

# Rosebud Sioux Tribe

*of the* Rosebud Indian Reservation

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## Priority Climate Action Plan

*RST Climate Pollution Reduction Grant, #5D-96898101*

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*on behalf of the Rosebud Sioux Tribe Environmental  
Protection Office (EPO)*

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# Table of Contents

## **1. Introduction**

- 1.1 CPRG Overview
- 1.2 PCAP Overview

## **2. PCAP Development**

- 2.1 The Tribal/Territorial PCAP Management and Development Team
- 2.2 Approach to Developing the PCAP
- 2.3 Scope of the PCAP
- 2.4 Special Considerations for the Rosebud Sioux Tribe

## **3. PCAP Elements**

- 3.1 GHG Inventory
- 3.2 GHG Reduction Measures
- 3.3 Benefits Analysis
- 3.4 Review of Authority to Implement
- 3.5 Identification of Other Funding Mechanisms
- 3.6 Workforce Planning Analysis

## **4. Next Steps**

# 1 Introduction

## 1.1 CPRG overview

For the Rosebud Sioux Tribe, the Climate Pollution Reduction Grant (CPRG) program is not just about developing and implementing ambitious plans for reducing greenhouse gas emissions and other harmful air pollution, it is an opportunity to establish and build an economy based on Lakota values and beliefs. Our reservation is located in some of the poorest counties in the U.S. Our economy is based on Tribal services, primary education, ranching, and our small casino. A large portion of money spent on the reservation leaves the economy immediately with little opportunity for the money to circulate within our local economy.

For over a decade, the Tribe has understood the impact of and pursued the implementation of renewable energy - now referred to as clean energy - projects. From one of the first large wind turbines in Indian Country to multiple small-scale wind, solar PV, and ground source heat pump projects, RST has aggressively pursued technologies that align with our core values and beliefs. The U.S. government's pivot to a clean energy transition provides RST with the opportunity to build capability and capacity in areas that will promote this transition and build an economy that is based on reduced impact to *Unci Maka* (Grandmother Earth) while maintaining more energy costs within our local economy: essentially building a clean energy economy for rural America.

The CPRG program is a resource to educate our people about the sources and impacts of climate pollution from our Reservation – building an understanding and connection to our culture. In our education and planning process we are training young people in the area of climate pollution, greenhouse gas inventory and clean energy alternatives – building capabilities in sustainable and clean energy technologies. Our intent is to pursue CPRG and other grant programs to implement clean energy and sustainable technology projects using these projects to train our people in these technologies and support the Tribe's transition to a clean energy economy – building capacity.

Our Priority Climate Action Plan (PCAP), as presented in the document, is one of our early and critical steps in this journey. RST sees climate pollution reduction as a foundation to develop and deploy projects. In addition to CPRG implementation funding, the Tribe is also pursuing other Federal and private grants to take a holistic approach to build our new economy. Our approach includes workforce development and support, reliable transportation, business creation, energy resiliency and sovereignty, STEM student recruitment as well as community education and involvement. Lakota culture sees that everything and everyone is connected. Our participation in the CPRG program will help us practice these relationships to heal *Unci Maka* and our people.

## 1.2 PCAP Overview

The PCAP that follows contains a simplified greenhouse gas (GHG) inventory compiled using existing data when possible and estimates for sectors without. We estimate that the Tribe emitted 145,587 metric tons of CO<sub>2</sub> equivalent (CO<sub>2</sub>e) greenhouse gases in 2020. The lack of data was the largest challenge when developing the inventory, and as a result priority measures were chosen based on multiple factors, including quantitative emissions impacts, holistic benefits, proven effectiveness, and implementation-readiness. Our action plan involves projects that address emissions from our greatest

source (transportation) through electric vehicles and charging stations, as well as additional measures that lessen our reliance on external coal-based energy sources by decreasing energy use and measures that increase our ability to generate renewable energy on the Reservation. These priority measures and their benefits are outlined. The Tribe then reviews its authority to implement such measures and identifies other opportunities for funding.

## 2 PCAP Development

### 2.1 The Tribal/Territorial PCAP Management and Development Team

The following organizations and personnel have been integral in developing our CPRG effort and the PCAP;

- Rosebud Sioux Tribe Environmental Protection Office
  - Ivan Crow Eagle, Director
  - John Saams (EES), Project Manager (under contract)
- Rosebud Sioux Tribe, Administration
  - Scott Herman, President
  - Wayne Boyd, Treasurer
- Rosebud Sioux Tribe, Council
  - Shere Plank, Council member
- Sicangu Resource Development
  - Sarah Kills In Water, Lead Grant Writer
- RST Forestry Department
  - Ken Haukaas, Director
- RST Transportation
  - John Charles Arcoren, Director

Our team will expand during development of the CCAP and will also include the following

- RST Land and Natural Resources Committee
- RST Economic Development Committee
- Sicangu Co.
- Sicangu Propane
- Sinte Gleska University
- City of White River, SD
- City of Winner, SD
- City of Mission, SD

### 2.2 Approach to Developing the PCAP

The Rosebud Sioux Tribe leadership identified Environmental Energy Systems LLC, (EES) as a partner to help develop energy projects and pursue funding to implement those projects. EES has been working on the Reservation since its inception in 2019 and has expertise in energy efficiency and clean energy project development, financing, and deployment. EES was approached as a resource to apply for the

CPRG planning grant and helped develop the strategy to prepare the GHG Inventory, PCAP and CCAP as well as help envisioning potential GHG reduction measures.

The Rosebud Sioux Tribe Environmental Protection Office (EPO) does not have an air program and was not fully prepared to implement the requirements of the CPRG program. In addition, the expected grant award amount of \$500,000 was reduced to less than \$400,000 by the increased number of grant applicants. EPO and EES coordinated to revise the proposed budget, prepare the Quality Assurance Project Plan (QAPP), and prepare to develop this PCAP. Due to time and budget constraints, training of Tribal members as outlined in our proposed workplan and a rigorous community engagement plan were not feasible to meet the PCAP deadline. At the request of the Tribe, EES engaged Tribal leadership and stakeholders and leveraged previous community engagement collected during the development of “A Climate Adaptation Plan for the Sicangu Lakota Oyate” in 2022. In addition, the Tribe pursued additional funding for community engagement to make up the original budget shortfall for our CPRG planning effort. On March 26, 2024, the Tribe was informed that our phase 1 submission for the Community Energy Innovation Prize was a winner in the amount of \$100,000. This prize concept was largely focused on supporting community engagement around the Tribe’s CPRG and energy efforts and workforce development. This prize will allow us to expand our community engagement as originally envisioned. One of our early community face-to-face activities will be conducted on April 18 at a homeownership expo sponsored by Tatanka Funds where we will provide information and distribute surveys to expand our engagement with individuals across the reservation.

EES worked with Tribal stakeholders from the Tribal Administration and Council, EPO, RST Transportation Program, RST Forestry Department, Sicangu Nation Employment and Training Program, Sicangu Co, Tatanka Funds and others to understand both the primary GHG emission sources and possible projects that would reduce those emissions and benefit the local economy. The discussions around the CPRG activities held with Tribal Council were live streamed and available for viewing by Tribal members. The Council actions included approval of submissions and passing of resolutions to support the development of this PCAP. In addition, discussions with stakeholders were held to coordinate an overall strategy to integrate the CPRG program into the vision of building the local economy and revitalizing the Lakota culture. Many of these interactions were one on one with some Zoom meetings to meet the tight deadline to produce the PCAP.

Moving into the Comprehensive Climate Action Plan (CCAP) CPRG phases of the project, EES will assist in recruiting and training Tribal members to staff our continued efforts in the EPA CPRG and other programs. In person community engagement around our CPRG and clean energy efforts are targeted to begin in late April or early May. RST intends to continue to utilize EES to help lead and move the CPRG efforts forward. The Tribe will engage the broader public (emphasizing Tribal members, on and off reservation, and non-member residents on the Reservation) through public meetings (in person and virtual) and opportunities for comment. The CCAP will summarize and, where appropriate, incorporate and respond to the feedback received. The GHG inventory developed for the CCAP will be much more detailed and the expected impacts of our envisioned CPRG projects will also be more rigorously developed. We anticipate developing Tribal talent and capabilities to perform the more detailed work required for the CCAP.

A wide array of projects related to climate pollution reduction have been under development by RST departments and businesses for a number of years. The following outlines some of these efforts and the related funding that has been or will be pursued to help implement those efforts;

Forestry-related projects currently funded through various USDA and Forestry programs include;

- Seedling planting (reforestation efforts)
- Sawmill upgrade to enhance our overall forest management work
- Forestry waste to product efforts with the goal to eliminate slash pile burning in the field
- Evaluation of biomass combined heat and power also producing biochar

Renewable and clean energy efforts include

- Establishing our Tribal utility, RESCo
- Building a 149 kW solar PV system through DOE Office of Indian Energy grant
- Deploying heat pump technologies through the DOE BuildingsUP competition
- Community outreach, education and listening sessions around the clean energy transition and how that can be used to revitalize aspects of our Lakota culture through the DOE Community Energy Innovation Prize
- A team of students from the Todd County High School placed second in the Statewide KidWind competition with their wind turbine design
- A planned microgrid utilizing solar and wind power with energy storage. Anticipate applying for funding through DOE
- Drilled two geothermal wells in White River to prove our geothermal resource through a grant from DOI
- A concept to develop our geothermal resource to provide direct heating for buildings and possible power production, submitted to DOE OCED and invited to submit a full application
- Update and pursuit of 100+ MW of wind farms through our economic development corporation Sicangu Co
- Developed a concept for electric bus routes to connect our poorest communities to services and job opportunities. This is our top CPRG opportunity priority.

Related efforts include;

- Installing metering in 12 homes to obtain detailed electric demand and consumption for electric resistance and heat pump HVAC systems funded through DOI EMDP grant
- Establishing a Clean Energy Bank through DOE's Energizing Rural Communities competition to facilitate deployment of clean energy systems and energy efficient upgrades
- Developing strategies to maximize the impact of the investment tax credit for applicable systems
- Engaging with the Native CDFI network to explore the use of New Markets Tax Credits for planned projects
- The development of a Job Accelerator concept based on sustainable technologies
- Submitting to be a host for DOE's Clean Energy Innovator Fellow program
- Developing a plan for electrification through DOI's Tribal Electrification Program

As our efforts demonstrate, RST is taking a holistic approach and pursuing multiple funding methods to make our strategy a reality for our people. We will remain flexible to enable our progress to continue on our journey to a clean energy future. Our top priority focuses on transportation due to the reduced GHG emissions as well as the multiple additional benefits to our poorest communities.

### **2.3 Scope of the PCAP**

The RST occupies land located in the counties of Todd, Mellette, Tripp, Gregory, and part of Lyman in south central South Dakota. These lands comprise 3.2 million acres, of which there are approximately 915,000 acres held in trust. Our climate pollution reduction planning effort as a whole, and this PCAP in particular, will be focused on our Reservation within the bounds of Todd County, but will be done in a way that we can expand our efforts to include all of our Trust Lands and possibly other counties as well.

Our approach is to look at all GHG emissions from our Tribal lands. By doing this, we can assess emissions that if reduced may adversely impact our people or economy and develop strategies that compensate for these emissions in other ways such as sequestration or approaches that reduce emissions beyond our lands.

### **2.4 Special Considerations for the Rosebud Sioux Tribe**

As stated previously, the lack of any existing GHG inventory and limited related data meant that the inventory developed for the purpose of this PCAP would be inherently limited. This had to be taken into account when evaluating the inventory itself, as well as any measures chosen based on it. While data was limited, our knowledge of Tribal circumstances also steers our efforts. For example, even prior to our GHG inventory we were aware of the need for transportation emissions reductions; a characteristic of Reservations is the long distances of driving required for even basic activities, which, paired with older vehicles due to poverty, logically results in high emissions that could be offset. Many sources of emissions due to activities on Tribal land are also indirect, such as purchased electricity and imported water. Quantifying these impacts and addressing them has additional complications. However, the Tribe has years of experience with past measures related to climate change including the development of “A Climate Adaptation Plan for the Sicangu Lakota Oyate” –2022 and the Rosebud Sioux Tribe Strategic Energy Plan – 2015. We have been pursuing projects on multiple fronts for years, including solar and wind power generation. In this way the CPRG and this PCAP are a logical next step for our Tribe.

This PCAP is not only informed by our Lakota culture and beliefs; our efforts are meant to be a living application of those beliefs. An example of this is our approach to ground source heat pumps. A large portion of our Reservation lies above the Ogallala Aquifer, which is being depleted at an ever-increasing rate. Because of this, RST has restricted drilling into or through the aquifer. Balancing the protection of the aquifer and maximizing the use of ground source heat pumps could have been seen as in conflict, however, our approach was to adopt horizontal ground loops to avoid potential harm to the aquifer – taking our beliefs and seeing the connections and coming to an approach that best serves our people and Unci Maka.

Another special consideration is the status of our economy and people. Addressing GHG emissions and the clean energy transition can also revitalize our economy, create hope for our youth and revitalize our



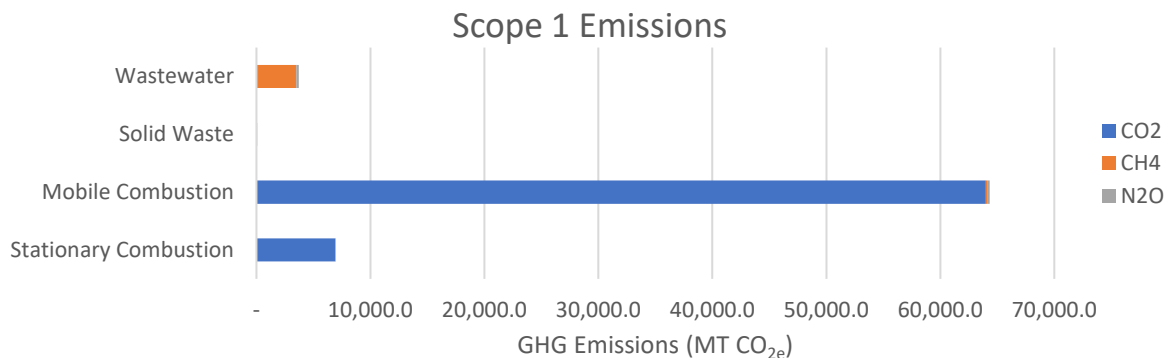


3	Water Use	1,852.0	5.5	7.5	-	-	-	1,865.1	1.3%
	Waste Production*	-	-	-	-	-	-	-	-
	Agriculture	-	60,662.4	-	-	-	-	60,662.4	41.7%
	Fires	7,236.4	756.7	-	-	-	-	7,993.1	5.5%
	<b>Total Emissions</b>	<b>79,991.5</b>	<b>65,098.0</b>	<b>497.3</b>	-	-	-	<b>145,586.7</b>	<b>100%</b>

Our estimates show that the Tribe emitted 145,587 metric tons of CO<sub>2</sub> equivalent (CO<sub>2</sub>e) greenhouse gases in 2020. The two largest sources of GHGs were mobile combustion and agriculture, at 44.2% and 41.7% of total emissions respectively. The largest potential sector missing from our data was electricity use, which is a priority for the comprehensive CCAP and its inventory.

### Scope 1

Direct sources of emissions from within Todd County are categorized under Scope 1: stationary combustion, mobile combustion, solid waste, and wastewater.



#### Stationary Combustion

An estimated 80% of households on the reservation use propane. Due to the lack of site-specific data, propane usage was estimated by applying the average propane usage of propane-using households in South Dakota in 2020 (US Energy Information Administration, Annual household site propane end-use consumption by state, averages 2020) to the number of households in Todd County estimated to use propane (based on US Census data, 2020). At 627 gallons of propane per household in 80% of 2,407 households, we estimate that stationary combustion results in 6,929 MT CO<sub>2</sub>e a year.

#### Mobile Combustion

A comprehensive account of mobile emissions sources in Todd County were available from the 2020 National Emissions Inventory. The NEI data showed that mobile on-road and nonroad processes were responsible for 64,355 MT CO<sub>2</sub>e of GHG emissions. The majority (74.4%) of these were emitted by on-road vehicles- primarily non-diesel passenger cars and trucks.

### **Solid Waste**

There is one landfill on tribal territory in Todd County. As of 2013, its maximum capacity was 20 tons of waste per day, which was exceeded by the Tribe. Using the California Air Resource Board Landfill Emissions Tool, this was used to estimate the emissions in the absence of any greenwaste or sludge cover. We estimate solid waste disposal within tribal bounds results in 72 MT CO<sub>2</sub>e per year, primarily in the form of methane.

### **Wastewater**

The majority of the population of Todd County is served by wastewater lagoons. Due to the lack of in-depth information available on their processes, individual populations served, and number of septic users, emissions due to wastewater treatment were calculated using the TGHGIT in a simplified manner, assuming maximum emissions from anaerobic facilities without nitrification/denitrification. The total annual GHG emissions due to wastewater are estimated at 3,730 MT CO<sub>2</sub>e. It is also the primary source of nitrous oxide that was calculated, at 237 MT CO<sub>2</sub>e.

### **Scope 2**

There is not data available for the Tribe's Scope 2 emissions, which are related to the use of grid-derived energy consumption. Within Todd County, electricity is provided by the local energy cooperative Cherry-Todd, which itself receives power from Basin Electric. Though we have been unable to quantify the energy consumed by the Tribe for the purposes of the PCAP, we have taken into account what we do know about current sources of electricity. Our local electrical cooperative sources power from Basin Electric, which generates 44.1% of its output from coal, 19.8% from natural gas, 3.4% from oil, with the remainder being primarily wind and other assorted sources (Basin Electric Annual Report, 2019). This makes limiting the amount of electricity purchased and pivoting to our own renewable electricity generation key to limiting emissions.

### **Scope 3**

Indirect emissions from activities within the Tribe's boundary, including water use, agriculture, and fires, are included under Scope 3. There was insufficient data to estimate emissions due to waste produced and exported out of tribal boundaries, or any other additional sources.

### **Water Use**

The Tribe imports almost all of its water, with the exception of some wells. In the absence of specific data, the quantity of water imported was calculated using the Tribe's allotment of 127 gallons per person per day, as well as the allotment of 12.5 gallons per head of cattle per day, for a yearly estimate of 743.8 million gallons imported. Using the TGHGIT, we estimate approximately 1,865 MT CO<sub>2</sub>e of greenhouse gas emissions to arise from this practice.

### **Agriculture**

The primary agricultural operation on the reservation is ranching. Per the USDA National Agricultural Statistics Service, in 2020 there were 68,000 heads of cattle within Todd County, 37,000 of which were beef cows. Using the EPA's State Greenhouse Gas Inventory Tool Agriculture Module, and assuming all other cattle produced emissions in line with that of the average beef replacement heifer, we were able

to approximate the methane emissions due to enteric fermentation (60,662 MT CO<sub>2e</sub>). Additional data will be needed to account for emissions due to other practices, such as manure management and fertilizer usage. However, even without taking these sources into account, agriculture remains one of the largest sources of GHG emissions on the Reservation due to enteric fermentation alone.

### **Fires**

The NEI contained data regarding both prescribed fires and wildfires within Todd County, amounting to 7,993 MT CO<sub>2e</sub> in the year 2020.

## **3.2 GHG Reduction Measures**

The following Priority GHG Reduction Measures are the focus of the Rosebud Sioux Tribe's PCAP. All of our priority measures have been part of the Tribe's long-term efforts to maximize the use of renewable energy and minimize our impact on Grandmother Earth. This is the primary reason they have been included in our PCAP. We did not have sufficient time to develop a robust enough GHG inventory to confidently identify additional measures, so relied largely on our previous work to participate in the clean energy transition promoted by this Administration.

Our GHG inventory work shows that, partly due to the EPA PCAP accounting guidelines, the majority of the GHG emissions on the Reservation are from agriculture (cattle ranching) and transportation. As we noted in our workplan and in the description of our economy, ranching is an important industry for both maintenance and growth of our economy. As such, additional research and community engagement will be necessary for the Tribe to address those emissions without adversely impacting our economic stability. Instead, we will focus on measures in other sectors.

The following five Priority GHG Reduction Measures focus on non-agricultural GHG emissions. Of the remaining (non-agricultural) emissions, 75.8% are estimated from vehicle emissions, 8.2% are estimated from building fossil fuel use, and an unknown percent are from building electricity use. Their benefits often intersect, with multiple measures supporting each other by reducing current emissions and preventing new emissions sources from arising by turning to renewable energy when possible.

### **Priority Action 1: Renewable EV Charging Stations Supporting EV Bus Routes and a New Tribal PHEV and EV Fleet**

Our highest priority GHG reduction measure is an example of our holistic approach to GHG reduction, while addressing one of our highest known emissions sources (mobile combustion). Tribal services and most job opportunities are located in the towns of Rosebud and Mission. Some of our poorest communities are located over 20 miles from one or both of these areas. In order to create a reliable transportation option for Tribal members in these communities, the Tribe is interested in piloting two bus routes that would utilize electric buses. In addition to the buses, at least three EV charging stations will also be required. The Tribe's vision for these charging stations is that they would be powered from solar and wind generation at the EV charging station. These Charging stations would be owned and operated by RESCo, our new Tribal utility. This priority action addresses GHG reduction, but also expands access to services and job opportunities to our poorest communities. The bus routes will create

new jobs for bus EV operators and maintainers, as well as jobs to build and maintain the charging stations.

This priority action would also have follow-up actions to expand the use of EVs on the Reservation through expansion of the EV charging network and conversion of portions of the Tribal vehicle fleet to EVs.

The planned short-term implementation involves two electric bus routes covering approximately 360 and 495 miles per day, each with a capacity of 20 people. At full capacity, this could replace a maximum of 6,241,500 passenger vehicle miles driven per year, or approximately 2,274 MT CO<sub>2</sub>e of GHGs. We estimate that the buses will typically have between 2 and 5 passengers, which would still result in 303 MT CO<sub>2</sub>e of GHGs. While the buses use approximately 1kWh per mile driven, our plan to use renewable energy for charging stations prevents this from offsetting the benefits with additional emissions. Further electrification of vehicles on the Reservation would contribute further to reducing the impact of our largest emissions source: transportation. We plan to measure the efficacy of these efforts by tracking bus usage as well as passenger vehicle miles driven annually.

### **Priority Action 2: Community-Scale Resilient Micro-Grid System Powered by Renewable Systems**

Currently the Rosebud Sioux Tribe depends on electricity provided by the local electric cooperative, Cherry-Todd. Cherry-Todd sources power from Basin Electric, which is approximately 20% wind with limited-but-increasing solar, but primarily relies on coal. The Tribe has a history of trying to deploy renewable electric systems, both wind and solar PV, with mixed success. The most recent effort was to deploy a 149kW solar PV system to power 17 Tribal homes in our Sicangu Village community. Changing interconnect requirements have created barriers to making that system operational. The Tribe has developed a strategy to establish a Tribal utility and deploy resilient community microgrids to overcome these barriers and eliminate most of our GHG emissions resulting from electric consumption. The microgrid concept will be piloted using the existing 149kW solar PV system and adding small wind generation, battery energy storage system and upgrades to the housing as described under our electrification Priority Action 4. RESCo, the Tribal utility has been created to lead the pilot microgrid effort and then replicate it across our communities and operate those microgrids as our own Tribal utility. The solar PV system alone could offset as much as 218,000 kWh per year (NREL's PVWatts Calculator) or 97.5 MT CO<sub>2</sub>e of GHGs (per TGHGIT) from purchased electricity and stationary combustion, with additional measures contributing to both further reductions and stability of the system overall. This decrease in grid-sourced power should be a reliable metric for our success, and other projects under this measure can be tracked similarly.

The resilient and renewable microgrid strategy will result in a higher level of energy sovereignty, increased resilience, and create jobs while keeping a larger portion of electric bill revenue within our local economy. The pilot project for this priority action is the basis for a DOE Office of Indian Energy grant application. Should that application be awarded, this pilot project will serve as the model to replicate this across our various communities. The severe winter conditions during the winter of 2022/2023 showed us how important energy resiliency is for our communities. During an extended period of time that winter, road access was blocked which prevented propane deliveries and other basic

services. Resilient microgrids will eliminate the need for propane and provide local power resources to ensure operations during the severe weather conditions that we experience in South Dakota. The Rosebud Sioux Tribe, and its members on the Reservation live in an Environmental Justice Disadvantaged Community, as identified by the EPA.

### **Priority Action 3: Create a New Energy Efficient Community at Keya Wakpala Woicageyapi**

A long term project of Sicangu Co, the Tribal economic development corporation, has been the development of a new community, Keya Wakpala Woicageyapi. The first home in this development is nearing completion. Sicangu Co has proposed developing new, highly insulated, high-performance, affordable homes for community members. The home designs would respond to the specific needs of the Rosebud Reservation in several ways, including but not limited to:

- High performance, easily built homes to provide the most economically feasible response to the demands of the South Dakota area climate extremes.
- Tribal members' needs would be considered to create housing types that allow for multi-generational families to share a safe, healthy, warm home.
- High efficiency heating and ventilation systems will be used to minimize energy use.
- Develop community amenity and business facilities to provide services and jobs for the new community.
- Apply lessons learned from our community microgrid development to build the community from the ground up as a microgrid, with similar emissions reductions.

### **Priority Action 4: Electrification and Renewables for Existing Homes on the Reservation**

As part of our microgrid development, we learned early on that there is a need to convert to heat pump technologies. The technology best suited for our climate is ground source heat pumps where we propose to utilize community ground loops. The standard practice on the Reservation is to provide some form of electric resistance heating, either baseboard units or electric resistance emergency heat as backup for propane or air to air heat pumps. Widespread use of electric resistance heating is a threat to the stability of small microgrids by imposing excessive demands when renewable generation may be low. Instead of oversizing the battery and microgrid systems, the Tribe previously chose to move towards heat pump technologies. As part of that effort, RESCo has entered and won the first phase of the BuildingsUP competition that focuses on electrification of homes. RESCo also partnered with Tatanka Funds to win the first phase of the Energizing Rural Communities prize to establish a clean energy bank to facilitate financing of energy efficiency and renewable energy projects. Our efforts in this area make residential electrification an actionable priority action for our PCAP. Our future efforts in electrification will begin to account for the GHG impact of these projects and prize competitions we have won.

Our short-term plan for electrification would see us electrifying 250 homes within the first five years, which could reduce our stationary combustion emissions by over 10%. By pairing with our microgrid efforts, we can again prevent offsetting this benefit by using new renewable energy to support this electrification without relying on our current primarily coal-generated power from outside electric generation. The ultimate long-term goal is to fully electrify all houses on the Reservation, virtually

eliminating emissions from stationary combustion. We will track displaced propane and reduction in electricity consumption as this progresses.

In addition to electrification, a number of small wind and solar PV systems have been installed at homes over the past 20 years. Many of these systems have not been properly maintained and as a result are not operating properly. A key part of our strategy is to train people to properly install, maintain and repair these systems to ensure they deliver their intended benefit. Once these capabilities are established, we see expanding the use of these systems both on and off our Reservation, especially where community microgrids may not be feasible. We will be able to measure their usage in comparison to the resulting reduction in purchased grid-sourced electric.

### Priority Action 5: Weatherization and Envelope Upgrades of Existing Homes

Another aspect of our work in developing microgrids is the attention to weatherization and how best to address our older housing inventory with 2x4 construction. We see the combination of resilient/renewable microgrids, electrification of homes and finally weatherization/envelope upgrades as a necessary, integrated approach to minimize energy use and therefore GHG emissions. This approach also creates a larger number of new jobs that can be used locally at first, but then sold as services across our region as we demonstrate the benefits of this approach. Studies into past weatherization programs, such as the federal Weatherization Assistance Program, show that such measures can save between 10 and 20% on energy. More specifically quantifying this reduction in our case is difficult to the lack of a baseline for energy consumption. However, an ongoing project is measuring the energy consumption of 12 homes with various heating system technologies to develop a model to represent a typical home on our Reservation. We will use this baseline and post-weatherization annual energy and fuel use to quantify our success.

## 3.3 Benefits Analysis

Estimated Emissions of Co-Pollutants (tons)						
Ammonia	CO	Nitrogen Oxides	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	VOCs
1,543.5	2,502.0	524.5	2,363.4	523.0	7.7	6,685.8

As with the GHG inventory, analysis of hazardous air pollutants and criteria air pollutants is currently limited by the lack of data available. The above table estimates overall emissions based on what was available in the 2020 NEI for Todd County. Knowledge of base year emissions is also key for accurately estimating the reduction possible based on our priority measures, so additional research is necessary to provide a more precise image in the CCAP.

Our electric vehicle priority measure will primarily address carbon monoxide and nitrogen oxide emissions. Mobile sources contribute the most to these pollutants, and an overall 10% electrification of vehicle miles driven on the Reservation could reduce them by 250 and 52 tons respectively.

The microgrid, electrification, and weatherization measures all work together to decrease the use of and emissions from both stationary fuel combustion and purchased electricity. While we can't currently quantify the latter, we can say that purchasing less of mostly coal-generated power will overall contribute to decreases in related emissions; coal combustion contributes majorly to emissions of nitrogen oxides, particulate matter, and sulfur dioxide. Based on the NEI data, our long-term goal of nearly eliminating stationary combustion would reduce emissions by 1.1 tons of ammonia, 151.9 tons of carbon monoxide, 12.0 tons of nitrogen oxides, 23.5 tons of particulate matter, 1.7 tons of sulfur dioxide, and 22.8 tons of volatile organic compounds annually.

All measures include air quality benefits such as GHG and CAP emissions reductions, but they also all work together to shift the economy of the Tribe towards one that is supported by clean energy, which in turn creates more job opportunities and project opportunities to further these goals. These benefits are part of a long-term shift in moving towards a greener overall system.

### **3.4 Review of Authority to Implement**

The Rosebud Sioux Tribe, as a sovereign, federally recognized Indian Tribe organized pursuant to the Indian Reorganization Act of 1934 and pertinent amendments thereof has the authority to enact GHG reduction measures on the Rosebud Reservation and off Reservation Trust lands. The Rosebud Sioux Tribal Council (Council), is empowered under the Tribe's constitution to enact ordinances and resolutions. The Tribal Council has been actively involved in approving the pursuit of projects that are directly related to this PCAP and that reduce GHG emissions. Moving forward, the Council will pass resolutions to support pursuit of grant funds for the projects outlined in the PCAP and projects later included in the CCAP. When funds are won or identified (e.g., grant or loan funds), the Council will then approve acceptance of those funds along with assigning responsibility for the implementation of the project and approvals to move forward into implementation. Responsibility normally lies with a Tribal Department established by Council. Where a project occurs within the Rosebud Sioux Reservation for the benefit of the Tribe's members the Tribe, its Council, and its governmental departments have broad authority to carry out the measures included in this PCAP.

### **3.5 Identification of Other Funding Mechanisms**

For the past year, RST has been increasing our focus on identifying and obtaining various sources of funding to move forward with our plans to build our economy through the application of a clean energy transition. The Tribe has a monthly review of available grants, prizes and other funding that is reviewed and compared to our overall community priorities. We apply our belief that all things are connected to funding are too numerous to list. However, the following categories are reviewed and have been pursued for various efforts. These include;

- Various DOE programs around clean energy including solar PV, Wind and geothermal as well as workforce development and training opportunities.
- The HeroX American-Made Challenges such as BuildingsUP and Energizing Rural Communities, two competitions that we have been successful in the first phase and are continuing to pursue follow on Prizes as we advance our goals.

- DOT grants around transportation
- DOL grants around pre-apprenticeship, apprenticeship, and training programs
- DOJ grants around reintroduction of incarcerated individuals into the community as well as training programs to reduce recidivism (by focusing on sustainable technologies that tie to our other programs)
- USDA programs around rural businesses and energy programs
- USDA Forest Service grants and programs to introduce youth to forestry work and to maintain the health of our forests (using traditional knowledge and approaches) as well as find new uses for forest residue that reduce emissions
- Treasury programs to monetize tax incentives and promote the growth of our emerging CDFI by developing programs and funding for clean energy loans
- State programs around apprenticeship and training
- Various private foundation grants around the many aspects of our approach and building connections between those efforts to maximize impact

Our approach will maximize the overall impact of each dollar we invest, with the thought of how that investment will benefit the next seven generation or more. This approach ensures any investment in RST in the form of grants or prizes will have lasting and meaningful impacts.

### 3.6 Workforce Planning Analysis

Early on in the development of our strategy around the IRA and BIL opportunities, RST leadership realized that developing our capabilities and capacity had to be integrated into all approaches that we pursue. This concept was included in our CPRG workplan and is still seen as an important aspect of our future work in developing the CCAP. As our emerging CDFI pursued a job accelerator grant there was a realization that there was a step needed before workforce development where many grants and efforts focus. Worker preparation is a critical step to engage our youth and community members that have lost hope before we can have a pool of workers to engage in workforce development. A key part of this worker preparation is community engagement to make as many people as possible aware of the opportunities that this work is and will continue to create. RST is coordinating among various entities to build a program that will work across all of our efforts to bring workers to the opportunities that we create with our efforts.

## 4 Next Steps

Upon completion of the PCAP, our efforts will be focused on two areas, recruiting and training staff to develop the CCAP and preparation of our grant application for implementation funds. The aggressive timelines outlined in the CPRG program require that we maintain focus to move our priorities and make the planned impacts. RST looks forward to continuing our work with EPA and building a successful CPRG program that can be a model for rural America.