Hopi Nation Priority Climate Action Plan (PCAP)

1. Background

The Hopi Tribe is a federally recognized Tribe with a Reservation encompassing more than 1.5 million acres in a remote area of northeastern Arizona. Approximately 14,390 Tribal members live on and off the Hopi Reservation. Tribal members living on reservation reside within 14 residential communities or villages. The majority of these residents live along the State Highway 264 corridor in villages near or on First, Second, and Third Mesas. However, four outlying communities exist – Spider Mound (Yu Weh Loo Pahki) and Keams Canyon to the east, and to the west the Villages of Upper and Lower Moenkopi located adjacent to the Navajo community of Tuba City.

Tribal Government has existed for many hundreds of years before the founding of the United States. Hopi governmental authority was traditionally exercised at the local Village level through religious leadership and clans. While the United States has insisted on dealing with the Hopi as if they were a single Tribe, the Hopi Tribe is a union of self-governing Villages. The concept of "Hopi" has historically indicated a culture, but not a governmental entity. The traditional Hopi Villages were ruled by clan theocracies. A few Hopi villages continue the traditional form of Village administration, which includes a leader - *kikmongwi* - from a specific clan. Each Village has its own social, religious, and political organization. There are significant structural similarities between most Villages. Hopi clans are matrilineal. Each of the clans has its own ceremonies and its own history.

The Hopi Tribe has an isolated electrical system, which is subject to reliability issues. A 69kV transmission line runs into the reservation, ending at the Keams Canyon substation. From the substation, two 21kV feeder lines run east and west to serve the Hopi villages. From these distribution lines, smaller lines run into communities or connect to individual loads. The U.S. Department of Energy (DOE) estimates that 35% (~878) of Hopi households do not have access to electricity. Hopi households that do have grid-electricity are connected to a single radial 21 kV electric line that provides notoriously unreliable service, leading to frequent and extended power outages. For the past 40 years, the Tribe's economy has been driven by coal-related operations. However in 2019, coal-related operations ended abruptly with the closure of the Navajo Generating Station (NGS) and the associated Kayenta Mine. This led to significant job loss and an 85% reduction in the Tribe's revenue. As a result, improving electricity access and reliability, promoting quality local employment, enhancing energy sovereignty, and reducing the burden of energy bills are major priorities for the Hopi Tribe. One of Hopi Tribe's major goals for their climate action planning process under the Climate Pollution Reduction Grant (CPRG) program is to identify the Tribe's major sources of greenhouse gas (GHG) emissions and then use this information to support the development of renewable energy to foster energy sovereignty for Hopi people in a way that respects and honors cultural traditions while addressing longstanding energy inequities.

1.1. CPRG overview

The Climate Pollution Reduction Grant (CPRG) program, implemented under the Inflation Reduction Act of 2022 (IRA) and administered by the U.S. Environmental Protection Agency

(EPA), was designed to help tackle climate pollution, support job creation, lower energy costs, address environmental injustice, and reduce harmful air pollution. The CPRG supports the development and expansion of state, territorial, tribal, and local climate action plans and the implementation of investment-ready policies, programs, and projects to reduce GHG emissions. This Priority Climate Action Plan (PCAP) is a key piece of the Hopi's broader resilience and preparedness priorities and is a contingent step to address the impacts and risks of climate change on the Tribe. This PCAP will also support the Tribe's transition towards more reliable and renewable sources of energy, while also providing economic development opportunities for the Tribe.

1.2. PCAP Overview

This PCAP incorporates the required elements as defined by the EPA CPRG program, including:

1) a simplified GHG inventory focused on Hopi tribal government operations;

2) the identification of near-term, high-priority, implementation-ready measures for reducing GHG emissions;

3) quantification of anticipated GHG emission reductions associated with each identified measure;

4) a co-benefit analysis (when applicable) that includes a qualitative and/or quantitative estimate of co-pollutant reductions associated with each near-term implementation-ready measure; and

5) a review of authority to implement each GHG reduction measure.

The GHG inventory was performed using the EPA's Tribal Greenhouse Gas Inventory Tool for Governmental Operations. A majority of Hopi's near-term, high-priority, implementation measures are focused on renewable energy to address long-standing energy reliability and inequity issues for the tribe.

1.3. Approach to Developing the PCAP

The Hopi Utilities Corporation (HUC) is a tribally chartered corporation wholly owned by the Hopi Tribe, and has the broad authority to own, manage, and operate water and electric power on the Reservation for the benefit of the Tribe and its People. HUC is responsible for the Hopi Tribe's PCAP under the EPA's CPRG program. HUC contracted the Carbon Accounting, Reporting, and Management Lab (CARML) at Northern Arizona University to create the simplified GHG inventory for this PCAP with a focus on emissions associated with tribal government operations. CARML also worked with HUC to quantify the emission reductions for each of the Tribe's high-priority, near-term, implementation-ready GHG emission reduction measures. The measures identified in this PCAP originate from HUC and the Hopi Tribe.

1.4. Scope of the PCAP

The GHG inventory for this PCAP covers scope 1 and 2 emissions associated with tribal government operations for the base year of 2022. Due to time and staff constraints, some data was unavailable during preparation of this document. When data was unavailable,

missing information was gap-filled using reasonable modeling approaches and proxy data. Any gap filling of data (where applicable) is described in detail below. A more comprehensive, community wide GHG inventory will be included in the CCAP phase. All GHG emission calculations were completed using the EPA's Tribal Greenhouse Gas Inventory Tool (TGIT) for Governmental Operations.

2. Greenhouse Gas (GHG) Inventory

The following GHG inventory is for Hopi Tribal Government operations, meaning those assets owned and operated by the Hopi Tribal Government. Emissions are broken down by emission scope and source. No quality assurance (QA) assessment was performed on the emissions reported below due to a lack of independent, reliable, and relevant emissions data to compare against. The closest emissions estimates for comparison are at the county level, The Hopi Reservation is located in parts of Coconino and Navajo Counties, both of which include a portion of the Navajo Nation in addition to medium-sized population centers in a different climate zones (e.g., Hopi - high desert; Payson - ponderosa forest). Therefore, county-level data are not very representative of Hopi Tribal Government operations which are likely to have unique fuel and electricity use patterns.

Exclusions and limitations of this GHG inventory are as follows:

- **Solid waste** - All solid waste is transported off reservation for disposal. The Hopi Tribe does not own or manage a landfill on Tribal lands. No information was available on the amount of solid waste generated by Tribal Government operations. Therefore, solid waste handling and disposal was not included within the scope of this GHG emissions inventory. Solid waste data will be identified and collected in the CCAP phase.
- **Waste water** - The Hopi Tribe relies exclusively on septic and lagoon systems. The resulting waste from septic tanks and lagoons is taken off Tribal lands for processing. This results in scope 3 emissions for the Hopi Tribe. However, data was not available to include this source of scope 3 emissions in the PCAP. Waste water data will be identified and collected in the CCAP phase.
- **Agriculture & Land Use** - Agriculture & land use was not considered as part of this GHG inventory as this category of emissions / sequestration is not relevant to Tribal Government operations and therefore not considered material.
- **Urban Forestry -** Urban forestry was not considered as part of this GHG inventory as this category of emissions / sequestration is not relevant to Tribal Government operations and is not considered material.

A majority (79%) of calculated emissions from Tribal Government come from Scope 1

Total Hopi Tribal Government Operations Emissions (MT CO_2e)					
	CO_2	CH_4	N_2O	Total MT CO_2e	Percent of Total

Scope 1	1,826.55	6.94	49.42	1,882.90	79%
Scope 2 - Location Based	492.16	0.87	1.11	494.15	21%
Total Net Emissions	**2,318.71**	**7.81**	**50.53**	**2,377.05**	**100%**

A majority (72%) of Scope 1 emissions come from the Tribal fleet.

Emissions by Source (MT CO_2e)					
Source	**CO_2**	**CH_4**	**N_2O**	**Total**	**Percent of Total**
Stationary Combustion	172.18	0.23	0.44	172.84	7%
Mobile Combustion	1,654.37	6.71	48.98	1,710.06	72%
Electricity - Location Based	492.16	0.87	1.11	494.15	21%
Total (Net Emissions)	**2,318.71**	**7.81**	**50.53**	**2,377.05**	**100%**

2.1. Scope 1 - Direct Emissions

2.1.1. Stationary

Due to lack of direct consumption data, the stationary emissions are based on modeled estimates of fuel consumption in Tribal governmental buildings and assets. Tribal government buildings use propane as a stationary energy source for heating. Each tribal building location owned and operated by tribal government was assigned a Commercial Building Energy Consumption Survey (CBECS) building type (i.e. Administrative or Professional, Government, Highschool etc). Using a combination of building usage information from CBECs, actual electricity consumption data by building, and fuel consumption intensity metrics by building use type from CBECs, total building MMBtu of propane usage was estimated. The approach is was as follows:

1. Using CBECS table *C22, Electricity consumption totals and conditional intensities by building activity subcategories,* the kilowatt hour (kWh) per square foot (sq ft) rate was identified for each building type.
2. The total square footage of each building was estimated by combining the CBECS electricity intensities for each building type with actual electricity consumption by building obtained from APS.
3. Using CBECS table *C12, Sum of major fuel consumption totals and gross energy intensities by building activity subcategories,* the intensity factor in million British Thermal Units (MMBtu) / sq ft for each building type was identified.

4. The total building MMBtu usage (which includes electricity) was estimated using the square footage derived from (2) and the energy intensity factor from (3).
5. The MMBtu associated with electricity consumption was subtracted out and the total MMBtu left for each building was allocated to propane.
6. Finally, using an average heat content of propane from The Climate Registry the total gallons of propane consumed for each building was estimated and used in the TGIT to estimate stationary combustion related emissions.

Stationary Fuel and Energy (MMBtu) Use by Department		
Department	**Gal (propane)**	**Energy Use (MMBtu)**
Government / Tribal	30,095	2,739
Total Stationary Combustion Energy Use	30,095	**2,739**

Emissions by Department (MT CO_2e)				
Department	**CO_2**	**CH_4**	**N_2O**	**Total**
Government / Tribal	172	0	0	173
Total Stationary Combustion Emissions	**172**	**0**	**0**	**173**

2.1.2. Mobile

GHG emissions associated with mobile sources were computed using total tribal government purchase of gasoline and diesel fuel, as well as a list of on-road vehicles in the Hopi Tribal Government's fleet.

To determine the average miles per gallon (MPG) for each vehicle, the following steps were taken:

1. The average MPG based on the make, model, and year of each vehicle was checked using fueleconomy.gov.

2. If fueleconomy.gov didn't have the necessary information. These averages were based on MPG data provided in the Tribal Government Inventory Tool (TGIT).

Once the MPG values were obtained, the vehicles were sorted into specific types:

(a) Passenger Cars;

(b) Light Trucks *(including vans, pickup trucks, and SUVs)*; and

(c) Utility and Recreational Equipment.

The gallons of gasoline and diesel purchased in the inventory year (2022) were allocated evenly across all vehicles of the respective fuel type. This allocation was used to calculate an average vehicle miles traveled (VMT) based on the calculated or provided MPG.

Finally, the vehicles were grouped and the VMT was summed for each group for calculating non-CO_2 emissions based on vehicle year, vehicle type and fuel type.

Energy Use by Department and Fuel Type (MMBtu)			
	Gasoline	**Diesel**	**TOTAL**
Tribal Fleet	19,565	3,789	23,354
Total	**19,565**	**3,789**	**23,354**

Net Emissions by Department (MT CO_2e)				
	CO_2	**CH_4**	**N_2O**	**TOTAL**
Tribal Fleet	1,654.37	6.71	48.98	1,710
Total Mobile Emissions	1,654.37	6.71	48.98	**1,710**

2.2. Scope 2 - Indirect Emissions from Purchased Electricity

Electricity usage was gathered from Tribal Government account level activity from the only utility which serves the Tribe, Arizona Public Service (APS). The Tribe is in the AZNM eGrid region and this was the emission factor used in GHG emission calculations.

Electricity Use by Department (in kWh)	
Department	**kWh**
Government / Tribal	1,323,760
Total Electricity Use	**1,323,760**

Emissions by Department (in MT CO_2e)				
	CO_2	**CH_4**	**N_2O**	**Total**
Government / Tribal	492.16	0.87	1.11	494.15

Total Emissions from Electricity Use	**492.16**	**0.87**	**1.11**	**494.15**

2.3. GHG Reduction Measures and Benefits Analysis

Recall the U.S. DOE estimates that 878 homes, or 35% of Hopi households, do not have access to electricity. Of these, approximately 280 unelectrified homes are located within 2,000 feet of the single APS distribution line that provides service on the reservation, meaning they may qualify for the free APS utility service line extension program recently approved by the Arizona Corporation Commission; however many of these homes have obstructions between their property and the utility line that prevent line extensions. Meanwhile, cost estimates for a service line extension for homes beyond 2,000 ft of the distribution line conservatively start at $30,000 – more than 75% of the median Hopi household income – and rapidly increase with distance, making this an nonviable option for most households. These off-grid homes have little, if any, chance of electrification without significant financial assistance. Nearby, Hopi households that do have grid-electricity are connected to a single radial 21 kV electric line that provides notoriously unreliable service, leading to frequent and extended power outages. These facts highlight what is well known on the Reservation – Hopi community members suffer from extreme energy poverty.

One major priority for the Hopi Tribe is to improve the reliability and cost efficiency of energy services on the Reservation, along with developing and managing the Tribe's own energy resources in a sustainable manner. The Hopi Tribe has commissioned a number of renewable energy feasibility studies and plans, including a recent feasibility study to ascertain the potential to develop a Tribally owned and managed power utility company under HUC (Hopi Utility Corporation). The Tribe currently receives less than reliable power from APS over a single 69kV transmission line that services the reservation and two 21kV feeder lines that run east and west to serve the Hopi villages from Kearns Substation.

As mentioned above, the Hopi Reservation is located in one of the best solar resource regions in North America. Hopi communities enjoy more than 270 days of sun per year. This is a premium solar resource area that is perfectly suited for residential-serving solar deployment. With this in mind, HUC and the Hopi Tribe have identified priority measures that involve deploying solar and battery storage systems to deliver 24/7 power to off-grid households and low-income, grid-connected households on the Reservation. Additionally, HUC and the Tribe intend to develop more than 400 MW of utility scale solar to be exported to metro areas around the region. Details for each PCAP priority measure, including both the quantification of GHG reduction and the benefit analysis, are provided below. In addition to developing solar energy resources on tribal lands, Hopi has also identified several near-term priority measures around fleet electrification, upgrading some of the diesel trucks in the government fleet, and energy efficiency upgrades in commercial and residential buildings.

Although the PCAP GHG inventory focused on tribal government operations, many of the near-term, high-priority, implementation ready GHG reduction measures identified below are community-wide in focus.

Measure 1: Installation of Residential Solar PV and Battery Electric Storage Systems	
Measure Description	Deploy 4.75 MW residential solar PV and 12.5 MWh BESS to power at least 1,300 unelectrified and low-income homes.
Implementing agency	HUC, Hopi Renewable Energy Office
Milestones for obtaining implementing authority	Obtain Special Land Use Assignment Obtain Tribal Council Resolution approving project Complete all necessary CPO/DNR clearances
Funding sources	U.S. Department of the Interior, U.S. Department of Energy, U.S. Environmental Protection Agency
Implementation schedule and milestones	Obtain HTC approval to apply for funding - 6/2024 Apply for funding - 6/2024
Metrics for tracking progress	Number of systems installed Number of homes electrified Annual CO_2 mitigation
Geographic location(s)	Hopi Tribal Lands
Cost Estimate	$31,080,100
Annual estimated GHG emission reductions	Annual CO_2 mitigation = 5,761 metric tons
Annual estimate co-benefits	Annual SOx mitigation = 1,139 kg Annual NOx mitigation = 2,136 kg Annual PM2.5 mitigation = 381 kg Annual VOCs mitigation = 91 kg Annual NH3 mitigation = 132 kg
Emissions Mitigation Calculation Tools	EPA's AVERT tool

Measure 2: Deployment of Solar PV and Battery Electric Storage Systems	
Measure Description	Deploy Solar PV and battery electric storage systems across Tribal land to offset purchases from Arizona Public Service.
Implementing agency	HUC, Hopi Renewable Energy Office
Milestones for obtaining implementing authority	Obtain Special Land Use Assignment Obtain Tribal Council Resolution approving project Complete all necessary CPO/DNR clearances
Funding sources	U.S. Department of the Interior, U.S. Department of Energy, U.S. Environmental Protection Agency
Implementation schedule and milestones	Obtain HTC approval to apply for funding - 6/2024 Apply for funding - 6/2024 Obtain village/household approval to install systems - 12/2024 Complete site analysis and system design - 12/2025

	Begin installations - 1/2026
Metrics for tracking progress	Number of systems installed Number of homes electrified Annual CO_2 mitigation
Geographic location(s)	Hopi Tribal Lands
Cost Estimate	$30M - $40M,000,000 for solar plus storage (dependent on total storage and grid system capability to handle export)
Annual estimated GHG emission reductions	Assuming a 9 MW solar project in AZ using AVERT that generates ~22,780,000 kWh per year: Annual CO_2 mitigation = 8,018 metric tons Annual CH_4 mitigation = .5262 metric tons Annual NOx mitigation = .072 metric tons
Annual estimate co-benefits	Annual SOx mitigation = 1.32 metric tons Annual NOx mitigation = 4.78 metric tons
Emissions Mitigation Calculation Sources and Tools	EPA AP-42 Compilation of Air Pollutant Emission Factors for Stationary Internal COmbustion Engines. EPA Center for Corporate Climate Leadership: Emission Factors for Greenhouse Gas Inventories

Measure 3: Solar PV and Battery Electric Storage System Microgrid at Tawa'ovi campus	
Measure Description	Build a microgrid at the Tawa'ovi campus to offset diesel consumption from existing generators
Implementing agency	HUC
Milestones for obtaining implementing authority	Obtain Special Land Use Assignment Obtain Tribal Council Resolution approving project Complete all necessary CPO/DNR clearances
Funding sources	U.S. Department of Energy, Arizona State University, private and philanthropic funding.
Implementation schedule and milestones	Funding Awarded - 3/2024 Award Negotiation Complete - 8/2024 Power Engineering and NEPA Complete - 8/2025 Construction Complete 12/2027
Metrics for tracking progress	Installation of 1.25 MW solar & 4 MWh BESS Annual reduction of 1,718 MT CO_2
Geographic location(s)	Hopi Tribal Lands
Cost Estimate	$11.4 million total including design, construction, and project management costs
Annual estimated GHG emission reductions	Annual CO_2 mitigation = 1,718 metric tons Annual CH_4 mitigation = 69 kg Annual N_2O mitigation = 13 kg
Annual estimate co-benefits	Annual SOx mitigation = 3,055 kg Annual NOx mitigation = 46,449 kg

	Annual PM10 mitigation = 10,006 kg Annual CO mitigation = 3,265 kg
Emissions Mitigation Calculation Sources and Tools	EPA AP-42 Compilation of Air Pollutant Emission Factors for Stationary Internal COmbustion Engines. EPA Center for Corporate Climate Leadership: Emission Factors for Greenhouse Gas Inventories

Measure 4: Utility Scale Solar PV and Battery Electric Storage System	
Measure Description	Construct a 400 MW solar array with 1,200 MW battery electric storage system for electricity export.
Implementing agency	HUC
Milestones for obtaining implementing authority	Complete
Funding sources	DOE Loan Program Office Private financing
Implementation schedule and milestones	Complete APS interconnection studies - 12/2025 Complete pre-development sitework - 3/2025 Bid into RFP - 12/2024 Commercial online date - 6/2029
Metrics for tracking progress	Construction of 400MW solar and 600+ MWh BESS Annual reduction of at least 609,039 MT CO_2
Geographic location(s)	Hopi Tribal Lands
Cost Estimate	$500,000,000
Annual estimated GHG emission reductions	Annual CO_2 mitigation = 609,039 metric tons
Annual estimate co-benefits	Annual SOx mitigation = 118,596 kg Annual NOx mitigation = 228,638 kg Annual PM2.5 mitigation = 39,948 kg Annual VOCs mitigation = 9,535 kg Annual NH3 mitigation = 13,807 kg
Emissions Mitigation Calculation Sources and Tools	EPA's AVERT tool

Measure 5: Transition Tribal Vehicle Fleet to Electric Vehicles	
Measure Description	Replace 30 passenger cars in the Hopi Tribal fleet with EVs. Replace 3 diesel school buses with electric buses.
Implementing agency	HUC, Hopi Facilities Dept, Hopi Education Department, Hopi Tribal Council
Milestones for obtaining	Obtain Council Resolution approving grant application and fleet vehicle purchases

implementing authority	
Funding sources	EPA, DOT
Implementation schedule and milestones	Submit resolution describing plan and grant availability to Tribal Secretary - 4/2024 HTC approval of resolution -6/2024 Grant submission - 6/2024 Fleet vehicle purchase begin - 11/2024
Metrics for tracking progress	Number of fleet vehicles replaced Annual CO_2 mitigation Dollars saved in fuel purchases
Geographic location(s)	Hopi Tribal Lands
Cost Estimate	TBD
Annual estimated GHG emission reductions	Annual CO_2 mitigation = 202 metric tons
Annual estimate co-benefits	Annual CO mitigation = 581 kg Annual NOx mitigation = 73 kg Annual PM10 mitigation = 19 kg Annual PM2.5 mitigation = 4 kg Annual VOCs mitigation = 57 kg Annual SOx mitigation = 2 kg
Emissions Mitigation Calculation Sources and Tools	Argonne National Laboratory Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) Tool EPA Center for Corporate Climate Leadership: Emission Factors for Greenhouse Gas Inventories

Measure 6: Transition Tribal Diesel Vehicle to More Efficient Diesel Vehicles	
Measure Description	Upgrade 12 older diesel vehicles in the Hopi Tribal fleet to new, more efficient diesel vehicles.
Implementing agency	HUC, Hopi Facilities Dept, Hopi Education Department, Hopi Tribal Council
Milestones for obtaining implementing authority	Obtain Council Resolution approving grant application and fleet vehicle purchases
Funding sources	EPA, DOT
Implementation schedule and milestones	Submit resolution describing plan and grant availability to Tribal Secretary - 4/2024 HTC approval of resolution -6/2024 Grant submission - 6/2024 Fleet vehicle purchase begin - 11/2024
Metrics for tracking progress	Number of fleet vehicles replaced Annual CO_2 mitigation Dollars saved in fuel purchases

Geographic location(s)	Hopi Tribal Lands
Cost Estimate	TBD
Annual estimated GHG emission reductions	Annual CO_2 mitigation = 7.94 metric tons
Annual estimate co-benefits	Because criteria air pollutant emissions in the AFLEET tool are based on the miles traveled, rather than fuel consumed, there is no change to criteria air pollutants from this measure.
Emissions Mitigation Calculation Sources and Tools	Argonne National Laboratory Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) Tool EPA Center for Corporate Climate Leadership: Emission Factors for Greenhouse Gas Inventories

Measure 7: Investment in Residential and Commercial Building Efficiency Upgrades	
Measure Description	$100,000 dollars will be invested in residential energy efficiency upgrades. $50,000 will be invested in commercial energy efficiency upgrades.
Implementing agency	Hopi Facilities Dept, Hopi Housing Authority
Milestones for obtaining implementing authority	Obtain Council Resolution approving grant application Obtain consent from residents and building occupants
Funding sources	EPA, HUD, DOE, USDA
Implementation schedule and milestones	Submit resolution describing plan and grant availability to Tribal Secretary - 6/2024 HTC approval of resolution -8/2024 Grant submission - 8/2024 Contracting -11/2024 Upgrades begin - 2/2025
Metrics for tracking progress	Dollars invested in building efficiency upgrades Energy/$ saved per year Annual CO_2 mitigation
Geographic location(s)	Hopi Tribal Lands
Cost Estimate	$150,000
Annual estimated GHG emission reductions	Annual CO_2 mitigation = 1,851 metric tons
Annual estimate co-benefits	Annual SOx mitigation = 313 kg Annual NOx mitigation = 662 kg Annual PM2.5 mitigation = 118 kg Annual VOCs mitigation = 27 kg Annual NH3 mitigation = 45 kg

Emissions Mitigation Calculation Sources and Tools	EPA's AVERT tool

Measure 8: Workforce Development	
Measure Description	This measure is to create the enabling workforce to be able to deploy the measures above in the remote geography of the Hopi Reservation. It would prioritize training and skills development for a clean energy workforce on Hopi Lands by partnering with regional workforce development partners like Native Renewables or similar firms.
Implementing agency	HUC, Tribal Employment Rights Office
Metrics for tracking progress	Number of jobs created and skilled labor available in the region, for projects on Hopi Lands.
Geographic location(s)	Hopi Tribal Lands
Cost Estimate	$1M - $5M
Annual estimated GHG emission reductions	This is an enabling measure for the estimates in the measures listed above.
Annual estimate co-benefits	This is an enabling measure for the estimates in the measures listed above

2.4. Review of Authority to Implement

The Hopi Tribe is a federally recognized Tribe located in Arizona that is a sovereign nation. Tribal sovereignty refers to the inherent right of the Hopi Tribe to govern itself, its borders, lands, and people. It is unique in that it is directly tied to cultural beliefs, lands, and historical traditions. While sovereignty grants Tribes the right to establish their own government, determine membership requirements, enact legislation, and establish law enforcement and court systems, these rights are based on a distinct culture and history that protects an important way of life for each of the 574 federally-recognized Tribes in the United States. Sovereignty is not just a political concept that provides Tribes with power, but also a mechanism to protect important cultural and historical aspects of a Tribe, which can have a significant impact on government-to-government interactions. Tribes are not subject to individual states' laws and are entitled to regulate and operate independently of states. This provides a pathway to leverage sovereignty to overcome regulatory or policy barriers defined at the state- and utility-level that may hinder Tribal implementation of priority measures.

In addition to Hopi's Tribal sovereignty presenting an overarching authority to implement, Hopi Utilities Corporation (HUC) is a Tribally-chartered corporation of the Hopi Tribe. In 2017, the Hopi Tribal Council passed Resolution H-062-2017 to approve the Charter of Incorporation for HUC. HUC has broad authority to own, manage, and operate water and electric power systems and services on the Hopi Reservation for the benefit of the Tribe and

its People. Additionally, HUC was established to "*improve, promote, and develop businesses and economic opportunities for the Hopi Tribe*". HUC is a wholly-owned business of the Tribe, chartered as a Hopi corporation under Hopi Tribal Ordinance 45. HUC will play a lead role in the planning, execution, and management of priority measures.

2.5. Identification of Other Funding Mechanisms

Funding Opportunity	**Description**	**Timeline**	**Applicable Measure**
DOE Tribal Energy Efficiency Block Grant (EECBG)	Provides formula awards to Tribes for projects that reduce fossil fuel emissions or improve energy efficiency. Voucher award for tribes is approximately 10-15k.	Full application due April 30, 2024	**Measure 7**
DOE Tribal Home Electrification and Appliance Rebates Program	Rebate program to support Tribal households to reduce energy bills, increase home comfort, improve indoor air quality, and reduce emissions by providing direct funding for energy efficiency and electrification home upgrades. $225 million available. Electrification and Appliance Rebates Program	Letter of Intent to apply by May 15, 2024. Applications accepted on a rolling basis until May 31, 2025	**Measure 7**

Environmental and Climate Justice Block Grants	$3B in IRA funding for financial and technical assistance to carry out environmental and climate justice activities to benefit underserved and overburdened communities.	Awards must be made by EPA by September 30, 2026.	**Multiple**
Philanthropy funding	Various sources	Depends on foundation and specific opportunity	**Multiple**
DOE SCEP - Assistance for the Adoption of the Latest and Zero Building Energy Codes	This opportunity assists eligible entities in further decarbonizing their buildings through the adoption of the latest national model building energy codes, zero energy codes, other codes that deliver equivalent or greater energy savings, including innovative approaches to decarbonize existing buildings through certain measurable and enforceable requirements.	Concept paper due February 9, 2024. Full application due April 30, 2024.	**Measure 7**

FEMA BRIC	$50M Tribal set aside for projects that respond to FEMA Hazard Mitigation Plan and reduce risks they face from disasters and natural hazards.	February 29, 2024	**Multiple**
Community Change Grants	Partnership grant. $2B in IRA funding to benefit disadvantaged communities through projects that reduce pollution, increase climate resilience, and build community capacity to respond to environmental and climate justice challenges. $300 million reserved for tribes.	Rolling with a deadline of November 21, 2024.	**Multiple**
Energy and Mineral Development (EMDP) Program Grant	Offers Tribes financial support to assess the energy mineral resource potential of their lands.	Likely opens Q1 2024 and is an annual program	**Multiple**
Tribal Energy Development Capacity (TEDC) Grant	Offers Tribes financial support to enhance a Tribe's internal capacity to manage energy resources through things like Tribal utility feasibility and formation	FY2024 due in January 2024 and is an annual program	**Multiple**

Production Tax Credit/Investment Tax Credit/Other Tax Credits	"Direct Pay" Tax Credits for non-profits, tribes, consumers for clean energy, energy efficiency, EV and charging stations. 30-50% of project costs. Stackable with USDA/other funds.	Comment period has closed. Final rule to be issued soon.	**Multiple**

3. Next Steps

Following the completion of the PCAP, the Hopi Tribe, HUC, and CARML will transition to working on the Hopi Tribe's Comprehensive Climate Action Plan (CCAP), which is anticipated to be finalized in 2026. Over the long term, Hopi will implement prioritized measures to reduce its GHG emissions that will help the Tribe transition to sustainable, renewable energy, improve electricity access and reliability, promote quality local employment, enhance energy sovereignty, and reduce the burden of energy bills throughout the Reservation.