNEL	$172,640	$172,640	$172,640	$172,640	$172,640	$863,200
	TOTAL FRINGE BENEFITS	$48,339	$48,339	$48,339	$48,339	$48,339	$241,696
	TOTAL TRAVEL	$17,000	$17,000	$17,000	$17,000	$17,000	$85,000
	TOTAL EQUIPMENT	$70,000	$0	$0	$0	$0	$70,000
	TOTAL SUPPLIES	$18,000	$18,000	$18,000	$18,000	$18,000	$90,000
	TOTAL CONTRACTUAL	$177,000	$107,000	$120,000	$90,000	$85,000	$579,000
	TOTAL CONSTRUCTION COSTS	$641,500	$5,900,250	$14,391,500	$12,091,500	$7,491,500	$40,516,250
	TOTAL DIRECT	$1,144,479	$6,263,229	$14,767,479	$12,437,479	$7,832,479	$42,445,146
	TOTAL INDIRECT	$44,835	$44,835	$44,835	$44,835	$44,835	224173
TOTAL FUNDING		$1,189,314	$6,308,064	$14,812,314	$12,482,314	$7,877,314	$42,669,319

Other Funding

The Northern Cheyenne Tribe identified housing and a localized renewable energy powered microgrid as a top priority. However, it has few funding opportunities that would facilitate the implementation of this measure. The Tribe's housing authority has pursued federal funding to conduct a feasibility study to determine the residential housing needs on the Reservation. However, the study would only serve to aid the development of this measure and would not result in an award that would cover the construction costs for the proposed energy efficient homes. The Tribe initially recognized the CPRG implementation grant as a unique funding opportunity in which it can prioritize sustainability and combatting climate change, while also serving the direct needs of Tribal members;

however, the EPA did not award the grant. As a tax exempt entity, the Tribe cannot take advantage of tax credits in applicable legislation and instead is dependent on federal funding to implement this measure.

Note the renewable energy strategies depicted in this Reduction Measure are separate from those outlined above in Reduction Measure 1, specifically those associated with the EPAs Solar for All program.

Additional funding available via the following resources:

- EPA's Clean Communities Investment Accelerator (CCIA)
  CCIA will provide financial assistance, largely be in the form of loans, in three priority project categories: distributed generation of clean energy, buildings (new net zero buildings, and substantially rehabilitation of existing buildings), and zero emissions transportation.
  www.grants.gov/search-results-detail/349233
- US Department of Energy Improvements in Rural or Remote Areas Funding Opportunity:
  www.energy.gov/oced/energy-improvements-rural-or-remote-areas-update
- US Department of Energy Microgrid Assistance Partnership (CMAP)
  Program will provide technical support and/or financial assistance to design or deploy a microgrid that aligns with community-defined priorities or to improve performance of an existing microgrid technology.
  www.energy.gov/oe/community-microgrid-assistance-partnership
- DOE's Office of Indian Energy Policy and Programs: Technical Assistance
  DOE's Office of Indian Energy sponsors ongoing technical assistance upon request at no cost to Indian Tribes and Tribal entities to advance Tribal energy projects.
  www.energy.gov/indianenergy/technical-assistance
- Indian Health Service (IHS) Water and Sanitation Grants
  The Indian Health Service provides grants for improving water and sanitation infrastructure on reservations. These grants are often focused on sustainable water use and energy efficiency. Tribal members can gain jobs related to sustainable water management, infrastructure development, and system maintenance. This may include positions focused on renewable energy applications in water treatment or management systems.
  https://www.ihs.gov
- U.S. Department of Housing & Urban Development (HUD) Office of Native American Programs (ONAP)
  The U.S. Department of Housing and Urban Development (HUD) provides funding to tribes through the Office of Native American Programs (ONAP) to support sustainable housing development and infrastructure. The HUD Indian Housing Block Grant (IHBG) and Indian Community Development Block Grant (ICDBG) programs fund green building initiatives and energy-efficient housing projects. Tribal members can be involved in constructing energy-efficient homes, retrofitting buildings with sustainable materials, or managing housing projects that include renewable energy systems.
  https://www.hud.gov/codetalk

Measure 6: Coal Deposit Easement

Measure Summary	GHG Emission Reductions in 2030 Compared to BAU (MT CO_2e)	GHG Emission Reductions in 2050 Compared to BAU (MT CO_2e)
Measure 6: Coal Deposit Easement	**BAU does not include emissions**	**BAU does not include emissions**

Description

While not technically a carbon sink, Northern Cheyenne feel strongly about the fact it has maintained unused coal seams throughout the Reservation, representing a potential store of future GHG emissions. In this capacity, the Tribe is reducing the influence of future emissions by never removing the fuels in the first place; sequestering the carbon while it is still in coal form. The Tribe recognizes current GHG inventory best practices do not capture the negative emissions of this unrealized carbon in its operational inventory to lower its footprint. It is the Tribe's hope, however, that its policy to withhold its extraction could set a precedent for other tribes to permanently lock away potential future emissions from their resources but still receive the financial benefit. This Reduction Measure explores the idea to develop a plan for entities which own underground coal deposits to receive compensation for the right to never mine it. Thus, buying unmined coal constitutes an incredibly cheap form of offsetting carbon consumption.

The current international carbon credit strategy recognizes the potential impact of long term sequestration projects required to meet the goals of the Paris Climate Change Agreement. This includes a range of mitigation strategies and tactics, with a focus on abatement, compensation, and *neutralization*.[37] Current study indicates that immediate efforts by entities must foster the rapid and deep cutting of GHG emissions as a priority, including sequestration, so that fewer emissions enter the atmosphere, requiring less GHG removal in the future.

Northern Cheyenne is currently exploring and/or participating in unrelated, carbon sequestration programs involving owned natural assets on the Reservation, such as preserving existing forests and active reforestation programs. It is the Tribe's desire to explore the viability to place existing Tribally owned coal reserves under easement protection from future mining to neutralize the carbon from ever entering the atmosphere and receive compensation via carbon credit markets. Per The Climate Trust, there currently is a carbon protocol, through the International Carbon Registry based in Iceland, requiring a 100-year restriction/easement regarding the right to access the coal. However, no entity has fully developed or been issued credits on any project yet.

Compensation, including purchasing carbon credits, is a meaningful real-world impact key performance indicator (KPI), recognized as very important for the transition to a low carbon economy, but not used for measuring net zero or portfolio alignment as part of accepted target setting protocols. Instead, entities will need to develop separate metrics to track and understand the efficacy of these efforts to ensure they linked directly to projects that effectively avoid, reduce, or remove carbon.

Implementation

Implementation Authority

Under the Northern Cheyenne Constitution, the Tribal Council has the power to "approve or prevent any sale, disposition, lease or encumbrance of tribal lands, interest in lands or other tribal assets, including minerals, gas, and oil," and "engage in any business that will further the economic well-being of the members of the Tribe." Art. IV, Sec. 1(c) and (e). The Bureau of Indian Affairs has clarified that it does not need to approve sequestration projects on the Reservation and thus, the authorizing and implementing authority lies with the Tribal Council. The

[37] www.unepfi.org/themes/climate-change/the-role-of-negative-emissions-in-achieving-climate-alignment-for-asset-owners/

Tribal Council, therefore, has the authority to enter into an agreement with a third-party entity to implement coal sequestration on the Reservation.

Implementing Agency

The EPD would manage the program coordinating with Tribal Council to implement relevant programs resulting from this investigation.

Implementation Timeline

Pending the results of the research, implementation will depend on program availability and availability.

Implementation Timeline

Research to proceed immediately. Implementation pending program availability/applicability.

6 Benefits Analysis

Air Quality Data

While the CCAPs primary focus is on GHG emissions, each of the Sectors and Sources identified are also responsible for emitting certain pollutants that contribute to air pollution. Examining relevant ambient air pollutants associated with each Sector may be useful for health and policy research relating to air pollution and its control. This Section focuses on the following pollutants:

Particulate Matter (PM2.5 and PM10): These particles come in many sizes and shapes and can be made up of hundreds of different chemicals. Some are emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks, or fires. Most particles form in the atmosphere as a result of complex reactions of chemicals such as Sulfur Dioxide and Nitrogen Oxides, which are pollutants emitted from power plants, industries, and automobiles. The typical measurement for PM is micrograms (one-millionth of a gram) per cubic meter of air, or µg/m^3.

Nitric Oxide (NO_x): A group of highly reactive gases that also include nitrous acid and nitric acid. They primarily enter the air from the burning of fuel and from cars, trucks and buses, power plants, building heating, and off-road equipment emissions. NO_x interacts with water, oxygen, and other chemicals in the atmosphere to form acid rain which harms sensitive ecosystems such as lakes and forests. NO_x measurements are generally in Parts Per Million (PPM).

Sulfur Dioxide (SO_2): The largest source of SO_2 in the atmosphere is the burning of fossil fuels by power plants and other industrial facilities. SO_2 and other sulfur oxides can react with other compounds in the atmosphere to form fine particles that reduce visibility (haze) in parts of the United States, including many national parks and wilderness areas. SO_2 measurements are typically in parts per billion (ppb).

The Northern Cheyenne Reservation is a Class 1 airshed, defined through the Clean Air Act to preserve, protect and enhance air quality, and serves as a tool available to tribes under the Clean Air Act to afford special protection to air quality. Currently the Tribe monitors air quality specifically for PM10 and SO_2 utilizing air monitoring stations located on the Reservation.[38] The Tribe developed this as a key component of its clean air program in response to the presence of the Colstrip power plant north of the Reservation. The Tribe reports this information to the EPA's Air Quality System (AQS) database. There are also monitors located outside of Colstrip that the Tribe does not manage.

Per the AQS database, the most recent data available for Particulate Matter is for PM10 from 2016. During this period, the mean PM10 value was in the 0-54 µg/m^3 range – good air quality with only a minimal amount of days during this period in the moderate range which may be a risk to some people particularly those who are unusually sensitive to air pollution.

[38] epa.maps.arcgis.com/apps/webappviewer/index.html?id=5f239fd3e72f424f98ef3d5def547eb5&extent=-146.2334,13.1913,-46.3896,56.5319

Unlike PM10, the AQS database has data from 2023 for SO_2. During this period, the mean value was in the 0-35 or 'good' range with minimal health impacts with a minimal amount of days during this period in the moderate range which may be a risk to some people particularly those who are unusually sensitive to air pollution.

The primary source for these pollutants, in relation to the Tribe's GHG inventory, is from market based electricity, propane for heating, and transportation sectors. Unlike states, cities, and municipalities, the Tribe's contribution to these pollutants on a regional scale is minimal at best due to its small scale. In addition, the impact associated with each pollutant is lessened by the Reservation's location in an open, rural area. While the proposed Reduction Measures will reduce each of these associated pollutants, it is not feasible to determine a potential impact, or reduction, in overall pollutants associated with the Tribe. There are many primary sources that make up these values outside of the Tribe's control, and it is not possible to identify all of them nor quantify the impact the proposed Reduction Measures would have.

For the Tribe to determine the impact its measures have on these pollutants when it is not the major contributor, redirects the focus to those not wholly responsible. Rather, national policy should focus on the primary emitters that small entities, like tribal nations, rely on.

Effects of Coal-Fired Energy Generation

In 2023, coal-fired power plants provided the largest share of Montana's electricity generation, accounting for 45% of in-state generation. There are five commercial coal fired powered plants in Montana, the largest of which, the Colstrip Energy Plant (2.1 GW capacity), operates just 20 miles north of central Lame Deer[39] and is also the sixth-largest source of greenhouse emissions in the U.S.[40]

It is important to make the distinction that aside from this sector being the largest GHG contributor in the Tribe's inventory, it is also the primary contributor of co-pollutants due to using coal as the primary fuel source. In 2023, Montana ranked 11th nationally on CO_2 emissions, 13th in NO_x, and 12th in SO_2 in pounds per MWh, yet 40th in net generation.[41] These statistics reinforce the impact coal-fired power plants have on GHG emissions and air quality. It is with this in mind that the Tribe chose to preserve its coal deposits in perpetuity, so its resources do not contribute to this issue.

Colstrip Power Plant, Colstrip, MT
Source: The Sheward Partnership

The operation and fuel source for these plants are out of the Tribe's control; however, the Reduction Measures outlined above (the combination of energy efficiency projects and deployment of renewables) intend to reduce the Tribe's reliance on market based electricity and the need for these plants. That said, the Tribe's demand is so small overall compared to the greater region, that while its choices will impact its pollutant emissions, it will do little to benefit the greater region. Ultimately, national policy and outside market factors will be the driver to force these utilities to adopt cleaner and/or renewable fuel sources or close altogether to have any substantial impact. Of the plants noted above, the Colstrip plant has an anticipated retirement scheduled for 2027 after which time it will be important to re-examine the impact its closure and subsequent utility replacement has on the Tribe's GHG emissions and co-pollutants.

[39] www.eia.gov/state/?sid=MT

[40] https://yaleclimateconnections.org/2019/07/the-war-on-coal-myth/

[41] www.eia.gov/electricity/state/montana/

Benefits Framework

BENEFITS SUMMARY BY MEASURE		
BENEFIT CATEGORY	***BENEFITS AND DISBENEFITS***	***CCAP REDUCTION MEASURE***
Jobs and Workforce Development	• *Educational and training opportunities* • *Employment opportunities and access to jobs*	**All**
Public and Community Health	• *Reduced exposure to environmental hazards and/or pollution* • *Access to homes and community buildings that can more easily "ride out" power failures* • *Improved home IAQ*	**Measure 4**: Deployment of Large-Scale Renewable Energy Projects **Measure 5**: Community-Scale Renewable Energy Microgrid Distribution and new DOE "Zero Energy Ready" Housing **Measure 3:** Solid Waste Reduction/Recycling **Measure 6:** Coal Deposit Easement
Preserving Open Land and Water	• *Minimize the impact of landfills on the surrounding landscape and water quality* • *Withholding coal extraction will preserve historic Tribal land, views, water quality, and ways of life*	**Measure 3:** Solid Waste Reduction/Recycling **Measure 6:** Coal Deposit Easement
Affordable and Reliable Energy	• *Lessen reliance on local utility and establish energy sovereignty* • *Decreased energy burden* • *Develop potential Tribal revenue source* • *Reduce regional demand for coal generated power*	**Measure 2**: Weatherization of Existing Buildings **Measure 4**: Deployment of Large-Scale Renewable Energy Projects **Measure 5**: Community-Scale Renewable Energy Microgrid Distribution and new DOE "Zero Energy Ready" Housing
Climate Resilience	• *Provide renewable, reliable electricity to communities on the Reservation* • *Improved housing stock* • *Access to district energy heating and cooling*	**Measure 4**: Deployment of Large-Scale Renewable Energy Projects **Measure 5**: Community-Scale Renewable Energy Microgrid Distribution and new DOE "Zero Energy Ready" Housing
Housing Availability and Quality	• *Provide affordable, healthy, safe, and energy efficient housing designed for the harsh weather conditions in southeastern Montana.*	**Measure 2**: Weatherization of Existing Buildings **Measure 5**: Community-Scale Renewable Energy Microgrid Distribution and new DOE "Zero Energy Ready" Housing

BENEFITS SUMMARY BY MEASURE		
BENEFIT CATEGORY	***BENEFITS AND DISBENEFITS***	***CCAP REDUCTION MEASURE***
Transportation Access	• *Supports the local and regional uptake of EVs* • *Improved public health outcomes*	**Measure 1**: Replace Tribal Owned Fleet Vehicles with Hybrid and Electric Vehicles

7 LIDAC AND WORKFORCE DEVELOPMENT ANALYSIS

LIDAC and Tribal Nations

The Climate and Economic Justice Screening Tool (CEJST) notes regarding Tribal nations:

> *"To respect Tribal sovereignty and self-government and to fulfill Federal trust and treaty responsibilities to Tribal Nations, land within the boundaries of Federally Recognized Tribes are designated as disadvantaged on the map. This decision was made after meaningful and robust consultation with Tribal Nations.*
>
> *This is consistent with CEQ's Action Plan for Consultation and Coordination with Tribal Nations, the Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Consultation, and Executive Order 13175 on Consultation and Coordination With Indian Tribal Governments."*[42]

The CEJST identifies the Northern Cheyenne Reservation as census tracts 30087940400 (Rosebud County) and 30003940400 (Big Horn County). Note the latter tract also encompasses areas outside of the Reservation boundary. As such, the tool considers any community within the Reservation to be disadvantaged as they exist on land within the boundaries of Federally Recognized Tribes.

Consistent with being identified as a disadvantaged community, the Tribe has historically struggled with persistent poverty and economic hardship as cited in other Sections of this Plan.

The U.S. Census American Community Survey 5-Year Estimates show that although incomes have increased across the country, the median household income on the Northern Cheyenne Reservation has actually shrunk in 2023 by almost 12% since 2020 (before the Pandemic) to $41,400, compared to $78,538 nationally.[43] As a result, 40.7% of Reservation families live below the poverty line[44].

TERO

The Tribe has enforced a Tribal Employment Rights Ordinance or Office (TERO). The ordinances requires that all employers who are engaged in operating a business on reservations give preference to qualified Indians in all aspects of employment, contracting and other business activities. TERO Offices monitor and enforce the requirements of the tribal employment rights ordinance. Prospective employers and business must contact the TERO Office at:

www.cheyennenation.com/Tero.html
PO Box 308, Lame Deer, MT 59043
406.477.6287

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[42] edgi-govdata-archiving.github.io/j40-cejst-2/en/#9.14/45.5333/-106.4991

[43] www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2022/

[44] https://data.census.gov/profile/Northern_Cheyenne_Indian_Reservation_and_Off-Reservation_Trust_Land,_MT--SD?g=2500000US2490

Reservation Labor Market

Despite the proliferation across reservations of new economic opportunities including gaming, fossil fuel energy projects, expanded social and health services, and the advent of tribal colleges, job opportunities and economic growth on the Northern Cheyenne Reservation remains a challenge due to it being geographically separate from other populated areas, limited access to diversified economic opportunities and outside investment, and "structurally induced economic disparities"[45] through federal policy and the evolution of the reservation concept itself. This has contributed to a large portion of its population living at or below the poverty level due to persistent underemployment. This not only exacerbates economic hardship but also contributes to broader social issues such as inadequate housing, food insecurity, and health disparities. All these factors have shaped the reservation economic environment to this day which significantly affect the situation of tribal workers on reservations. One result is a serious mismatch between reality at the reservation level and the policy embedded in the federal programs intended to help alleviate the problems.

Because employment is essential for wage generation and thus for the well-being of individuals and their families, the creation and *retention* of jobs is of critical importance in any measure of socio-economic development. Wage and salary income – especially from steady, well-paying jobs – permits people to make the purchases that translate into stable demand for goods and services, contributing to a healthy local economy.

The Native American population historically have had higher unemployment rates and lower labor force participation rates than the total population – averaging 8.2% unemployment during the 2014-2024 time period[46] compared to 5.3% nationally. It is an important distinction in the context of this report, however, to focus on Native American unemployment figures specifically to those living on the Reservation. In this respect, members of the Northern Cheyenne Tribe exceed national statistics considerably.

Per data from the Federal Reserve Bank of Minneapolis Center for Indian Country Development,[47] labor force participation of people 16 years or older is 56.1% and unemployment is 18.8%. Note, the median age is 22.9, where adults 18-64 make up 51% of all people and 31% are ages 5-17 - meaning the Tribe's existing population has potential for a robust workforce with a large percentage of the population set to join the labor force.

To maximize socio-economic development opportunities and transformational change, policies and projects need to draw as much as possible on the local workforce, offer soft and hard skills training programs, promote gender fairness and cultural diversification, improve health and wellbeing, protect heritage and cultural resources, and afford land access and use. Rural areas, however, lag behind more urbanized areas in terms of educational attainment, employment opportunities, and wages.

National labor statistics collect most existing labor force data at the state or county level and not specific to the Tribe or Reservation. The most recent labor market studies specific to Northern Cheyenne is from 2008[48] and notes the economy is primarily supported by federal government, tribal government, farming/ranching, and non-native/native owned businesses. Employment opportunities at the Reservation have generally centered around working for the Northern Cheyenne Tribal Government, Indian Health Service, Bureau of Indian Affairs, Chief Dull Knife College, Lame Deer Public Schools, Charging Horse Casino, the nearby Colstrip power plant and associated coal mines, and St. Labre Indian School. The leading jobs include management, professional, and related occupations, service occupations, sales and office

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[45] www.eda.gov/sites/default/files/2023-12/Wind_River_Development_Fund_Recompete.pdf - page 1. "[Federal] policies disrupted Native trade ecosystems by forcing indigenous groups to the fringes of society and confining them to remote, isolated land bases. In the years following, federal policy continued to strip Native communities of assets through the expropriation of lands and natural resources. Native individuals, families, and communities have endured *structurally-induced economic disparities* for over 130 years."

[46] data.bls.gov/timeseries/LNU04035243

[47] www.minneapolisfed.org/indiancountry/resources/native-community-data-profiles

[48] ia600203.us.archive.org/23/items/900EB7C4-2709-4851-9335-1038A2A64868/900EB7C4-2709-4851-9335-1038A2A64868.pdf

occupations, farming, fishing, and forestry occupations, construction, extraction, and maintenance occupations, production, and transportation, and material moving occupations.

A successful, sustainable workforce development program on the Reservation to expand these options, however, is of no use if there is not an opportunity to maintain the jobs within the Northern Cheyenne Reservation due to a lack of demand. As the Reservation is in a geographically remote area, migration to distant metropolitan areas in search of work is common. Workforce development on the Reservation must ensure that the prospective businesses and associated jobs have staying power for it to sustain itself within the community. While the reduction measures proposed here offer new opportunities in the green economy, job training and workforce development to implement these measures will serve no purpose if there is not a lasting demand for these services on the Reservation and the immediate area. Otherwise, the unemployment and poverty picture will not change. Therefore, a successful workforce development program must contribute to growing and sustaining business opportunities across the Reservation in addition to developing and sustaining the workforce for it to succeed.

There are many other aspects that make the success of business development feasible (i.e., introducing tribal community development financial institutions, restructuring traditional economic structure and law, and developing educational programs) that this CCAP does not and cannot fully address. However, by demonstrating the need for workforce in specific employment sectors, the CCAP could serve as the catalyst for economic development in concert with other initiatives introduced and managed by the Tribe to rebuild equitable economies based on its cultural values. The proposed projects are an opportunity to reverse current negative trends and increase economic growth by providing a path for the community to grow and be equitable through training in new technologies and steady jobs with advancement.

Reduction Measure Workforce Development Summary

Following is a list of priority occupations, primary roles, and requirements associated with each of the proposed Reduction Measures:

Measure 1: Replace Tribal Owned Fleet Vehicles with Hybrid and Electric Vehicles

New technologies such as EVs struggle to become mainstream without a larger ecosystem of trained, skilled professionals who provide services that keep EVs operational and safe. These include automotive technicians and mechanics who are familiar with high-voltage electricity, high-tech software, and mechanical parts within an EV. Training begins in high school or post-secondary vocational school and community college. Work at large repair shops or dealerships typically requires certifications from the National Institute for Automotive Service Excellence (ASE)[49], a nonprofit organization that tests and certifies auto mechanics and technicians.

Deployment of the necessary charging infrastructure will require increasing numbers of electrical power-line installers and repairers who can install and maintain the electric grid to move electricity from the grid to customers, as well as electricians who will install charging stations and related equipment for EVs. Both these occupations require a high school diploma with on-the-job training, and in the case of electricians, certifications and apprenticeship programs specializing in charger installations are emerging. The Electric Vehicle Infrastructure Training Program[50], for instance, develops curriculum to train and certify electricians to perform installation and maintenance of charging stations.

While typically there is not enough interest for building an entire workforce development program in this space, the Tribe could look to develop a stipend or scholarship as a more successful alternative. Tribes can access a wide range of funding and support for electric vehicle adoption, infrastructure, and workforce development through partnerships

[49] https://ase.com/

[50] https://evitp.org/

with Yellowstone-Teton Clean Cities (YTCC: https://ytcleancities.org), DOE, EPA, and other agencies. YTCC can help tribes apply for clean energy grants, develop EV infrastructure, and facilitate collaborations with industry to promote electric vehicle adoption and create sustainable, good-paying jobs for tribal members.

Measure 2: Weatherization of Existing Buildings

In-demand skills including energy auditing, insulation, electrification, and building control integration are vital for upgrading housing to meet efficiency standards.

Both of these Projects have significant potential to link to workforce development programs specific to this space, including potential programs at Chief Dull Knife College. It could develop a Green Construction and Retrofitting program to teach in-demand skills like energy auditing, insulation, electrification, energy efficiency training for building retrofits and new construction, and building control integration vital for constructing and upgrading housing to meet efficiency standards.

Measure 3: Solid Waste Reduction/Recycling

The Tribe currently manages the collection and transfer of solid waste materials via its own transfer station. Expanding the workforce to include recycling program specialists will involve many of the same skills utilized by the current workforce but requires additional employees to manage the program. They will need skills to develop specialized contracts with potential recycling partners, manage the program, sort materials, and operate and maintain heavy equipment.

The EPAs General Assistance Program (GAP) Technical Assistance Handbook provides a roadmap of activities that may be useful to tribes and intertribal consortia in developing environmental programs. The Tribe can use this Handbook to support the development of GAP work plans and identify priorities and long-term development goals in EPA-Tribal Environmental Plans (ETEPs).

www.epa.gov/system/files/documents/2022-09/Technical%20Assistance%20Handbook.pdf

Measure 4: Deployment of Large-Scale Renewable Energy Projects

For the wind energy development, 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, it requires 10-15 certified wind technicians for operations and maintenance for the life of the turbines. Chief Dull Knife College 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.

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.

A key workforce development opportunity arises from repurposing the skills of Tribal members previously employed in the coal mining and power plant industries. With the planned ramp-down of the nearby Colstrip coal plant (that employs many Tribal members), many experienced workers are seeking employment. Their expertise in operating heavy machinery, maintaining industrial facilities, and understanding power systems is directly transferable to the construction, operation, and maintenance needs of this Reduction Measure. This strategic repurposing of the local workforce's industrial experience can ensure the Tribal community directly benefits from the transition towards sustainable energy sources building on existing competencies while developing new marketable skills aligned with the long-term goals of reducing greenhouse gas emissions.

The Tribe will also collaborate with local labor unions, trade organizations, and employee transition programs to identify these displaced workers from mining and coal power. Customized training programs will be developed in partnership with Chief Dull Knife College to bridge their existing skills to renewable energy and building construction and retrofitting. Hands-on apprenticeships and on-the-job training components will enable these workers to directly apply their previous experience while upskilling for the new green economy jobs. For those facing barriers like lack of transportation or need for childcare, the program will offer supportive services through flexible online and immersive courses provided through the Chief Dull Knife College, making use of the technical building to provide access and availability for internet connection and technological device availability. Outreach efforts will focus on including other underemployed tribal members as well, creating opportunities for economic mobility.

Measure 5: Community-Scale Renewable Energy Microgrid Distribution and new DOE "Zero Energy Ready" Level Housing

The critical workforce development component directly aligns with the long-term skilled labor needs for operating and maintaining the microgrid and energy-efficient housing units. Beyond the immediate job creation from the construction phase, these projects aim to seed an enduring career pipeline for the next generation of the Tribal workforce to gain expertise in solar photovoltaic systems, battery storage, grid control systems, and more - preparing them for the technical roles required to keep this sustainable power source running reliably for decades.

Chief Dull Knife College could look to develop a Renewable Energy Technician certificate program that provides hands-on instruction using the microgrid as a living learning lab. Additionally, local K-12 schools can develop programs to have students shadow installers during projects.

Besides the longer-term vocational and academic programs, the workforce strategy will incorporate short-term job training certifications to prepare Tribal members for various supporting roles needed during the construction and operations phases. For the construction workforce, the Tribe must establish partnerships with unions and job training providers who offer OSHA 10 and OSHA 30 courses that cover essential construction site safety. Quick-track programs for traffic control, flagging, and basic construction skills will enable Tribal members to work as laborers, spotters, and on-road crews supporting the housing developments.

On the security and administrative side, the Tribe will facilitate training in security guard certification, basic office administration, and customer service to staff the workforce for patrolling sites, managing entrances, handling paperwork, and providing support services across the housing and microgrid operations. These short-term certification courses create low-barrier entry points into the projects' workforce stream. They offer an avenue for rapidly upskilling Tribal members, including those facing employment challenges, to get their foot in the door. On-the-job experience gained can then motivate continued education or pursuit of more advanced skilled trades down the line.

Additional Educational Programs

Partnering with the Tribe's education department, the Tribe can promote the various programs through career counseling and STEM curriculum in K-12 schools to spark interest among Reservation youth. Internships, apprenticeships, job fairs, feeder programs, and job shadowing opportunities allow students to get exposure to working on these pioneering Tribal projects. This deep integration creates intrinsic value by enabling youth to develop expertise in fields that will improve their communities while providing pathways to quality, in-demand green jobs.

Available Training Programs and Incentives Opportunities [51]

Low-income communities and marginalized populations have greater difficulty enduring climate change impact and environmental damage due to their location, economic situation, or other factors. Communities know what they need, but they often don't have access to the opportunities or investments to make those solutions possible. The following are resources to help guide the process towards realizing the outlined Reduction Measures.

Navajo Power

Navajo Power works with tribes to harness their resources for renewable energy development to create lasting economic and environmental benefits and develop Indigenous leadership and professional advancement through workforce development. They respect Indigenous sovereignty, understand cultural priorities, and deliver lasting economic benefits to create meaningful, sustainable change.

Contact: Cecilia Tso (Navajo), tso@navajopower.com
https://navajopower.com/

Red Cloud Renewables

Red Cloud Renewables (RCR) offers training and education to Native people in solar installation, energy-efficient building practices, and weatherization techniques. The Sacred Earth Lodge, a net-zero and sustainably constructed building, serves as a dormitory for those training at the training facility on the Red Cloud Renewable campus. Since 2008, more than 1200 students have completed trainings at RCR, and their work has brought tremendous benefits to the communities they return to, including the Pine Ridge community.

Contact: John Red Cloud (Oglala Lakota): johnrc@redcloudrenewable.org
https://www.redcloudrenewable.org/

Workforce Development Boards

Intergovernmental coordination is critical for the success of any workforce development program. Working with state agencies to align similar goals will provide additional resources for the Tribe to have a successful workforce development program.

State and local Workforce Development Boards are government-funded agencies and programs that are part of the Public Workforce System, a network of federal, state, and local offices that support economic expansion and develop the talent of the state's workforce.

The Montana Workforce Development Board is within the state's Department of Labor and Industry:

https://swib.mt.gov/
Jennifer Owen, Director, Montana State Workforce Innovation Board
Email: Jennifer.Owen@mt.gov
Phone: 406-594-0622
1315 E. Lockey
PO Box 1728
Helena, MT 59601

Environmental Justice Thriving Communities Technical Assistance Centers Program (EJ TCTAC)

EJ TCTACs are institutions and organizations throughout the country with a common goal to support the communities already doing essential environmental and energy justice work. The EPA, in partnership with the U.S. DOE Office of

[51] Note highlighted programs were available at the time of this Report and subject to changes due to funding availability and/or program status.

Clean Energy Demonstrations, designated two types of TCTACs: national and regional. Currently, there are 16 hubs with over 144 partners across the United States.

The national TCTACs include the Institute for Sustainable Communities (ISC), National Indian Health Board (NIHB), and the International City/County Management Association (ICMA). National TCTACs use their extensive networks in nonprofits, tribes, and local governments, respectively, to connect environmental justice organizations with even more opportunities. They plan events and trainings, and find and create resources that bring environmental justice communities together and elevate their stories.

www.ejtctac.org

U.S. Environmental Protection Agency (EPA)

The CPRG team maintains a Federal Funding Resource Opportunities Table on the CPRG Training, Tools, and Technical Assistance web page with snapshot information about current open funding opportunities that may be of interest to CPRG grantees and similar entities. This list is not exhaustive; however, it can provide a source of information about opportunities to fund greenhouse gas reduction measures.

www.epa.gov/inflation-reduction-act/about-cprg-training-tools-and-technical-assistance#federal-funding-resource-opportunities

Tribal Environmental Protection Program

Provides funding for environmental protection, sustainable resource management, and pollution control. The EPA also offers grants under its Environmental Justice and Environmental Education programs. These grants can fund jobs related to environmental monitoring, habitat restoration, waste management, pollution prevention, and climate adaptation. The EPA's Environmental Workforce Development and Job Training Program helps prepare tribal members for careers in environmental science, health, and protection.

https://www.epa.gov/tribal

Tribal Climate Resilience Program (EPA)

Provides funding to tribes for climate adaptation and resilience planning. The program helps tribes assess their vulnerabilities to climate change and develop strategies to mitigate impacts such as extreme weather, flooding, and wildfires. Tribal members can work as climate resilience planners, environmental scientists, and researchers. This could include roles in monitoring environmental changes, implementing adaptation strategies, and educating communities on climate issues.

https://www.epa.gov/tribal

U.S. Department of the Interior

The DOI supports climate resilience projects and sustainable land-use planning through various programs.

Office of Environmental Policy and Compliance

Offers assistance for tribes involved in natural resource stewardship, ecosystem restoration, and conservation practices. Through these programs, Tribal members can engage in land management, habitat restoration, wildfire prevention, and green energy projects.

Bureau of Land Management (BLM)

The BLM collaborates with tribes on land management, conservation efforts, and natural resource development, including renewable energy projects.

Division of Workforce Development—477 Program

The DOI 477 Program combines federal funding from multiple agencies into a single budget that provided to tribes to support employment, training, and social services. This program allows tribes to design their own workforce development programs tailored to local needs and conditions, offering services such as job training, career counseling, and placement services.

Native American Business Development Institute (NABDI)

The Native American Business Development Institute (NABDI) provides grants and technical assistance to Native American entrepreneurs and businesses. The program helps develop business ideas into viable, income-generating enterprises, thus creating employment opportunities and economic development in tribal communities.

Indian Energy Service and National Renewable Energy Laboratory

Provides additional support to tribes with renewable energy initiatives.

www.bia.gov/bia/ots/iesc
www.nrel.gov/state-local-tribal/decision-support-tribes.html

U.S. Department of Energy

Tribal Energy Program

Provides funding and technical assistance to help Native American tribes develop renewable energy resources, improve energy efficiency, and increase energy independence. The program helps tribes access clean energy technologies, including solar, wind, biomass, geothermal, and energy storage.

Tribal members can access training and job opportunities related to renewable energy installations (solar, wind), energy efficiency audits, and energy management. This program also supports workforce development for energy technicians and energy systems operators.

https://toolkit.climate.gov/tool/tribal-energy-program

Community Microgrid Assistance Partnership (CMAP)

This program will provide technical support and/or financial assistance to design or deploy a microgrid that aligns with community-defined priorities or to improve performance of an existing microgrid technology. This funding opportunity is open to state, local, and Tribal governments in Alaska and Hawaii, and Tribal lands in the Great Plains and Southwest and C-MAP can also support capacity building for microgrid operations or maintenance through workforce development programs led or coordinated by a regional partner organization.

https://www.energy.gov/oe/community-microgrid-assistance-partnership

U.S. Department of Labor

Workforce Innovation and Opportunity Act (WIOA)

Provides funding for job training programs to help Native Americans acquire skills in various sectors, including green energy, conservation, and environmental sciences.

Tribal members can access training in renewable energy technologies, environmental management, and sustainable construction. The program focuses on providing job placement and career development services.

www.dol.gov/agencies/eta/dinap

Native American Employment and Training Program

Focuses on providing training, education, and employment assistance to Native American adults and youth. The program aims to improve the economic self-sufficiency of tribal members by offering job placement, education, and skills development.

U.S. Department of Housing & Urban Development (HUD)

Office of Native American Programs (ONAP)

Provides funding to tribes through the Office of Native American Programs (ONAP) to support sustainable housing development and infrastructure. The HUD Indian Housing Block Grant (IHBG) and Indian Community Development Block Grant (ICDBG) programs fund green building initiatives and energy-efficient housing projects. Tribal members can be involved in constructing energy-efficient homes, retrofitting buildings with sustainable materials, or managing housing projects that include renewable energy systems.

https://www.hud.gov/codetalk

U.S. Economic Development Administration (EDA)

Native American Programs

The EDA offers grants and resources to support economic development, including workforce training and development, for Native American communities. This includes support for building infrastructure, enhancing workforce skills, and creating long-term sustainable jobs.

www.eda.gov

International Brotherhood of Electrical Workers (IBEW)

Pre-Apprenticeship Program

This program prepares tribal members for work by teaching them skills such as safety codes, AC-DC theory, and pipe bending. The program gives pre-apprentices access to the IBEW and National Electrical Contractors Association (NECA) networks and membership provides access to work and jobs they might not otherwise have. It provides tribal members with skills to ensure a trained workforce for future projects.

www.ibew.org/articles/10ElectricalWorker/EW1009/04.0910.html#:~:text=Bob%20Wolf%2C%20director%20of%20the,Jordan%20Goulet%20about%20a%20circuit

Partnership with Native American Leaders

-The IBEW works with tribal leaders to provide training and expertise.

www.ibew.org/

Conclusions

Workforce shortages exist in each sector relevant to the Reduction Measures when looking to the native populations on the Reservation. While the surrounding area may have workforce available to fulfill the CCAP goals, the Tribe's overarching goal is for these Reduction Measures to develop and utilize a workforce comprised mainly of tribal members to address persistent unemployment and economic disparity issues. The analysis above outlines the shortages while offering solutions, strategies, and funding resources to develop the required workforce. To achieve the benefits afforded by the proposed Reduction Measures, however, it is critical the Tribe develop job training programs to create workforce capacity.

The comprehensive approach, combining academic and vocational offerings with hands-on training using the funded initiatives as learning laboratories, can uplift the socioeconomic standing of Northern Cheyenne's community. It develops a sustainable pipeline of skilled workers prepared to operate and maintain these modern systems long-term while planting seeds of interest among the next generation to continue driving the Tribe's transition to a resilient, clean energy economy. These workforce opportunities represent more than just jobs - they symbolize a pathway to true independence, healing, and self-determination for Northern Cheyenne's people. For too long, the combination of poverty, substandard housing, and lack of economic mobility has contributed to mental health struggles, substance abuse issues, and an erosion of hope on the Reservation. But the recharged sense of purpose ignited by building a sustainable future will provide a source of pride and dignity that can help address those afflictions. The quality of life elevated by these jobs, efficient homes, and renewable energy sources will reverberate for generations. Today's youth can find inspiration in honoring their spiritual ties to the land while ushering in a new era of Tribal self-reliance.

This blossoming of economic independence aligned with environmental stewardship promises a revitalized sense of sovereignty over Northern Cheyenne's destiny. Just as its ancestors persevered, these workforce opportunities plant seeds for a renaissance of Tribal heritage rooted in sustainable prosperity. The mental, physical, and emotional tolls from a century of oppression can finally give way to a brilliant future crafted by the Tribal members' own skilled hands and noble values.

APPENDIX

A. 2023 Building Electric and Propane Account Inventories

Complete accounting of Northern Cheyenne's Tribal government electricity and propane accounts including utility, account number, and total usage for the 2023 calendar year.

Northern Cheyenne Tribe 2023 Building Inventory: Electric Utility Accounts

ID#	Unit Description	Sector	Utility	Electricity Use (kWh)	Facility Type
1	TR CO-OP M# 6815005 - CHARGING HORSE CASINO	Commercial/Institutional	Tongue River Electric CO-OP	492,720	Commercial/Institutional: Other
2	TR CO-OP M# 2103001 - VOC REHAB PROGRAM	Commercial/Institutional	Tongue River Electric CO-OP	32,258	Commercial/Institutional: Health Care
3	TR CO-OP M# 2103001 - COLLEGE	Commercial/Institutional	Tongue River Electric CO-OP	342,800	Commercial/Institutional: Education
4	TR CO-OP M# 2103001 - CULTURE CENTER	Commercial/Institutional	Tongue River Electric CO-OP	15,996	Commercial/Institutional: Public Assembly
5	TR CO-OP M# 2103001 - NEW DAY CARE	Commercial/Institutional	Tongue River Electric CO-OP	43,108	Commercial/Institutional: Education
6	TR CO-OP M# 2103001 - USDA (VOCATIONAL FACILITY 2008-WELDING SHOP)	Commercial/Institutional	Tongue River Electric CO-OP	80	Commercial/Institutional: Other
7	TR CO-OP M# 2103001 - APT #1 BEAVERHEART ST	Commercial/Institutional	Tongue River Electric CO-OP	1,736	Residential: Apartment Buildings
8	TR CO-OP M# 2103001 - NEW SHOP 2017	Commercial/Institutional	Tongue River Electric CO-OP	18,898	Commercial/Institutional: Other
9	TR CO-OP M# 6815002 - N CHEYENNE AVE	Commercial/Institutional	Tongue River Electric CO-OP	25,029	Commercial/Institutional: Other
10	TR CO-OP M# 6815002 - A.B.C.	Commercial/Institutional	Tongue River Electric CO-OP	20,870	Commercial/Institutional: Other
11	TR CO-OP M# 6815002 - LAME DEER COMMUNITY CENTER	Commercial/Institutional	Tongue River Electric CO-OP	88,080	Commercial/Institutional: Public Assembly
12	TR CO-OP M# 6815002 - A4	Commercial/Institutional	Tongue River Electric CO-OP	16,703	Commercial/Institutional: Other
13	TR CO-OP M# 6815002 - A5	Commercial/Institutional	Tongue River Electric CO-OP	15,533	Commercial/Institutional: Other
14	TR CO-OP M# 6815001 - NEW AIR MONITOR	Commercial/Institutional	Tongue River Electric CO-OP	6,423	Commercial/Institutional: Other
15	TR CO-OP M# 6815009 - MAIN WELL BY SUB IN LAME DEER	Commercial/Institutional	Tongue River Electric CO-OP	111,655	Commercial/Institutional: Other
16	TR CO-OP M# 6815009 - SAWMILL PUMP EAST OF CEMETARY	Commercial/Institutional	Tongue River Electric CO-OP	138,977	Commercial/Institutional: Other
17	TR CO-OP M# 6815009 - BIRNEY TREATMENT PLANT H6	Commercial/Institutional	Tongue River Electric CO-OP	38,254	Commercial/Institutional: Other
18	TR CO-OP M# 6815009 - H4	Commercial/Institutional	Tongue River Electric CO-OP	82,556	Commercial/Institutional: Other
19	TR CO-OP M# 6815009 - H6 T R RD NORTH	Commercial/Institutional	Tongue River Electric CO-OP	81,693	Commercial/Institutional: Other
20	TR CO-OP M# 6815009 - J1	Commercial/Institutional	Tongue River Electric CO-OP	677	Commercial/Institutional: Other
21	TR CO-OP M# 6815009 - LAGOON AERATORS	Commercial/Institutional	Tongue River Electric CO-OP	62,000	Commercial/Institutional: Other
22	TR CO-OP M# 6815009 - LAME DEER WATER WELL IN DULL KNIFE PARK	Commercial/Institutional	Tongue River Electric CO-OP	43,098	Commercial/Institutional: Other
23	TR CO-OP M# 6815009 - LONE FEATHER PUMP HOUSE	Commercial/Institutional	Tongue River Electric CO-OP	11,910	Commercial/Institutional: Other
24	TR CO-OP M# 6815009 - MUDDY WATER TANK BELOW CHURCH	Commercial/Institutional	Tongue River Electric CO-OP	774	Commercial/Institutional: Religious Worship
25	TR CO-OP M# 6815009 - NEW WATER TANK ABOVE RABBIT TOWN	Commercial/Institutional	Tongue River Electric CO-OP	50,356	Commercial/Institutional: Other
26	TR CO-OP M# 6815009 - LAME DEER WATER TANK	Commercial/Institutional	Tongue River Electric CO-OP	432	Commercial/Institutional: Other
27	TR CO-OP M# 6815009 - EAST SIDE WELL	Commercial/Institutional	Tongue River Electric CO-OP	29,168	Commercial/Institutional: Other
28	TR CO-OP M# 6815009 - NEW PUMP 2011-11 BY SUB	Commercial/Institutional	Tongue River Electric CO-OP	40,316	Commercial/Institutional: Other
29	TR CO-OP M# 6815009 - NEW OFFICE 2011 BY LD SUB	Commercial/Institutional	Tongue River Electric CO-OP	15,493	Commercial/Institutional: Office
30	TR CO-OP M# 6815012 - OLD CLINIC SITE/AMBULANCE BUILDING	Commercial/Institutional	Tongue River Electric CO-OP	75,240	Commercial/Institutional: Health Care
31	TR CO-OP M# 6815012 - IHS REMODELED CLINIC BLUE TIN BUILDING	Commercial/Institutional	Tongue River Electric CO-OP	149,720	Commercial/Institutional: Health Care
32	TR CO-OP M# 6815012 - NEW AMBULANCE BUILDING	Commercial/Institutional	Tongue River Electric CO-OP	28,356	Commercial/Institutional: Health Care
33	TR CO-OP M# 6815012 - NC LED SIGN HWY 212 ROUNDABOUT	Commercial/Institutional	Tongue River Electric CO-OP	13,560	Commercial/Institutional: Other

Northern Cheyenne Tribe 2023 Building Inventory: Electric Utility Accounts

ID#	Unit Description	Sector	Utility	Electricity Use (kWh)	Facility Type
34	TR CO-OP M# 6815012 - WELLNESS CENTER 4TH & MONTANA AVE	Commercial/Institutional	Tongue River Electric CO-OP	63,120	Commercial/Institutional: Health Care
35	TR CO-OP M# 6815024 - CHR Building	Commercial/Institutional	Tongue River Electric CO-OP	10,974	Commercial/Institutional: Health Care
36	TR CO-OP M# 6815042 - CAPITAL BUILDING	Commercial/Institutional	Tongue River Electric CO-OP	280,320	Commercial/Institutional: Office
37	TR CO-OP M# 6815042 - RODEO GROUNDS	Commercial/Institutional	Tongue River Electric CO-OP	112	Commercial/Institutional: Other
38	TR CO-OP M# 6815011 - ASHLAND HALL	Commercial/Institutional	Tongue River Electric CO-OP	13,903	Commercial/Institutional: Public Assembly
39	TR CO-OP M# 6815016 - FISHER BUTTE PIPELINE	Commercial/Institutional	Tongue River Electric CO-OP	4,018	Commercial/Institutional: Other
40	TR CO-OP M# 6815016 - JONES BROTHERS STOCK PUMP	Commercial/Institutional	Tongue River Electric CO-OP	16,138	Commercial/Institutional: Other
41	TR CO-OP M# 6815006 - COURT HOUSE	Commercial/Institutional	Tongue River Electric CO-OP	41,819	Commercial/Institutional: Other
42	TR CO-OP M# 6815000 - ROSEBUD LODGE	Commercial/Institutional	Tongue River Electric CO-OP	30,013	Commercial/Institutional: Public Assembly
43	TR CO-OP M# 6815000 - #10 BOWSTRING STREET	Commercial/Institutional	Tongue River Electric CO-OP	10,868	Commercial/Institutional: Other
44	TR CO-OP M# 6815011 - MODULAR OFFICE BUILDING	Commercial/Institutional	Tongue River Electric CO-OP	8,562	Commercial/Institutional: Office
45	TR CO-OP M# 6815011 - MOTOR POOL- TERO BLDG	Commercial/Institutional	Tongue River Electric CO-OP	68,909	Commercial/Institutional: Other
46	TR CO-OP M# 6815011 - BIRNEY HALL	Commercial/Institutional	Tongue River Electric CO-OP	24,508	Commercial/Institutional: Public Assembly
47	TR CO-OP M# 6815011 - MUDDY HALL	Commercial/Institutional	Tongue River Electric CO-OP	4,762	Commercial/Institutional: Public Assembly
48	TR CO-OP M# 6815011 - PUMP BY SUB STATION LD	Commercial/Institutional	Tongue River Electric CO-OP	678	Commercial/Institutional: Other
49	TR CO-OP M# 6815011 - COMMUNITY OUTREACH BUILDING	Commercial/Institutional	Tongue River Electric CO-OP	44,656	Commercial/Institutional: Office
50	TR CO-OP M# 6815011 - 3RD & CHEYENNE LAND AUTHORITY BLDG	Commercial/Institutional	Tongue River Electric CO-OP	58,920	Commercial/Institutional: Office
51	TR CO-OP M# 6815011 - CHEYENNE AVE LAUNDROMAT	Commercial/Institutional	Tongue River Electric CO-OP	23,826	Commercial/Institutional: Other
52	TR CO-OP M# 6815011 - BUSBY POW WOW GROUND	Commercial/Institutional	Tongue River Electric CO-OP	75	Commercial/Institutional: Other
53	TR CO-OP M# 6815011 - POW WOW WATER WELL SERVICE	Commercial/Institutional	Tongue River Electric CO-OP	1,661	Commercial/Institutional: Other
54	TR CO-OP M# 6815011 - POW WOW GROUNDS LAME DEER	Commercial/Institutional	Tongue River Electric CO-OP	1,240	Commercial/Institutional: Other
55	TR CO-OP M# 6815000 - MISSION ROAD ASHLAND POW WOW GROUNDS	Commercial/Institutional	Tongue River Electric CO-OP	704	Commercial/Institutional: Other
56	TR CO-OP M# 6815011 - BIRNEY CHURCH (NEW APOSTILIC)	Commercial/Institutional	Tongue River Electric CO-OP	18,164	Commercial/Institutional: Religious Worship
57	TR CO-OP M# 6815011 - POW WOW CONCESSIONS	Commercial/Institutional	Tongue River Electric CO-OP	267	Commercial/Institutional: Food Service
58	TR CO-OP M# 6815011 - NATURAL RESOURCES	Commercial/Institutional	Tongue River Electric CO-OP	18,250	Commercial/Institutional: Office
59	TR CO-OP M# 6815011 - PROCUREMENT DEPARTMENT	Commercial/Institutional	Tongue River Electric CO-OP	5,406	Commercial/Institutional: Office
60	TR CO-OP M# 6815011 - BUSBY TIN HALL	Commercial/Institutional	Tongue River Electric CO-OP	4,260	Commercial/Institutional: Public Assembly
61	TR CO-OP M# 6815011 - S-1 LD HWY 4	Commercial/Institutional	Tongue River Electric CO-OP	6,715	Commercial/Institutional: Other
62	TR CO-OP M# 6815011 - S-2 PATHWAY LIGHTS	Commercial/Institutional	Tongue River Electric CO-OP	4,491	Commercial/Institutional: Other
63	TR CO-OP M# 6815011 - HIGH SCHOOL ROAD WALKING PATH	Commercial/Institutional	Tongue River Electric CO-OP	1,852	Commercial/Institutional: Other
64	TR CO-OP M# 6815011 - EAST CHIEF ST PEDESTRIAN LIGHTING	Commercial/Institutional	Tongue River Electric CO-OP	6,217	Commercial/Institutional: Other
65	TR CO-OP M# 6815011 - 4TH ST- TOP SOCKET	Commercial/Institutional	Tongue River Electric CO-OP	848	Commercial/Institutional: Other
66	TR CO-OP M# 6815011 - 4TH ST BOTTOM SOCKET	Commercial/Institutional	Tongue River Electric CO-OP	6,068	Commercial/Institutional: Other
67	TR CO-OP M# 6815011 - E BOUNDARY RD	Commercial/Institutional	Tongue River Electric CO-OP	15,940	Commercial/Institutional: Other
68	TR CO-OP M# 6815043 - SOLDIER GULCH ROAD	Commercial/Institutional	Tongue River Electric CO-OP	21,544	Commercial/Institutional: Other

Northern Cheyenne Tribe 2023 Building Inventory: Electric Utility Accounts

ID#	Unit Description	Sector	Utility	Electricity Use (kWh)	Facility Type
69	TR CO-OP M# 6815043 - 40783 HWY 212	Commercial/Institutional	Tongue River Electric CO-OP	246	Commercial/Institutional: Other
70	TR CO-OP M# 6815042 - MORNING STAR PROPANE OFFICE-CHEYENNE AVE	Commercial/Institutional	Tongue River Electric CO-OP	4,025	Commercial/Institutional: Office
71	TR CO-OP M# 6815043 - MORNING STAR PROPANE OFFICE-CHEYENNE AVE	Commercial/Institutional	Tongue River Electric CO-OP	115	Commercial/Institutional: Office
72	TR CO-OP M# 6815003 - B	Commercial/Institutional	Tongue River Electric CO-OP	2,899	Commercial/Institutional: Other
73	TR CO-OP M# 6815003 - FORRESTRY OFFICE TRAILER	Commercial/Institutional	Tongue River Electric CO-OP	23,335	Commercial/Institutional: Office
74	TR CO-OP M# 6815004 - COMMODITY	Commercial/Institutional	Tongue River Electric CO-OP	49,046	Commercial/Institutional: Other
75	TR CO-OP M# 6815007 - CHEYENNE DEPOT MAIN STREET LAME DEER	Commercial/Institutional	Tongue River Electric CO-OP	198,560	Commercial/Institutional: Mercantile
76	TR CO-OP M# 6815007 - QUICK LUBE LAME DEER	Commercial/Institutional	Tongue River Electric CO-OP	19,242	Commercial/Institutional: Other
77	TR CO-OP M# 6815008 - G-CHEYENNE DEPOT ASHLAND	Commercial/Institutional	Tongue River Electric CO-OP	142,800	Commercial/Institutional: Mercantile
78	TR CO-OP M# 6815017 - LIAP PROJECT	Commercial/Institutional	Tongue River Electric CO-OP	25,215	Commercial/Institutional: Other
79	TR CO-OP M# 6815039 - ICDBG (CANISTER SITE)	Commercial/Institutional	Tongue River Electric CO-OP	30,248	Commercial/Institutional: Other
80	TR CO-OP M# 6815040 - ROAD MAINTENANCE - TEEPEE RANCH AREA	Commercial/Institutional	Tongue River Electric CO-OP	190	Commercial/Institutional: Other
81	TR CO-OP M# 10192500 - 42074 U.S. Highway 212	Commercial/Institutional	Tongue River Electric CO-OP	61,200	Commercial/Institutional: Other
82	TR CO-OP M# - Old Casino Building	Commercial/Institutional	Tongue River Electric CO-OP	21,955	Commercial/Institutional: Public Assembly
83	TR CO-OP M# - NC Tribal School Campus	Commercial/Institutional	Tongue River Electric CO-OP	895,998	Commercial/Institutional: Public Assembly

Northern Cheyenne Tribe 2023 Building Inventory: Propane			
ID#	Unit Description	Sector	Fuel Used (gal)
1	TRIBAL BLDG	Commercial/Institutional	11,369.40
2	ASHLAND HALL	Commercial/Institutional	7,884.90
3	BIRNEY HALL	Commercial/Institutional	5,098.30
4	MUDDY HALL	Commercial/Institutional	5,853.90
5	BUSBY HALL	Commercial/Institutional	6,028.20
6	COMMODITY BLDG	Commercial/Institutional	2,001.50
7	TRIBAL ED	Commercial/Institutional	1,163.90
8	TERO	Commercial/Institutional	5,108.00
9	HEALING HEARTS	Commercial/Institutional	425.50
10	CHILD CARE	Commercial/Institutional	333.90
11	WIA	Commercial/Institutional	958.40
12	THPO	Commercial/Institutional	685.00
13	HEADSTART	Commercial/Institutional	9,057.40
14	PROSECUTION OFFICE	Commercial/Institutional	273.50
15	ADMIN BLDG	Commercial/Institutional	5,667.10
16	MAINTENANCE BLDG	Commercial/Institutional	1,365.20
17	WELLNESS CENTER	Commercial/Institutional	4,769.30
18	HPP	Commercial/Institutional	1,174.80
19	DES	Commercial/Institutional	979.90
20	THIP	Commercial/Institutional	415.30
21	AMBULANCE BARN & TRLR	Commercial/Institutional	5,130.30
22	RED BLDG	Commercial/Institutional	801.20
23	NCDC (MINI MALL)	Commercial/Institutional	1,609.60
24	CHEY DEPOT I	Commercial/Institutional	1,911.00
25	CHEY DEPOT II	Commercial/Institutional	2,670.70
26	CHEY AVE LAUNDROMAT	Commercial/Institutional	1,685.50
27	LUBE CENTER (FOOD PANTRY)	Commercial/Institutional	1,860.70
28	SOLID WASTE	Commercial/Institutional	2,504.80
29	ROSEBUD LODGE	Commercial/Institutional	1,669.70
30	ENVIRONMENTAL PROTECTION DEPT	Commercial/Institutional	2,060.50
31	N CHEY UTILITIES COMM (NCUC)	Commercial/Institutional	1,090.30
32	CHIEF DULL KNIFE COLLEGE (CDKC)	Commercial/Institutional	30,277.80
33	CHARGING HORSE CASINO	Commercial/Institutional	13,584.30
34	NC Tribal School Campus	Commercial/Institutional	51,287.40

B. 2023 Vehicle Inventory

Complete accounting of Northern Cheyenne's Tribal government vehicles including make, model, VIN (as applicable), fuel type, and associated department use for the 2023 calendar year.

Northern Cheyenne Tribe 2023 Vehicle Inventory							
ID#	Vehicle Make	Vehicle Model	Vehicle Year	VIN	Vehicle Type	Department	Fuel Type
1	Can-Am	Defender	2021	3JBUUAX44MK002999	Utility And Recreational Equipment	EPD	Gasoline
2	Hisun	Tactic 750	2021	A6HSDWZ0KMB000128	Utility And Recreational Equipment	EPD	Gasoline
3	Dodge	Ram 2500	2022	3C6UR5FJ5NG327153	Light Truck (vans, pickups, SUVs)	EPD	Gasoline
4	Chevy	Tahoe	2021	1GNSKNKD7MR458790	Light Truck (vans, pickups, SUVs)	EPD	Gasoline
5	Dodge	Ram 2500	2018	3C6UR5NJXJG400061	Light Truck (vans, pickups, SUVs)	EPD	Gasoline
6	Chevy	Silverado 2500 HD	2020	1GC4YPE75LF140829	Light Truck (vans, pickups, SUVs)	EPD	Gasoline
7	Toyota	Camry	2016	4T1BD1FK7GU200643	Passenger Car	EPD	Gasoline
8	Chevy	Tahoe	2015	1GNSKCKC3FR208672	Light Truck (vans, pickups, SUVs)	EPD	Gasoline
9	Chevy	Silverado	2016	1GC1KVEG2GF264717	Light Truck (vans, pickups, SUVs)	EPD	Gasoline
10	Toyota	Venza	2024		Passenger Car	EPD	Gasoline
11	Ford	F350	2024		Light Truck (vans, pickups, SUVs)	EPD	Gasoline
12	Chevy	1/2 ton	2005	1GCEK19B96Z205458	Light Truck (vans, pickups, SUVs)	Road Construction	Gasoline
13	Chevy	1/2 ton	2009	1GCEK14X79Z259431	Light Truck (vans, pickups, SUVs)	Road Construction	Gasoline
14	Sportman ATV	700EF1	2007	4XAMH68AX74935614	Utility And Recreational Equipment	EMS	Gasoline
15	Sportman ATV	700EF1	2007	AMAMH68A07A935606	Utility And Recreational Equipment	EMS	Gasoline
16	Ford	8000 Fire Truck	1985	17467	Heavy-Duty Vehicle	Fire Protection	Diesel
17	Ford	8000 Fire Truck	1986	1FDXD8UCVAU6201	Heavy-Duty Vehicle	Fire Protection	Diesel
18	GMC	Acadia	2018	1GKKNSLS7JZ188374	Light Truck (vans, pickups, SUVs)	Board of Health	Gasoline
19	GMC	Acadia	2018	1GKKNSLA0JZ243870	Light Truck (vans, pickups, SUVs)	Headstart	Gasoline
20	Kodiak	ATV	2016	5Y4AM93Y6JA110021	Utility And Recreational Equipment	Land Authority	Gasoline
21	Kodiak	ATV	2016	5Y4AM93Y4GA106672	Utility And Recreational Equipment	Land Authority	Gasoline
22	Chevy	Blazer	2020	UK	Light Truck (vans, pickups, SUVs)	Elderly	Gasoline
23	Starcraft	Bus	2019	1HA6GUBG3KN001149	Heavy-Duty Vehicle	Headstart	Diesel
24	Toyota	Camry	2019	4T1B11HK1KU835145	Passenger Car	Board of Health	Gasoline
25	Dodge	Caravan	2019	2C4RDGBG5KR713340	Passenger Car	Board of Health	Gasoline
26	Dodge	Caravan	2019	2C4RDGBG2KR806350	Passenger Car	Board of Health	Gasoline
27	Dodge	Caravan	2019	2C4RDGG9KR806359	Passenger Car	Board of Health	Gasoline
28	Chevy	Collins Bus	2017	1GB6BUBG7G1249394	Heavy-Duty Vehicle	Headstart	Diesel
29	Dodge	Durango	2019	1C4RDJAG4KC75570	Light Truck (vans, pickups, SUVs)	Board of Health	Gasoline
30	Ford	F350	2009	1FBSS31L39DA73872	Light Truck (vans, pickups, SUVs)	Forestry	Gasoline
31	Ford	F350	2010	1FBSS3BL0ADA44008	Light Truck (vans, pickups, SUVs)	Forestry	Gasoline
32	Ford	F350	2017	1FDEE3FS4HDC01210	Light Truck (vans, pickups, SUVs)	Transit	Gasoline
33	Ford	Econoline	2014	UK	Heavy-Duty Vehicle	Forestry	Diesel
34	Ford	Econoline E450 Bus	2009	1FDFE45PX9DA29970	Heavy-Duty Vehicle	Transit	Diesel
35	Ford	Econoline E450 Bus	2009	1FDFE45P89DA29966	Heavy-Duty Vehicle	Transit	Diesel
36	Chevy	Equinox	2006	2CNDL73FX66125018	Passenger Car	Admin	Gasoline
37	Chevy	Equinox	2006	2CNDL73FX66125018	Passenger Car	Courts	Gasoline
38	Ford	Expedition	2019	1FMJK2AT4KEA42188	Light Truck (vans, pickups, SUVs)	Healing Hearts	Gasoline
39	Ford	Expidition	2020	1FMJU1PT2LEA71928	Light Truck (vans, pickups, SUVs)	Rosebud Ldg	Gasoline
40	Ford	Explorer	2023	1FM5K8AB6NGB18367	Light Truck (vans, pickups, SUVs)	NCIS	Gasoline
41	Chevy	Express	2006	1GAHG39U261254987	Heavy-Duty Vehicle	Forestry	Diesel
42	Chevy	Express Van	2019	1HAA6GUBG4KN001483	Heavy-Duty Vehicle	Headstart	Diesel
43	Chevy	Express Van 1500	2013	1GNSHCF48D1151222	Heavy-Duty Vehicle	Transit	Diesel
44	Ford	F-150	2005	1FTRW15W25FB48567	Light Truck (vans, pickups, SUVs)	Road Construction	Gasoline
45	Ford	F-250	2014	1FTZWZB60EEB79600	Light Truck (vans, pickups, SUVs)	Forestry	Gasoline
46	Ford	F-250	UK	1FTNF21L7YE627903	Light Truck (vans, pickups, SUVs)	Land Authority	Gasoline
47	Ford	F-250 Flatbed	1973	F26YRS47112	Light Truck (vans, pickups, SUVs)	Admin	Gasoline
48	Ford	F-350	1999	UK	Light Truck (vans, pickups, SUVs)	Commodity	Gasoline
49	Ford	F-350	2014	1FD8W3F69EEA39190	Light Truck (vans, pickups, SUVs)	Forestry	Gasoline
50	Chevy	Tahoe	2023	1GNSKRKD8PR249439	Light Truck (vans, pickups, SUVs)	Range Program	Gasoline
51	Ford	F-350 Flatbed	2010	1FDWX3FR0AEA62642	Light Truck (vans, pickups, SUVs)	Admin	Gasoline
52	Ford	F700 Fire Truck	1992	1FDRK74C4PVA10568	Heavy-Duty Vehicle	Fire Protection	Diesel
53	Yamaha	G3 Boat	2008	41YAB181781034287 BOTH	Ship or Boat	EMS	Gasoline

Northern Cheyenne Tribe 2023 Vehicle Inventory							
ID#	Vehicle Make	Vehicle Model	Vehicle Year	VIN	Vehicle Type	Department	Fuel Type
54	International	HV607 Sanitation Truck	UK	3HAEKTAT4NL326089	Heavy-Duty Vehicle	Morning Star Propane	Diesel
55	Dodge	Journey SXT	UK	3C4PDDBG1DT614973	Light Truck (vans, pickups, SUVs)	THPO	Gasoline
56	Chevy	K3500	1999	UK	Light Truck (vans, pickups, SUVs)	Admin	Gasoline
57	Chevy	Malibu	2017	1G1ZA5S T7HF135423	Passenger Car	Road Construction	Gasoline
58	Chevy	Midbus	2008	1GBJG31K081222548	Heavy-Duty Vehicle	Headstart	Diesel
59	Suzuki	Mini Truck	UK	DD51T-202438	Light Truck (vans, pickups, SUVs)	EMS	Gasoline
60	Suzuki	Mini Truck	UK	DD51T-313688	Light Truck (vans, pickups, SUVs)	EMS	Gasoline
61	Chrysler	Pacifica	2021	2C4RC1BG5MR520138	Light Truck (vans, pickups, SUVs)	Childcare	Gasoline
62	Nissan	Pathfinder	2006	5N1AR18W46C672655	Light Truck (vans, pickups, SUVs)	Admin	Gasoline
63	Chevy	Pickup	UK	1GB4KZCG5BF150862	Light Truck (vans, pickups, SUVs)	Road Maintenance	Gasoline
64	Honda	Pilot	2021	UK	Light Truck (vans, pickups, SUVs)	Elderly	Gasoline
65	Kenworth	Propoane Truck	2007	7M184208	Heavy-Duty Vehicle	Morning Star Propane	Diesel
66	Nissan	Quest	2015	JN8AE2KP2F9126851	Light Truck (vans, pickups, SUVs)	Transit	Gasoline
67	Dodge	Ram	2014	1C63R3DT0EG274205	Light Truck (vans, pickups, SUVs)	Board of Health	Gasoline
68	Dodge	Ram	2018	3C6UR5DJ3JG160028	Light Truck (vans, pickups, SUVs)	Land Authority	Gasoline
69	Dodge	Ram	2015	1C6RR7FT5FS772263	Light Truck (vans, pickups, SUVs)	Road Construction	Gasoline
70	Dodge	Ram	2007	3D6WH46A67G733437	Light Truck (vans, pickups, SUVs)	Road Maintenance	Gasoline
71	Dodge	Ram 1500	2013	1C6RR7KT0DS33979	Light Truck (vans, pickups, SUVs)	Admin	Gasoline
72	Dodge	Ram 1500	2021	1C6SRFFT6MN532193	Light Truck (vans, pickups, SUVs)	TERO	Gasoline
73	Dodge	Ram 1500	2021	1C6SRFFT5MN524294	Light Truck (vans, pickups, SUVs)	ARPA	Gasoline
74	Dodge	Ram 1500	UK	1C6RR7GG2NS218629	Light Truck (vans, pickups, SUVs)	Courts	Gasoline
75	Dodge	Ram 1500	2019	1C6RR7LT6KS547932	Light Truck (vans, pickups, SUVs)	Natural Resources	Gasoline
76	Dodge	Ram 2500	2020	UK	Light Truck (vans, pickups, SUVs)	Admin	Gasoline
77	Dodge	Ram 2500	2020	3C63R3EL4LG278852	Light Truck (vans, pickups, SUVs)	Elderly	Gasoline
78	Dodge	Ram 2500	2018	3C6TR5DT6JG205296	Light Truck (vans, pickups, SUVs)	Forestry	Gasoline
79	Dodge	Ram 2500	2016	3C6UR5CJ6GG145288	Light Truck (vans, pickups, SUVs)	Forestry	Gasoline
80	Dodge	Ram 2500	2015	UK	Light Truck (vans, pickups, SUVs)	Forestry	Gasoline
81	Dodge	Ram 2500	2018	3C7WR5HJ5JG283540	Light Truck (vans, pickups, SUVs)	Forestry	Gasoline
82	Dodge	Ram 2500	2018	3C6UR5HJ0JG101772	Light Truck (vans, pickups, SUVs)	Forestry	Gasoline
83	Dodge	Ram 2500	2016	3C6UR5NL8GG264989	Light Truck (vans, pickups, SUVs)	THPO	Gasoline
84	Dodge	Ram 3500	2020	3C63R3EL4LG278852	Light Truck (vans, pickups, SUVs)	ARPA	Gasoline
85	Dodge	Ram 3500	2020	3C63R3EL4LG278852	Light Truck (vans, pickups, SUVs)	Commodity	Gasoline
86	Dodge	Ram 3500	2019	3C63R3GJ5LG154939	Light Truck (vans, pickups, SUVs)	Morning Star Propane	Gasoline
87	Dodge	Ram 3500	2021	3C7WRTLC3MG590450	Light Truck (vans, pickups, SUVs)	Road Construction	Gasoline
88	Dodge	Ram 5500	2022	3C7WRNEL6NG1866334	Heavy-Duty Vehicle	Fire Protection	Diesel
89	Dodge	Ram 5500	2019	3C7WRNFL7KG686036	Heavy-Duty Vehicle	Morning Star Propane	Diesel
90	Dodge	Ram 5500	UK	UK	Heavy-Duty Vehicle	Road Maintenance	Diesel
91	Ford	Ranger	2007	4XARA50A774116666	Light Truck (vans, pickups, SUVs)	EMS	Gasoline
92	GMC	Sierra	2019	1GT4DTCGXKF260766	Light Truck (vans, pickups, SUVs)	Human Services	Gasoline
93	GMC	Sierra	2020	1GT49TE75LF256781	Light Truck (vans, pickups, SUVs)	Board of Health	Gasoline
94	GMC	Sierra	2021	1GT49TEYMF129175	Light Truck (vans, pickups, SUVs)	Buffalo Program	Gasoline
95	GMC	Sierra	2019	1GTU9BED5KZ305149	Light Truck (vans, pickups, SUVs)	Childcare	Gasoline
96	Chevy	Silverado	2016	1GC0KKUEG3H2256051	Light Truck (vans, pickups, SUVs)	Admin	Gasoline
97	Chevy	Silverado	2022	3GCPYFEL5NG184576	Light Truck (vans, pickups, SUVs)	ARPA	Gasoline
98	Chevy	Silverado	2023	3GCUDHEL2PG208765	Light Truck (vans, pickups, SUVs)	Fish & Game	Gasoline
99	Chevy	Silverado	2021	1GCUYDED0MZ105216	Light Truck (vans, pickups, SUVs)	NCIS	Gasoline
100	Chevy	Silverado	2019	1GCRYDEK1KZ350737	Light Truck (vans, pickups, SUVs)	Rosebud Ldg	Gasoline
101	Chevy	Silverado 1500	2011	1GCPKPPE73CF107147	Light Truck (vans, pickups, SUVs)	Land Authority	Gasoline
102	Chevy	Silverado 3500HD	2024	1GC4YTEY0RF386360	Light Truck (vans, pickups, SUVs)	Range Program	Gasoline
103	Chevy	Silverado 2500	2016	1GC2KUEG0GZ227890	Light Truck (vans, pickups, SUVs)	Land Authority	Gasoline
104	Chevy	Silverado 2500	2017	1GC0KUEG3H Z252910	Light Truck (vans, pickups, SUVs)	Land Authority	Gasoline
105	Chevy	Silverado K150	UK	3GCUKREH0EG304043	Light Truck (vans, pickups, SUVs)	THPO	Gasoline
106	Chevy	Silverado K250	2018	1GC1KWEY8JF270124	Light Truck (vans, pickups, SUVs)	Headstart	Gasoline
107	Skidsteer	Skidsteer			Construction Equipment	Morning Star Propane	Gasoline

Northern Cheyenne Tribe 2023 Vehicle Inventory

ID#	Vehicle Make	Vehicle Model	Vehicle Year	VIN	Vehicle Type	Department	Fuel Type
108	Polaris	Snowmobile	Uk	SN1PG8E5302628310	Utility And Recreational Equipment	Land Authority	Gasoline
109	Polaris	Snowmobile	Uk	SN1PG8E50AC856	Utility And Recreational Equipment	Land Authority	Gasoline
110	Alexis	Spartan Fire Truck	UK	67514	Heavy-Duty Vehicle	Fire Protection	Diesel
111	Polaris	Sportsman 570	2023	3NESEE570PN168107	Utility And Recreational Equipment	Range Program	Gasoline
112	Polaris	Sportsman 850	UK	4XASXZ85XPB145691	Utility And Recreational Equipment	Buffalo Program	Gasoline
113	Chevy	Starcraft	2012	1GB3G2BG0C1126165	Heavy-Duty Vehicle	Headstart	Diesel
114	Chevy	Suburban	2020	1GNSKHKC7LR245443	Light Truck (vans, pickups, SUVs)	Childcare	Gasoline
115	Chevy	Suburban	2020	1GNSKJKJXLR107630	Light Truck (vans, pickups, SUVs)	Natural Resources	Gasoline
116	Kenworth	T300 CAT	2002	2NKMHD7X92M890698	Heavy-Duty Vehicle	Morning Star Propane	Diesel
117	Kenworth	T300 CAT	2002	2NKMHZ7X02M889663	Heavy-Duty Vehicle	Morning Star Propane	Diesel
118	Kenworth	T309	2005	UK	Heavy-Duty Vehicle	Range Program	Diesel
119	Kenworth	T370	2021	2NKHHM7X2MM442579	Heavy-Duty Vehicle	Morning Star Propane	Diesel
120	Kenworth	T370 Fire Truck	2008	2NKHLN9X68M216651	Heavy-Duty Vehicle	Fire Protection	Diesel
121	Chevy	Tahoe	2022	1GNSCLED2NR201065	Light Truck (vans, pickups, SUVs)	NCIS	Gasoline
122	Chevy	Tahoe	2019	1GNSKEEC6KR128185	Light Truck (vans, pickups, SUVs)	NCIS	Gasoline
123	Chevy	Trailblazer	2008	UK	Light Truck (vans, pickups, SUVs)	Childcare	Gasoline
124	Dodge	Transit Van	2021	UK	Light Truck (vans, pickups, SUVs)	Commodity	Gasoline
125	Ford	Transit Van	2015	1FBZX2CG9FKA82416	Light Truck (vans, pickups, SUVs)	Transit	Gasoline
126	Chevy	Traverse	2014	UK	Light Truck (vans, pickups, SUVs)	Elderly	Gasoline
127	Chevy	Traverse	2020	1GNEVFKW9LJ310892	Light Truck (vans, pickups, SUVs)	Healing Hearts	Gasoline
128	Dodge	Truck	2001	1B7KF23Z51J235454	Light Truck (vans, pickups, SUVs)	Admin	Gasoline
129	Toyota	Tundra	2001	5TBRT34191S192156	Light Truck (vans, pickups, SUVs)	Land Authority	Gasoline
130	Toyota	Tundra	2016	5TFDM5F15GX065026	Light Truck (vans, pickups, SUVs)	Natural Resources	Gasoline
131	Toyota	Tundra	2016	5TFPW5F13GX513531	Light Truck (vans, pickups, SUVs)	Road Maintenance	Gasoline
132	Covid Ambulance	UK	UK	1FDUF4HT6MDA08359	Heavy-Duty Vehicle	Board of Health	Diesel
133	Mobile Med Healtl	UK	UK	UK	Heavy-Duty Vehicle	Board of Health	Diesel
134	Ford	Van	2016	1FMZK1YM0GKA74219	Light Truck (vans, pickups, SUVs)	Board of Health	Gasoline
135	International	Water Truck	2010	3HSCUAPR8AN281721	Heavy-Duty Vehicle	Road Maintenance	Diesel
136	Chevy	3500 HD Diesel	2014	UK	Heavy-Duty Vehicle	Solid Waste	Diesel
137	Chevy	2500	2020	UK	Heavy-Duty Vehicle	Solid Waste	Diesel
138	Peterbilt	520	2019	UK	Heavy-Duty Vehicle	Solid Waste	Diesel
139	Peterbilt	320	2014	UK	Heavy-Duty Vehicle	Solid Waste	Diesel
140	Kenworth	T880	2021	UK	Heavy-Duty Vehicle	Solid Waste	Diesel
141	Kenworth	T800	2013	UK	Heavy-Duty Vehicle	Solid Waste	Diesel
142	Bobcat	S570 Skidsteer	2019	UK	Construction Equipment	Solid Waste	Gasoline
143	John Deere	320p Back-hoe	2024	UK	Construction Equipment	Solid Waste	Gasoline
144	Chevy	2500	UK	UK	Light Truck (vans, pickups, SUVs)	CDKC	Gasoline
145	Ford	F150	UK	UK	Light Truck (vans, pickups, SUVs)	CDKC	Gasoline
146	Ford	Escape 1	UK	UK	Light Truck (vans, pickups, SUVs)	CDKC	Gasoline
147	Ford	Escape 2	UK	UK	Light Truck (vans, pickups, SUVs)	CDKC	Gasoline
148	Ford	Exploer	UK	UK	Light Truck (vans, pickups, SUVs)	CDKC	Gasoline
149	GMC	Van #1	UK	UK	Light Truck (vans, pickups, SUVs)	CDKC	Gasoline
150	GMC	Van #2	UK	UK	Light Truck (vans, pickups, SUVs)	CDKC	Gasoline
151	Yamaha	YFM450	2023	5Y4AJ78E6PA101727	Utility And Recreational Equipment	Natural Resources	Gasoline
152	Polaris	CamAm Loutlander Max	UK	3JBLPAJ26FJ000870	Utility And Recreational Equipment	Natural Resources	Gasoline
153	Chevy	3500 HD Diesel	2024	1GC4YTEY0RF386360	Heavy-Duty Vehicle	Land Authority	Diesel
154	Chevy	Tahoe	2023	1GNSKRKD8PR249439	Light Truck (vans, pickups, SUVs)	Land Authority	Gasoline
155	Kenworth	T309	2005	UK	Heavy-Duty Vehicle	Land Authority	Diesel
156	Polaris	800 RMK	UK	SN1CH8GS7CC486446	Utility And Recreational Equipment	Land Authority	Gasoline
157	Chevy	Silverado	2021	1GCUYDED0MZ105216	Light Truck (vans, pickups, SUVs)	NCIS	Gasoline
158	Dodge	Ram 1500	2013	1C6RR7KT0DS33979	Light Truck (vans, pickups, SUVs)	NCIS	Gasoline
159	Chevy	Silverado	2023	3GCUDFED6PG353255	Light Truck (vans, pickups, SUVs)	NCIS	Gasoline
160	UK	KM M25	2019	1K9BU2422KN246548	Construction Equipment	Morning Star Propane	Diesel
161	Chevy	Silverado	2024	2GC4YTEY0R1236451	Light Truck (vans, pickups, SUVs)	Morning Star Propane	Gasoline

Northern Cheyenne Tribe 2023 Vehicle Inventory							
ID#	Vehicle Make	Vehicle Model	Vehicle Year	VIN	Vehicle Type	Department	Fuel Type
162	Ford	F5550 Super Sanitation	2020	1FDUF5HTXLED79345	Heavy-Duty Vehicle	Morning Star Propane	Diesel
163	Dodge	Durango	2018	1C4RDJAG3JC101997	Light Truck (vans, pickups, SUVs)	Human Services	Gasoline
164	Dodge	Durango	2022	1C4RDJDGXNC198939	Light Truck (vans, pickups, SUVs)	Human Services	Gasoline

Denotes vehicle omitted from study due to unknown age, 2024 model year, recreation equipment, or construction equipment

C. Tribal Greenhouse Gas Inventory Tool (TGGIT)

The EPA developed the Tribal Greenhouse Gas Inventory Tool (TGGIT) to help tribes across the United States evaluate their greenhouse gas emissions. The tool calculates GHG emissions for many sectors, including residential, commercial, transportation, and waste and water management. Below is a copy of the summary page; the native excel file accompanies the CCAP as a separate file.

Inventory Emissions Summary

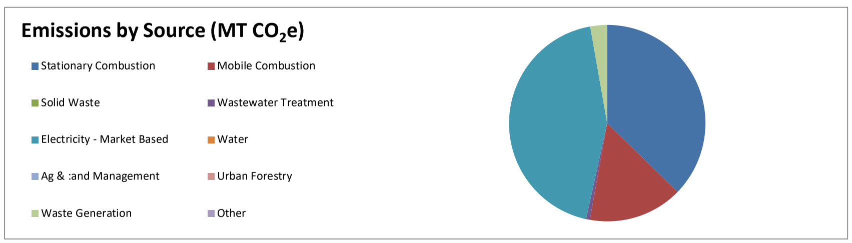
Return to Table of Contents

Please use the drop-down menu in the Scope 2 Emissions Selection box to determine which scope 2 emissions methodology is used in the summary

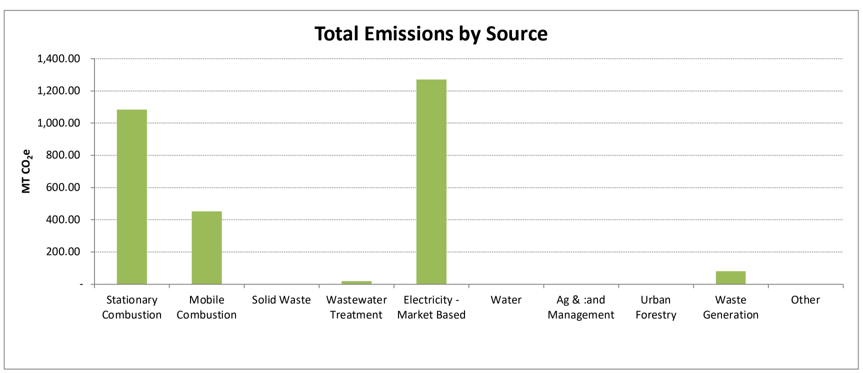
Scope 2 Emissions Selection:	Market Based
	0.65 Per capita Emissions for Northern Cheyenne Tribe(MT CO2e/person)

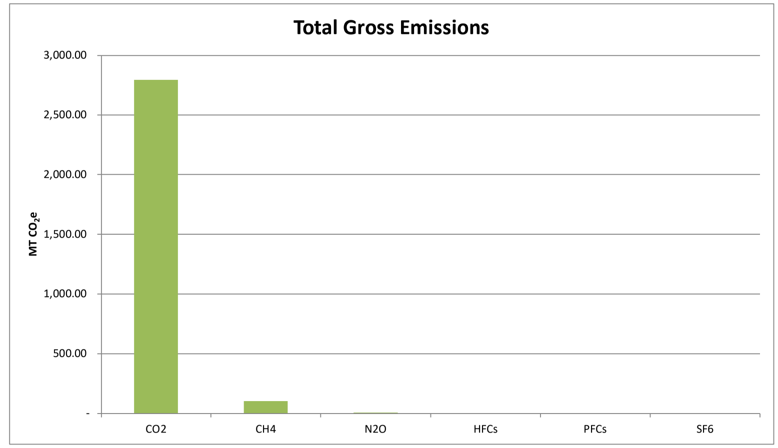
Total Emissions (MT CO_2e)								
	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	Total MT CO_2e	Percent of Total
Scope 1	1,531.16	19.67	2.73	-	-	-	1,553.56	53%
Scope 2 - Location Based	1,198.74	3.12	4.22	-	-	-	1,206.09	
Scope 2 - Market Based (for informational purposes only)	1,263.47	3.23	4.22				1,270.93	44%
Scope 3	-	80.64	-	-	-	-	80.64	3%
Total Gross Emissions	**2,794.63**	**103.54**	**6.95**	**-**	**-**	**-**	**2,905.12**	**100%**
Total Net Emissions	**2,794.63**	**103.54**	**6.95**	**-**	**-**	**-**	**2,905.12**	**100%**

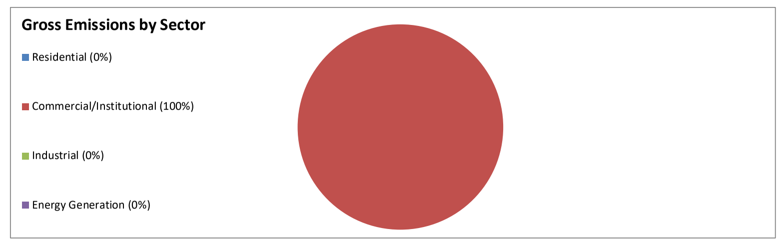
Emissions by Source (MT CO_2e)								
Source	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	Total	Percent of
Stationary Combustion	1,079.91	1.44	2.73	-	-	-	1,084.09	37%
Mobile Combustion	451.25	-	-	-	-	-	451.25	16%
Solid Waste	-	-	-	-	-	-	-	0%
Wastewater Treatment	-	18.22	-	-	-	-	18.22	1%
Electricity - Location Based	1,198.74	3.12	4.22	-	-	-	1,206.09	
Electricity - Market Based (for informational purposes only)	1,263.47	3.23	4.22				1,270.93	44%
Water	-	-	-	-	-	-	-	0%
Ag & Land Management	-	-	-				-	0%
Urban Forestry	-	-	-				-	0%
Waste Generation	-	80.64	-				80.64	3%
Total (Gross Emissions)	**2,794.63**	**103.54**	**6.95**	**-**	**-**	**-**	**2,905.12**	**100%**
Total (Net Emissions)	**2,794.63**	**103.54**	**6.95**	**-**	**-**	**-**	**2,905.12**	**100%**

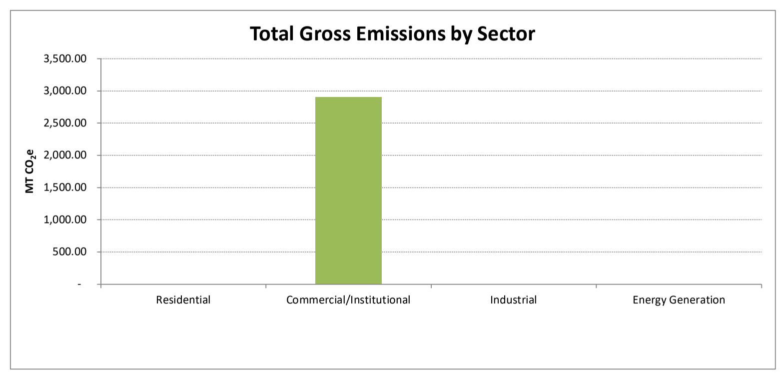


Gross Emissions by Sector		
Sector	Total (MT CO_2e)	Percent of Total
Residential	-	0%
Commercial/Institutional	2,905.12	100%
Industrial	-	0%
Energy Generation	-	0%
Total	**2,905.12**	**100%**









Total Emissions by Sector and Source (MT CO_2e)											
Sector	**Stationary**	**Electricity**	**Mobile**	**Solid Waste**	**Waste water**	**Water**	**Agriculture & Land Management**	**Urban Forestry**	**Other**	**TOTAL GROSS**	**TOTAL NET**
Residential	-	-	-	-	-	-	-	-	-	-	-
Commercial/Institutional	1,084.09	1,270.93	451.25	80.64	18.22	-	-	-	-	2,905.12	2,905.12
Industrial	-	-	-	-	-	-	-	-	-	-	-
Energy Generation	-	-	-	-	-	-	-	-	-	-	-
Total	1,084.09	1,270.93	451.25	80.64	18.22	-	-	-	-	**2,905.12**	**2,905.12**

D. PCAP Work session Attendance List

Attendance list from the PCAP Work session with Tribal Stakeholders to develop Reduction Measures and CPRG Implementation grant application focus.

THE SHEWARD PARTNERSHIP, LLC
www.theshewardpartnership.com
2300 Chestnut Street | Philadelphia, PA 19103 | 215.751.9301

date: February 28, 2024

Meeting Sign-In Sheet

tsp no.: 2893

project: **Northern Cheyenne Tribe CPRG Program**

re: **Greenhouse Gas Reduction Measures Work Session**

Name	Company	Phone	Email Address
David Mazzocco	The Sheward Partnership	610.425.8927	dcm@tsparch.com
Michael Pavelsky (virtually)	The Sheward Partnership		mwp@tsparch.com
Bradley Gay (virtually)	The Sheward Partnership		bdg@tsparch.com
Grey Fowles (virtually)	The Sheward Partnership		gef@tsparch.com
Brian Chestnut	Ziontz Chestnut	206.380.3766	bchestnut@ziontzchestnut.com
Kevin Wright	ProtoGen Energy		kevin@protogenenergy.com
Bill Briggs (virtually)	Chief Dull Knife College		bbriggs@cdkc.edu
Charlene W. Alden	Northern Cheyenne Tribe (EPD)	406.477.6506	charlene.alden@cheyennenation.com
Scott Williams	Northern Cheyenne EPD	406.477.6506	scott.williams@cheyennenation.com
Donna Fisher	Northern Cheyenne Development Corporation	406.697.0241	ncdcoffices@gmail.com
Melissa Fisher	Northern Cheyenne Tribal Council	406.720.0569	melisfish79@gmail.com
Donavin Limberhand	Northern Cheyenne Tribal Council	406.720.0388	donavin.limberhand@cheyennenation.com
John J. Grinsell	NCIS	406.450.4484	john.grinsell@cheyennenation.com
Kayla Grinsell	Northern Cheyenne Tribal Health	406.207.9058	director@nctribalhealth.com

Rod Trahan	Northern Cheyenne Tribal Housing Authority	406.477.6419	rtrahan@nctha.net
Norma Gourneau	Northern Cheyenne Tribal Council	406.477.4852	ngourneau@gmail.com
Debra K. Charettte	Northern Cheyenne Tribal Council	406.740.1264	debra.charette2@cheyennenation.com
Eva Foote	Northern Cheyenne Tribal Council	406.740.1693	eva.foote@cheyennenation.com
	Northern Cheyenne Tribal Council	406.606.8481	kirbycreekauto@gmail.com
Sheldon King	Morningstar Propane / NCTS	406.720.0894	shelbelbusby@yahoo.com
Angel Lei	NCT DES	406.740.1200	a.beckerncdes@gmail.com
Jim Swan	Grant Writing		jimswan23@gmail.com

E. CCAP Presentation Attendance List

Attendance list from the meeting with Tribal Council leadership to set key goals and policies as it relates to the CCAP including setting an overall carbon reduction goal.

THE SHEWARD PARTNERSHIP, LLC
www.theshewardpartnership.com
2300 Chestnut Street | Philadelphia, PA 19103 | 215.751.9301

date: March 19, 2025

Meeting Sign-In Sheet

tsp no.: 2893

project: **Northern Cheyenne Tribe CPRG Program**

re: **CCAP Presentation to Tribe Council**

Name	Company	Phone	Email Address
David Mazzocco	The Sheward Partnership	610.425.8927	dcm@tsparch.com
Brian Chestnut (via Teams)	Ziontz Chestnut	206.380.3766	bchestnut@ziontzchestnut.com
Liliana Elliot (via Teams)	Ziontz Chestnut	206.448.1230	lelliott@ziontzchestnut.com
Charlene W. Alden	Northern Cheyenne EPD	406.477.6506	charlene.alden@cheyennenation.com
Scott Williams	Northern Cheyenne EPD	406.477.6506	scott.williams@cheyennenation.com
Debra Charette	Northern Cheyenne EPD	406.477.6506	debra.charette2@cheyennenation.com
Gene Small, President	Northern Cheyenne Tribe Council, President	406.655.6290	gene.small@cheyennenation.com
Melissa Fisher	Northern Cheyenne Tribe Council		
Howard Ontiveros	Northern Cheyenne Tribe Council		
Torrey Davie	Northern Cheyenne Tribe Council		
Gwen Spotted Horse	Northern Cheyenne Tribe Council		
Stefan Raining Bird	Northern Cheyenne Tribe Council		
Nizhoni Friesz (via Teams)	Northern Cheyenne Tribe Council		

F. Reduction Goal Resolution

United States Department of the Interior
Bureau of Indian Affairs
Northern Cheyenne Agency
P.O. Box 40
Lame Deer, MT 59043

IN REPLY REFER TO:
EXECUTIVE DIRECTION

Gene Small, President
Gene.Small@Cheyennenation.com
Northern Cheyenne Tribe
P.O. Box 128
Lame Deer, MT 59043

Dear President Small:

This is in reference to Northern Cheyenne Tribal Council Resolution No. DOI-138 (2025) enacted on May 7, 2025 and received on May 12, 2025.

Resolution No. DOI-138 (2025) adopting and authorizing the Comprehensive Climate Action Plan and Associated Climate Goals.

Resolution No. DOI-138 (2025) is hereby noted. The Northern Cheyenne Tribal Council has the authority to take this action pursuant to Article IV, Section 1 (a), (k) and (r) of the Amended Constitution and Bylaws of the Northern Cheyenne Tribe.

Pursuant to Article IV, Section 4 of the Amended Constitution & Bylaws of the Northern Cheyenne Tribe, the Superintendent has authority to respond to said resolution.

All necessary copies of this resolution have been retained for our files.

Sincerely,
ANDREW WERK
Digitally signed by ANDREW WERK
Date: 2025.05.22 15:52:46 -06'00'
Superintendent

Enclosure

TRIBAL COUNCIL OF THE NORTHERN CHEYENNE TRIBE
NORTHERN CHEYENNE RESERVATION
LAME DEER, MONTANA

RESOLUTION NO. DOI – 138 (2025)

A RESOLUTION OF THE NORTHERN CHEYENNE TRIBAL COUNCIL ADOPTING AND AUTHORIZING THE COMPREHENSIVE CLIMATE ACTION PLAN AND ASSOCIATED CLIMATE GOALS

WHEREAS, the Northern Cheyenne Tribal is the governing body of the Northern Cheyenne Tribe by authority of the Tribe's Amended Constitution and Bylaws approved by the Secretary of the Interior on May 31, 1996;

WHEREAS, Article IV, Section 1(k) of the Amended Constitution, the Tribal Council is instructed to protect and preserve the property, wildlife, and natural resources of the Tribe;

WHEREAS, the Northern Cheyenne Tribe has taken many measures to preserve and protect its Reservation and the surrounding lands by enacting laws to protect the air, land, water, and other aspects of the natural environment, opposing large greenhouse gas-emitting development plans and foregoing lucrative economic development opportunities because of their adverse impacts;

WHEREAS, in recognition of the existential threat of climate change and in light of the Tribe's determination to preserve and protect the natural world, on May 26, 2016, by Resolution No. DOI-140 (2016), the Tribal Council confirmed the Tribe's commitment to establish sustainable energy as part of a long-range effort for a sustainable and viable economy;

WHEREAS, to carry out these above stated goals, the Tribal Council authorized the Northern Cheyenne Tribe to apply for the United States Environmental Protection Agency's Climate Pollution Reduction Grant (CPRG) to create a climate action plan and the Tribe subsequently received said funding in 2023;

WHEREAS, under the CPRG, the Tribe created a Comprehensive Climate Action Plan (May 2025) that sets forth greenhouse gas reduction goals and measures to achieve these goals;

WHEREAS, the Plan was created in collaboration with Tribal Leaders and Tribal governmental agencies and is intended to inform policy and governmental decision-making to strive towards a more sustainable community; and

WHEREAS, the Tribal Council has goals to further sustainability and see the community thrive for generations to come; now

THEREFORE BE IT RESOLVED, the Tribal Council hereby adopts and authorizes the Northern Cheyenne Tribe's May 2025 Comprehensive Climate Action Plan;

BE IT FURTHER RESOLVED, the Tribal Council formally adopts the goal of the Tribe being carbon neutral by 2035; and

BE IT FINALLY RESOLVED, that the Tribal Council hereby calls on the Northern Cheyenne Tribe, governmental departments, and future Tribal Councils to enact policies, ordinances, and procedures that carry out the goals and measures set forth in the Comprehensive Climate Action Plan and achieve the goal of being carbon neutral by 2035.

PASSED, ADOPTED, AND APPROVED by the Northern Cheyenne Tribal Council with 9 votes for passage and adoption, 0 votes against passage and adoption, and 0 abstentions on this 7th day of May 2025.

Gene Small, President
Northern Cheyenne Tribe

ATTEST:

Edina Redstar, Secretary
Northern Cheyenne Tribe

Noted::

ANDREW WERK
Digitally signed by ANDREW WERK
Date: 2025.05.22 15:53:30 -06'00'

Superintendent

G. CPRG Implementation Grant Budget

The Tribe developed the following detailed budget to implement Reduction Measure 5 as part of its CPRG implementation grant submission.

Detailed Budget Table

This Excel Workbook is provided to aid applicants in developing the required budget table(s) within the budget narrative.

BUDGET BY YEAR							
COST-TYPE	CATEGORY	YEAR 1 (2025)	YEAR 2 (2026)	YEAR 3 (2027)	YEAR 4 (2028)	YEAR 5 (2029)	TOTAL
Direct Cost	**Personnel**						
	Program Manager 1.0 FTE	$72, 800	$72, 800	$72, 800	$72, 800	$72, 800	$364, 000.00
	Director, .20 FTE	$19, 136	$19, 136	$19, 136	$19, 136	$19, 136	$95, 680.00
	Air Adiminstrator .20 FTE	$15, 808	$15, 808	$15, 808	$15, 808	$15, 808	$79, 040.00
	Administrative Asst. .20 FTE	$10,816	$10,816	$10,816	$10,816	$10,816	$54,080
	Temporary Employee Salaries	$54, 080	$54, 080	$54,080	$54,080	$54,080	$270,400
	TOTAL PERSONNEL	$172,640	$172,640	$172,640	$172,640	$172,640	$863, 200
	Fringe Benefits						
	Base (Gross Salaries) x 28% Rate	$48,339	$48,339	$48,339	$48,339	$48,339	$241,696
							$0
							$0
	TOTAL FRINGE BENEFITS	$48,339	$48,339	$48,339	$48,339	$48,339	$241,696
	Travel						
	In-State Travel	7,000	7,000	7,000	7,000	7,000	$35,000
	Out-of-State Travel	$10,000	$10,000	$10,000	$10,000	$10,000	$50,000
							$0
							$0
							$0
							$0
							$0
							$0
							$0
	TOTAL TRAVEL	$17,000	$17,000	$17,000	$17,000	$17,000	$85,000
	Equipment						
	Program Vehicle	$70,000	0	0	0	0	$70,000
							$0
	TOTAL EQUIPMENT	$70,000	$0	$0	$0	$0	$70,000
	Supplies						
	Office Supplies, desk, phones, printers, etc	$10,000	$10,000	$10,000	$10,000	$10,000	$50,000
	Field Supplies - boots, hats, testing kits, etc	$8,000	$8,000	$8,000	$8,000	$8,000	$40,000
	TOTAL SUPPLIES	$18,000	$18,000	$18,000	$18,000	$18,000	$90,000
	Pre-fabricated homes Consulting (incl in construction costs below)						$0
	Microgrid Feasibility and Design	$25,000	$30,000	$30,000	$30,000	$35,000	$150,000
	Owners Representative	TBD	TBD	TBD	TBD	TBD	$0
	Legal Fees	$40,000	$40,000	$40,000	$40,000	$40,000	$200,000
	PM/Architecture/MEP/Structural/Civil Engineering	$112,000	$37,000	$50,000	$20,000	$10,000	$229,000
	TOTAL CONTRACTUAL	$177,000	$107,000	$120,000	$90,000	$85,000	$579,000
	OTHER						
	Water and sewer upgrades	TBD	TBD	TBD	TBD		$0
	Pre-fabricated homes (fabrication, delivery, erection, fit-out: est. $500,000/home)	$250,000	$3,250,000	$5,000,000	$4,500,000	$2,000,000	$15,000,000
	Sitework Construction	$0	$1,000,000	$3,500,000	$2,000,000	$500,000	$7,000,000
	District Energy: borehole drilling and horizontal loop piping (est. 35 borehole)		$875,000				$875,000
	Solar Array and Microgrid	$0	$0	$4,000,000	$4,000,000	$4,000,000	$12,000,000
	Construction Contingency (15%)	$375,000	$758,750	$1,875,000	$1,575,000	$975,000	$5,231,250
	Vehicle Operations	$5,000	$5,000	$5,000	$5,000	$5,000	$25,000
	Training of Staff	$6,000	$6,000	$6,000	$6,000	$6,000	$30,000
	Meeting Costs	$2,500	$2,500	$2,500	$2,500	$2,500	$12,500
	Equipment Maintenance & Repair	$3,000	$3,000	$3,000	$3,000	$3,000	$15,000
	TOTAL OTHER	$641,500	$5,900,250	$14,391,500	$12,091,500	$7,491,500	$40,188,750
	TOTAL DIRECT	$1,144,479	$6,263,229	$14,767,479	$12,437,479	$7,832,479	$42,445,146
Indirect Cos	**Indirect Costs**						
	Base Amount (863,200) x 25.97%	44834.6	44834.6	44834.6	44834.6	44834.6	$224,173
							$0
	TOTAL INDIRECT	$44,835	$44,835	$44,835	$44,835	$44,835	$224,173
TOTAL FUNDING		$1,189,314	$6,308,064	$14,812,314	$12,482,314	$7,877,314	$42,669,319

H. Reduction Measure Calculations

The team utilized the following calculations to determine GHG emission reductions for:

- Reduction Measure 1: Replace Tribal Owned Fleet Vehicles with Hybrid and Electric Vehicles;
- Reduction Measure 2: Weatherization of Existing Buildings (Residential);
- Reduction Measure 4: Deployment of Large-Scale Renewable Energy Projects (Solar Energy Portfolio);
- Reduction Measure 5: Community Scale Renewable Microgrid.

REDUCTION MEASURE 1: VEHICLE GHG REDUCTION CALCULATIONS

	Vehicles	Est Miles	Est Gallons	mpg	kW/mi	EPS CO2 gm/	kg of CO2	Well to Pump Factor	kg of CO2	metric tonne of CO2e	
Diesel	33	165,600	11,853	14.0		10180	120,664	1.289	155487.0376	155.48704	
Gasoline	115	623,305	37,612	16.6		8887	334,258	1.289	430724.6578	430.72466	
Total	148	788,905	49,465	31		19,067	454,921	3	586,212	**586**	451.25 Inventory

5 Year	25%	Replacement	Vehicles	Est Miles	Est Gallons	mpg	kW/mi	EPS CO2 gm/gal	kg of CO2	Well to Pump Factor	NWPP CO2e (kg) /kW	kg of CO2	metric tonne of CO2e					
		Electric	37	197,226			0.53				0.275	102,252	102					
		Diesel	24.75	124,200	8,890	10.48		7,635	90,498	0.966		116,615	117					
		Gasoline	86.25	467,479	28,209	12.43		6,665	250,693	0.966		323,043	323		455 BAU projection			
		Total	148	788,905	37,099	23		14,300	341,191	2		541,910	**542**	**7.6%**	**Percent Reduction**	420.6146	**7.6%**	34.38538
														25.0%		341.25	**25.0%**	113.75

10 Year	50%	Replacement	Vehicles	Est Miles	Est Gallons	mpg	kW/mi	EPS CO2 gm/gal	kg of CO2	Well to Pump Factor	NWPP CO2e (kg) /kW	kg of CO2	metric tonne of CO2e					
		Electric	74	394,453			0.53				0.275	204,503	205					
		Diesel	16.5	82,800	5,927	6.99		5,090	60,332	0.644		77,744	78					
		Gasoline	57.5	311,653	18,806	8.29		4,444	167,129	0.644		215,362	215		458 BAU projection			
		Total	148	788,905	24,733	15		9,534	227,461	1		497,609	**498**	**15.1%**	**Percent Reduction**	386.2292	**15.7%**	71.77076
														50.0%		230.5	**49.7%**	227.5

20 Year	100%	Replacement	Vehicles	Est Miles	Est Gallons	mpg	kW/mi	EPS CO2 gm/gal	kg of CO2	Well to Pump Factor	NWPP CO2e (kg) /kW	kg of CO2	metric tonne of CO2e					
		Electric	148	788,905			0.53				0.275	409,006	409					
		Diesel	0	-	-	-		-	-	-		-	-					
		Gasoline	0	-	-	-		-	-	-		-	-		467 BAU projection			
		Total	148	788,905	-	-		-	-	-		409,006	**409**	**30.2%**	**Percent Reduction**	325.831	**30.2%**	141.169

REDUCTION MEASURE 2: PRIVATE HOME WEATHERIZATION GHG REDUCTION CALCULATIONS

Average Use Per Month

		kW	Mbtu	Gal Propane	lbs CO2e per kWh	lbs of CO2e per Gal of Propane	lbs of CO2e	Metric Tonnes of CO2e	
Baseline	Electric	873	2.98		0.61		528.85	0.23988	
	Propane (Mbtu)		4.18	45.67		12.68	579.04	0.262649	
	Total	873	7.16	45.67	0.61	12.68	**1107.9**	**0.503**	
						Total Residences	1330	668.364	
						Total Residences in the Program	**363**	182.1694	

Weatherization Heating Savings 30%

		kW	Mbtu	Gal Propane	lbs CO2e per kWh	lbs of CO2e per Gal of Propoane	lbs of CO2e	Metric Tonnes of CO2e	
Proposed just weatherization	Electric	873	2.98		0.61		528.85	0.23988	
	Propane (Mbtu)		2.93	31.97		12.68	405.33	0.183854	
	Total	873	5.91	31.97	0.61	12.68	**934.2**	**0.424**	**16%** per house
						Houses in Program total CO2		153.6059	
						CO2 Reduction		28.56348	
						Total CO2 w Reductions		639.8005	**4%** program

Assumed NG Heating Efficiency 80% average furnace

		kW	Mbtu		lbs CO2e per kWh		lbs of CO2e	Metric Tonnes of CO2e	
Proposed (assuming electric resistance heating)	Electric	873	2.98		0.61		528.8459	0.23988	
	Heating electric	687	2.34248		0.61		415.8759	0.188638	
	Total	1560	5.32	0.00	1.21	0	**944.7**	**0.429**	**15%**
						Houses in Program total CO2		155.34	
						CO2 Reduction		26.82937	
						Total CO2 w Reductions		641.5346	**4%** program

Assumed NG Heating Efficiency 80%

Assumed Heat Pump Avg. Efficiency 3.54 COP average residential heat pump in cold climate

		kW	Mbtu		lbs CO2e per kWh		lbs of CO2e	Metric Tonnes of CO2e	
Proposed (assuming heat pump)	Electric	873	2.98		0.61		528.8459	0.23988	
	Heating electric	194	0.661718		0.61		117.4791	0.053288	
	Total	1067	3.64	0.00	1.21	0	**646.3**	**0.293**	**41.7%**
						Houses in Program total CO2		106.2748	
						CO2 Reduction		75.89458	
						Total CO2 w Reductions		592.4694	**11%** program

REDUCTION MEASURE 4: PRIVATE HOME SOLAR ENERGY GHG REDUCTION CALCULATIONS

Average Use Per Month

		kW	Mbtu	Gal Propane	lbs CO2e per kWh	lbs of CO2e per Gal of Propoane	lbs of CO2e	Metric Tonnes of CO2e
Baseline	Electric	873	2.98		0.61		528.85	0.23988
	Propane (Mbtu)		4.18	45.67		12.68	579.04	0.262649
	Total	873	7.16	45.67	0.61	12.68	**1107.9**	**0.503**

% of electricity from 100% renewal	100%
100% Renewables CO2e/kW	0
Updated lbs of CO2e	0.000

		kW	Mbtu	Gal Propane	lbs CO2e per kWh	lbs of CO2e per Gal of Propoane	lbs of CO2e	Metric Tonnes of CO2e	
Proposed, no fuel change	Electric	873	2.98		0.00		0.00	0	
	Propane (Mbtu)		4.18	45.67		12.68	579.04	0.262649	
	Total	873	7.16	45.67	0.00	12.68	**579.0**	**0.263**	**47.7%**

Assumed NG Heating Efficiency 80%

		kW	Mbtu		lbs CO2e per kWh		lbs of CO2e	Metric Tonnes of CO2e	
Proposed (assuming electric resistance heating)	Electric	873	2.98		0.00		0	0	
	Heating ele	981	3.3464		0.00		0	0	
	Total	1854	6.33	0.00	0.00	0	**0.0**	**0.000**	**100.0%**

Assumed NG Heating Efficiency 80%

Assumed Heat Pump Avg. Efficienc 3.54 COP

		kW	Mbtu		lbs CO2e per kWh		lbs of CO2e	Metric Tonnes of CO2e	
Proposed (assuming heat pump)	Electric	873	2.98		0.00		0	0	
	Heating ele	277	0.945311		0.00		0	0	
	Total	1150	3.92	0.00	0.00	0	**0.0**	**0.000**	**100.0%**

REDUCTION MEASURE 5: GHG EMISSION REDUCTION CALCULATIONS

Northern Cheyenne Tribe

KEY

Denotes cell requiring manual input

BASELINE

Energy						
	monthly use	*unit*	*monthly use*	*unit*	*monthly use*	*unit*
Electricity (1)	873.00	kWh				
Propane (2)	1,225.04	kWh (equiv.)	4.18	MBtu	45.71	gal (equiv.)
Total Energy	**2,098.04**	kWh				

GHG Emissions				
	annual	*unit*	*annual*	*unit*
Total GHG Emissions per Home (3)	**18,811.00**	lbs CO2e	**8.53**	MT CO2e

PROPOSED

NUMBER OF HOMES

Phase 1	**30**

GHG REDUCTION 2025-2030

Energy		
	monthly use	*unit*
Total energy reduction (4)	1,258.82	kWh
Total energy use (4)	839.21	kWh

GHG Emissions					
	annual	*unit*	*annual*	*unit*	
GHG Emissions per Home (3)	11,397.00				
Total GHG Reductions per Home	7,414.00	lbs CO2e	3.36	MT CO2e	**39%**
Total GHG Reductions Phase 1	**222,420.00**	lbs CO2e	**100.89**	MT CO2e	

GHG REDUCTION 2025-2050

Energy		
	monthly use	*unit*
Total energy reduction (4)	1,258.82	kWh
Total energy use (4)	839.21	kWh

GHG Emissions					
	annual	*unit*	*annual*	*unit*	
GHG Emissions per Home (5)	5,698.50				
Total GHG Reductions per Home	13,112.50	lbs CO2e	5.95	MT CO2e	**70%**
Total GHG Reductions Phase 1	**393,375.00**	lbs CO2e	**178.43**	MT CO2e	

NOTES

Note 1: www.eia.gov/electricity/sales_revenue_price/pdf/table_5A.pdf

Note 2:www.eia.gov/consumption/residential/data/2020/state/pdf/ce4.6.lp.st.pdf

Note 3: Emissions calculated via EPA’s Household Carbon Footprint Calculator: https://www.epa.gov/ghgemissions/household-carbon-footprint-calculator

Note 4: Total energy combines total monthly electricity usage (in kWh) with total monthly propane usage (in kWh equivalent). Assumes a conservative 60% efficiency factor for designing to Passive House standards: https://www.phius.org/passive-building/what-passive-building/passive-building-principles

Note 5: Development full build out assumes it is paired with the renewable microgrid after it comes online supplying 50% of the development’s electrical needs with renewable electricity.