



## **Shinnecock Indian Nation Priority Climate Action Plan**

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Priority Climate Action Plan (PCAP) Authors

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# 1. Executive Summary

The Shinnecock Indian Nation, a federally recognized tribe located on Long Island, New York, prioritizes the preservation of their environment through sustainable development and stewardship practices. Facing environmental threats like rising sea levels and more frequent storms, the Shinnecock Nation has proactively pursued planning efforts to enhance resilience, including the development of a Tribal Environmental Protection Act and climate adaptation plans.

This report outlines the methodologies, scope, and strategic goals of the Shinnecock Indian Nation's climate action planning. Through detailed analysis and a greenhouse gas emissions inventory, the Nation sets forth a roadmap for reducing greenhouse gas emissions, enhancing resilience, and fostering a sustainable future for its community.

## 2. Introduction

The Shinnecock Indian Nation is a federally recognized tribe located on the Shinnecock Indian Reservation, adjacent to the east end of Long Island, New York. The Shinnecock people have called this land home for over 10,000 years, maintaining their cultural traditions and stewardship of the land and waters through generations. The Shinnecock Nation's territory encompasses approximately 1,000 acres, held in restricted fee status. The main property, known as the Neck, is a peninsula surrounded by Old Fort Pond, Heady Creek, and Shinnecock Bay. It is home to 662 tribal members and their spouses, according to the most recent update of the Land Use Plan, and with an estimate of 819 residents reported as of the 2020 U.S. Census. The Nation retains additional ancestral territory in West Woods, including waterways in Peconic Bay, shoreline, submerged land, and inland areas.

The Shinnecock way of life is deeply intertwined with the natural environment. As the Shinnecock Environmental Department states in their Land Use Plan, “The Shinnecock People have always identified themselves through their connection to ancestral *ohke* (land) and *nipi* (water). The spiritual health of the people is intertwined with their quality of life.” Preserving open space, restoring native vegetation, protecting water and air quality, and careful sustainable development of the land are key priorities outlined for the Nation in the Land Use Plan.

However, the Shinnecock Nation faces increasing environmental challenges, including rising sea levels, erosion, and more frequent intense storms due to climate change, which could significantly impact their low-lying peninsula. To proactively plan for a sustainable and resilient future, the Nation has pursued environmental planning efforts including the development of a Tribal environmental protection act, shoreline and wetland management plans, and a climate change adaptation plan.

In 2023, the Shinnecock Nation was awarded a Climate Pollution Reduction Grant Planning Grant (Phase 1) from the U.S. Environmental Protection Agency to further advance its data collection, climate mitigation planning, and emissions reductions goals. This funding allows the Nation to develop a comprehensive greenhouse gas emissions inventory and climate action plan, building on the rigorous analysis and priorities already established in their Land Use Plan. Through this process, the Shinnecock Nation aims to identify and implement emission reduction strategies that align with their cultural values and environmental stewardship goals.



## 2.1 CPRG Overview

The Shinnecock Indian Nation is participating in the U.S. Environmental Protection Agency (EPA)'s Climate Pollution Reduction Grant (CPRG) Program. The CPRG Program uses funding from the Inflation Reduction Act to provide financial and technical support for tribes, territories, states, and municipalities to develop plans and implement projects to reduce greenhouse gas emissions and build resilience against the impacts of climate change.

The CPRG Program aligns well with the Shinnecock Nation's ongoing efforts to protect the environment and prepare for a changing climate. As stated in their 2017-2021 Land Use Plan, the Nation desires to “protect the territory and the natural resources within the manmade boundaries” as well as “initiate relationships and agreements to address common goals” with surrounding communities, recognizing that air and water resources are shared beyond the reservation.

With the CPRG Planning and Implementation Grants, the Shinnecock Nation aims to produce:

- A comprehensive greenhouse gas (GHG) emissions inventory, utilizing the EPA Tribal Greenhouse Gas Inventory Tool (TGIT)
- An assessment of the legal, technical, and economic feasibility of emissions reduction pathways
- A Priority Climate Action Plan (PCAP) identifying GHG reduction options across energy, transportation, buildings, waste, and land use sectors

- A Comprehensive Climate Action Plan (CCAP), due at the end of the grant period, which further refines the GHG emissions inventory, establishes a system to monitor progress on emissions reductions goals, and further quantifies estimates of potential emissions reductions and associated health benefits and improvements in environmental justice for each strategy

Developing this data-driven foundation will position the Shinnecock Nation to make climate priorities actionable and equitable. Advancing clean energy, sustainable building design, recycling programs, native plantings and more will help the Nation mitigate their climate impact while creating jobs and improving quality of life. Through the CPRG program, the Shinnecock Nation will take an important step forward in their journey to build a sustainable and culturally vibrant community, guided by their traditional values to preserve the air, water, and soil for the next seven generations. With long-term planning and strategic investments, the Nation can lead by example in the fight against climate change.

## 2.2 PCAP Overview and Definitions

The Priority Climate Action Plan (PCAP) is a document to provide guidance and accurate data for the Shinnecock Nation to first identify what the Nation is contributing to GHG emissions that are driving climate change. The PCAP team, including the Shinnecock Environmental and Housing Departments, as well as the MIT Indigenous Environmental Planning team, collected various data to help with quantifying the GHG emission reduction measures. All GHG inventory sectors and emissions categories were based on 2023 calendar year data as a baseline, except for stationary combustion, for which only 2022 estimates on heating fuel were available at this time.

Electricity consumption data was provided through a public records request for all residential, commercial, and institutional buildings on the territory for the 2023 calendar year. American Community Survey (ACS) 2022 estimates of home heating fuel were used to estimate stationary indirect GHG emissions. The institutional vehicles the Tribe owns were inventoried, with a collection of frequency of use and average miles traveled, as well as the year of purchase and model type to estimate the annual vehicle miles traveled based on a 2023 inventory of data. Similarly, estimates of the number of households, residential/passenger cars owned, and vehicle miles traveled were used to calculate residential mobile combustion based on 2023 Tribal enrollment data. Wastewater information was collected based on the types of septic systems that serve residential and institutional buildings on the territory, with information provided by the Indian Health Service in 2023. The Nation does not have any landfills within its reservation boundaries, so no entry was provided for solid waste. A scope 3 inventory will be completed for the CCAP to document waste produced and conduct an updated Waste Stream Audit. The Nation’s water lines are serviced by the Suffolk County Water Authority, which provided aggregated water consumption data for residential and commercial sectors for the 2023 calendar year. Forestry estimates were made using satellite imagery from Google, collected in 2023. The GHG reduction measures were obtained from examples presented in the EPA CPRG Implementation application, other Tribe’s PCAPs, and the Nation’s existing environmental and climate mitigation efforts and relationships. Ongoing consultation and surveys are taking place to evaluate the community’s understanding and interest in these measures to help prioritize funding and final decisions on which reductions measures to implement.

CO <sub>2</sub>	Carbon dioxide
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CO <sub>2</sub> e	Carbon dioxide equivalent emissions, This is determined by multiplying the emissions of methane and nitrous oxide by their global warming potential.
CH <sub>4</sub>	Methane. Methane is a greenhouse gas with a GWP that is 25 times that of CO <sub>2</sub> . It is produced through anaerobic decomposition of waste, enteric fermentation, production of natural gas and petroleum products, and other industrial processes.
Direct emissions	The emissions generated on-site (as opposed to electricity delivered through a grid system), such as from the combustion of fossil fuels.
Fossil fuel	Any fuel derived from the prehistoric burial of organic matter. Examples include natural gas (methane or CH <sub>4</sub> ) and petroleum products (gasoline, diesel, kerosene, propane, and others). Combustion of petroleum products releases greenhouse gas emissions into the atmosphere.
Greenhouse Gas Emissions (GHG)	Greenhouse gas emissions
Microgrid	A small network of electricity users with a local source of supply that is usually attached to a centralized national grid but is able to function independently.
Mobile combustion	The combustion of fuels to power a moving vehicle, such as gasoline or diesel fuel in a car or truck.
N <sub>2</sub> O	Nitrogen oxide
Stationary combustion	The on-site combustion of fuels to produce electricity, heat, or motive power using equipment in a fixed location.

### 2.3 Approach to Developing the PCAP

Shinnecock Nation’s Environmental Director Shavonne Smith applied for the Climate Pollution Reduction Grant (CPRG) by the Environmental Protection Agency (EPA) on behalf of the Shinnecock Nation. The Nation submitted a Quality Assurance Project Plan (QAPP) to implement task and project management measures to best organize the development of the PCAP. The Nation intends to complete a Comprehensive Climate Action Plan (CCAP) which will incorporate extensive community input on GHG emissions reductions measures if awarded by the EPA. Finally, in the summer or fall of 2027, the Nation plans to produce a final status report on how we use the Climate Pollution Reduction Grants if awarded.

The Nation collaborated closely with the Massachusetts Institute of Technology (MIT) Indigenous Environmental Planning (IEP) team, as described in the QAPP. This team has established a previous relationship with the Nation, with a group of faculty and students in the MIT Department of Urban Studies and Planning who are trained to support the Nation with environment and technical-related tasks. The MIT IEP team consisted of six graduate students (Anushree Chaudhuri, Milan Chuttani, Saynab Maalin, Yvette Kleinbock, Sanjana Paul, and Keili Tucker) and three faculty members (Janelle Knox-Hayes, Lawrence Susskind, and Jean Luc-Pierrette) who worked closely with the Shinnecock Environmental Department and served as task leaders for all of the required GHG emissions inventory

protocol. Steven Smith of the Shinnecock Nation provided assistance with regular project auditing and quality control procedures to ensure data accuracy and consistency with federal and state estimates.

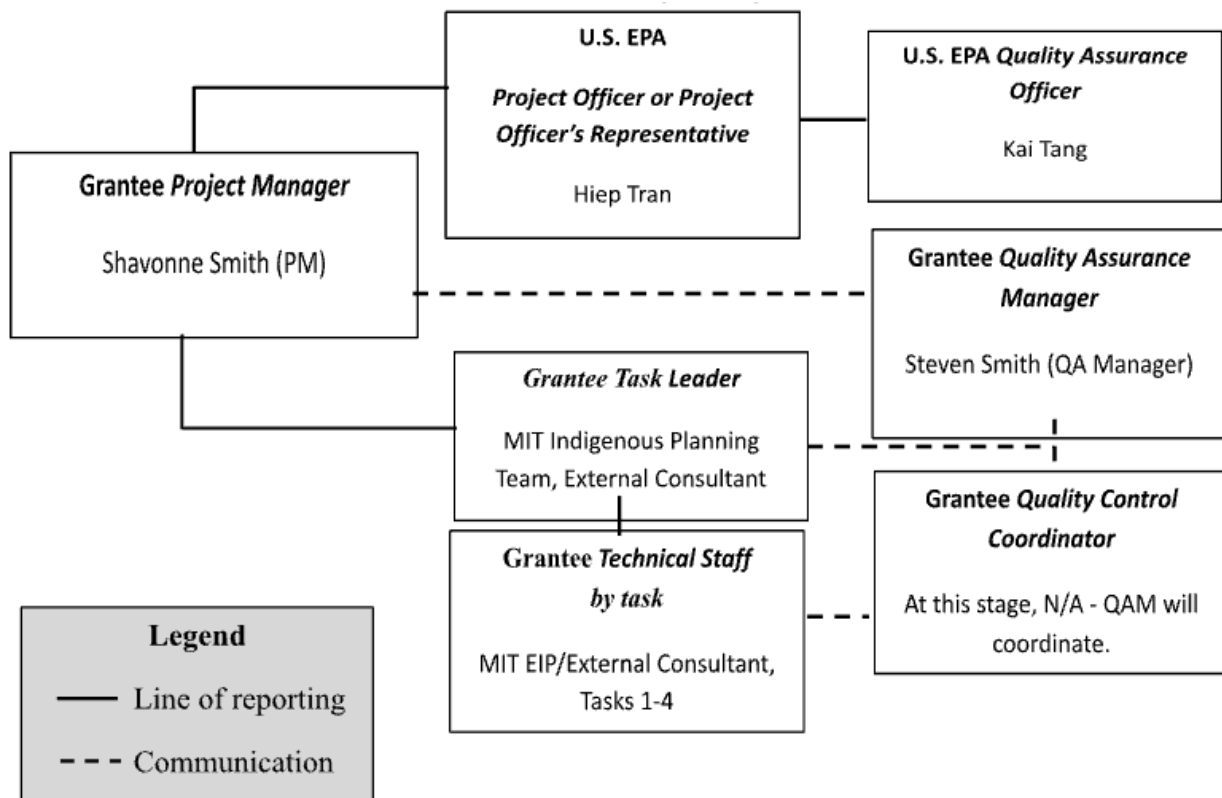
The EPA's Tribal Greenhouse Gas Inventory Tool (TGIT) was used for all emissions calculations reflected in the PCAP, and no emissions factors were altered from the federal estimates provided by the EPA. If any emissions factors or estimates are changed in developing the CCAP, these modifications will be noted and justified, and any discrepancies between TGIT and Tribe-specific estimates will be analyzed for consistency.

PCAP Interagency and Intergovernmental Coordination: The Shinnecock Nation and the MIT Indigenous Environmental Planning Team coordinated to request data from various departments within the Nation as well as public agencies, such as electricity, water, and gas utilities that service the Nation.

PCAP Public and Stakeholder Engagement: This PCAP consults findings from the Shinnecock Nation's Land Use Plan, which draws on extensive public engagement with elders, youth, and other important stakeholders in the Shinnecock territory through a survey with more than 100 responses and findings from previous meetings of the General Council (see Review of Authority to Implement for further information on the Nation's governance structure). The Nation will continue to expand its community engagement in developing the CCAP and implementing GHG reductions measures during the grant period, with the use of focus groups, regular surveys, and stakeholder meetings.

The Nation has developed a Quality Assurance Project Management Plan (QAPP), submitted to the EPA during the Planning phase, to outline project management and organization structures for developing the PCAP, including detailed methodology and quality control procedures for the GHG emissions inventory tasks. A project organization chart is included below. For further information about the Nation's approach to developing the PCAP, please refer to the previously submitted QAPP.





## 2.4 Scope of the PCAP

The scope of the PCAP includes GHG emissions reductions measures that can be realistically implemented in the next five years on the Nation's territory, given existing funding sources and relationships as well as additional funding from the EPA CPRG program and other sources.

The following PCAP includes the required elements of a GHG Inventory, Priority GHG Reduction Measures, Benefits Analysis, and Review of Authority to Implement. Developing rigorous data collection and analysis procedures to contribute to these PCAP elements increases in-house capacity on climate mitigation and adaptation issues, both in the course of developing the CCAP under this grant and hopefully in implementing future funding opportunities such as Phase 2 CPRG Implementation Grant. The base year of 2023 was used for all data available in the GHG emissions inventory, except for Stationary combustion, for which data from the Residential sector was only available from 2022.

At this stage, Tribes and territories are not expected to quantify co-pollutant impacts associated with nonindustrial GHG reduction measures. Thus, co-pollutant impacts that were not included in the PCAP Benefits Analysis at this time will be calculated and included in the CCAP.

## 3. PCAP elements

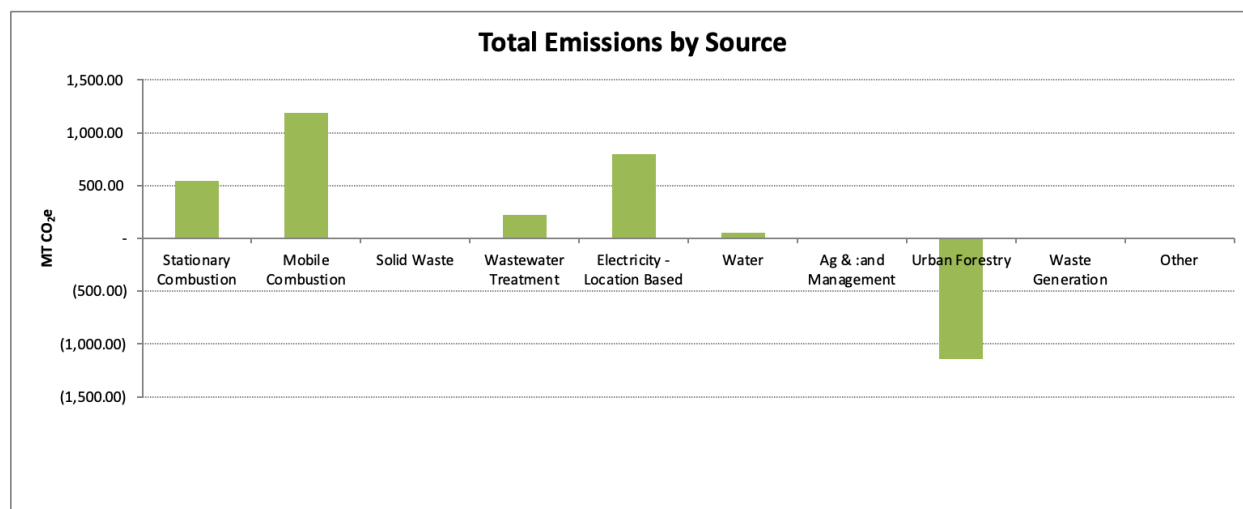
### 3.1 Greenhouse Gas (GHG) Inventory

A comprehensive emissions inventory by source is provided in the table. The per capita emissions for Shinnecock Nation members in 2023 was 1.74 MT CO<sub>2</sub>e, although this calculation is based on estimates and several Scope 3 emissions sources, such as solid waste, are not included. Detailed explanations of



methodology and sector/source-specific emissions inventory calculations are included in the subsections below. All of these calculations and visualizations were created with the support of the EPA’s TGIT tool.

Emissions by Source (MT CO <sub>2</sub> e)								
Source	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Percent of	
							Total	Total
Stationary Combustion	545.83	0.79	1.07	-	-	-	547.68	13%
Mobile Combustion	1,136.97	13.14	38.98	-	-	-	1,189.09	29%
Solid Waste	-	-	-	-	-	-	-	0%
Wastewater Treatment	-	212.07	8.75	-	-	-	220.82	5%
Electricity - Location Based	2,093.80	6.10	7.33	-	-	-	2,107.23	51%
<i>Electricity - Market Based (for informational purposes only)</i>	2,093.80	6.10	7.33	-	-	-	2,107.23	
Water	50.36	0.15	0.18	-	-	-	50.69	1%
Ag & Land Management	-	-	9.43	-	-	-	9.43	0%
Urban Forestry	(1,141.54)	-	-	-	-	-	(1,141.54)	-28%
Waste Generation	-	-	-	-	-	-	-	0%
<b>Total (Gross Emissions)</b>	<b>3,826.96</b>	<b>232.24</b>	<b>65.74</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>4,124.94</b>	<b>100%</b>
<b>Total (Net Emissions)</b>	<b>2,685.41</b>	<b>232.24</b>	<b>65.74</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2,983.40</b>	<b>100%</b>



### 3.1.1 Stationary fuel combustion

Shinnecock Nation estimates that 457 MT CO<sub>2</sub>e of GHG are emitted from three land use categories annually: residential consumption (457 MT CO<sub>2</sub>e), commercial building consumption (25 MT CO<sub>2</sub>e), and institutional use (65 MT CO<sub>2</sub>e). Because Shinnecock Nation is serviced by multiple distributed fuel providers across its individual residences and businesses, we model fuel combustion and GHG emissions using 2022 American Community Survey (ACS) 5-Year estimates, 2020 US Energy Information Administration (EIA) Residential Energy Consumption Survey (RECS) estimates, 2018 US EIA

Commercial Building Energy Consumption Survey (CBECS) estimates, and ground truth estimates from institutional fuel purchases. The territory does not have oil or gas power plant facilities or industrial combustion sources. This was the only emissions category for which 2022 estimates were used to develop a baseline.

*Methodologies:*

Residential combustion: 2022 ACS 5-Year Estimates indicate the following household heating fuel use distribution.

Type of Fuel	ACS Estimated # of Households (2022)	% of Total Households (2022)	PCAP Estimated # Households (2024)
Utility Gas (Natural Gas)	15	13.0%	31
Bottled, Tank or LP Gas (including propane)	31	27.0%	66
Fuel oil or kerosene	25	21.7%	53
Electricity	22	19.1%	47
Wood	8	7.0%	17
Coal	0	0.0%	0
Solar energy	14	12.2%	30
Total	115	100%	244

While we use ACS data for our initial PCAP estimation, we acknowledge two potential sources of error in these estimates for modeling residential fuel use.

- 1) There are no residential natural gas hookups on the territory, and thus it is estimated that only 1-3 households along a main road, rather than 15, use natural gas for heating.
- 2) ACS estimates may undercount the number of households using coal for heat as at least 1 household is confirmed to use coal for fuel.

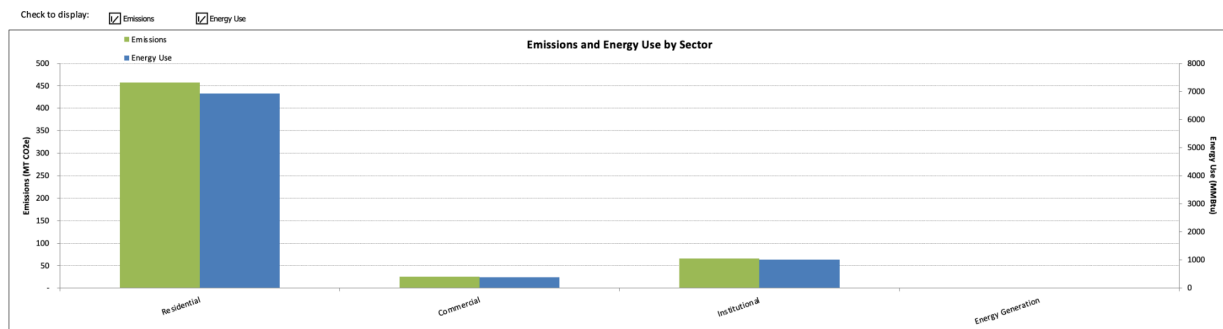
To address these gaps, a full survey of household fuel uses will be conducted on the territory in preparation for the CCAP.

On average, households in the Northeast’s Climate Zone 4 (“Mixed Humid Environment”) use 545 ccf of natural gas, 338 gallons of propane, or 438 gallons of fuel oil such as kerosene annually (US EIA RECS 2020: Table CE 2.2). These consumption metrics were used to calculate total residential stationary combustion metrics. Households using electricity or solar energy for heating were excluded because they do not utilize combustible fuel on site. Households using wood for fuel were also excluded as these are not accounted for in the TGIT tool.

*Commercial combustion:* Of the 11 businesses on Shinnecock Territory, three use natural gas through a local utility, and 8 use either heating oil or propane. Gross floor areas were calculated for each business using Google Earth. US EIA CBECS 2018 estimates were then applied to estimate fuel usage by floor area of each commercial business (211.2 gallons of heating oil per 1000 square feet OR 34.7cf of natural gas per square foot).

*Institutional combustion:* The Tribal government owns and operates several buildings on the territory including places of religious worship, a preschool, a recreation center, and a senior center. Six buildings use propane as their primary fuel source while the community center uses kerosene heating oil. Approximate gross floor areas were calculated using Google Earth. US EIA CBECS 2018 estimates were used to approximate propane and kerosene usage for each building.

Emissions by Sector (MT CO <sub>2</sub> e)				
Sector	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	TOTAL
Residential	456	1	1	457
Commercial	25	0	0	25
Institutional	65	0	0	65
Energy Generation	-	-	-	-
<b>Total Stationary Combustion Emissions</b>	<b>546</b>	<b>1</b>	<b>1</b>	<b>548</b>

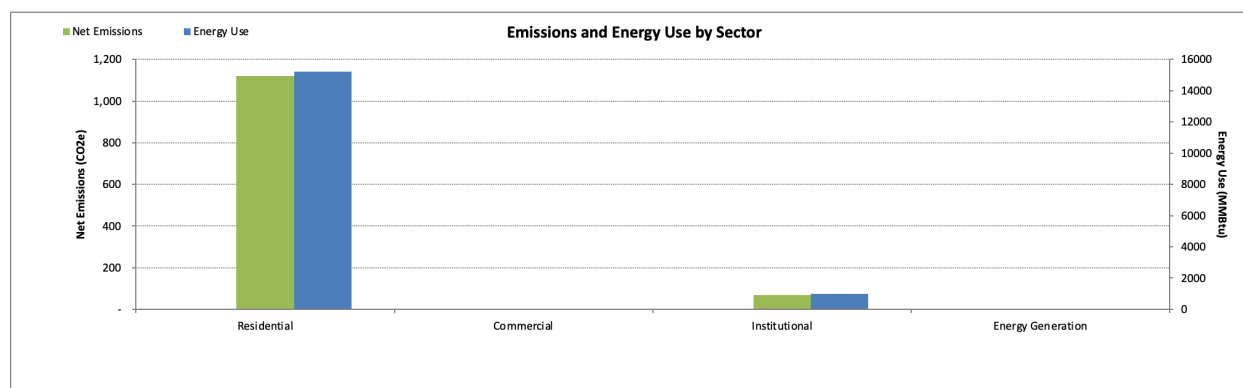


### 3.1.2 Mobile fuel combustion

Vehicle information, updated in 2023, for the Nation-owned vehicle fleet was collected from the Finance Office, including the frequency of each type of vehicle’s usage, year, model, make and fuel type of each vehicle. While exact odometer readings for each vehicle were not obtained at this time due to time constraints and lack of access to all Tribe-owned vehicles, this data is visually collected when possible from each department’s vehicles to estimate the miles traveled for all Tribe-owned vehicles, averaging across the years the vehicle has been in use. Residential vehicle emissions was calculated by obtaining an estimate of about 255 households on the territory each owning one passenger car using gasoline. The EPA’s average vehicle miles traveled per year of 11,500 and average fuel efficiency of 24.1 mpg for a passenger car were used to obtain estimates for fuel consumed and vehicle miles traveled for the residential sector. At a future date for the CCAP, a more comprehensive survey of residential vehicular

fuel consumption, miles traveled, and years, makes, and models of cars will be collected to further improve the emissions estimate from the residential sector.

Net Emissions by Sector (CO <sub>2</sub> e)				
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	TOTAL
<b>Residential</b>	1,068.35	13.09	38.78	1,120
<b>Commercial</b>	-	-	-	-
<b>Institutional</b>	68.61	0.05	0.20	69
<b>Energy Generation</b>	-	-	-	-
<b>Total Mobile Emissions</b>	<b>1,136.97</b>	<b>13.14</b>	<b>38.98</b>	<b>1,189</b>



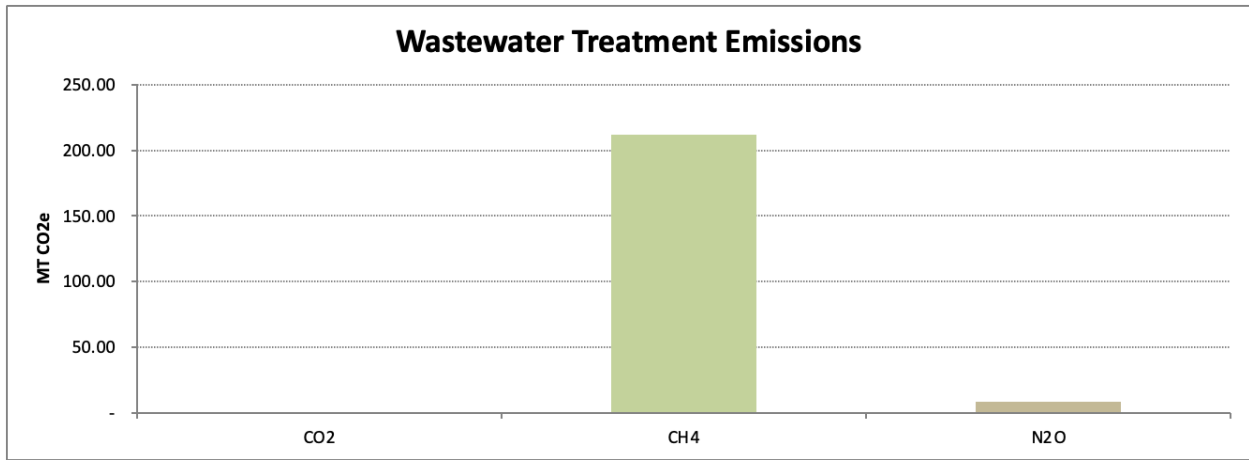
### 3.1.3 Solid waste

There are no landfill treatment facilities located within the geopolitical boundary of Shinnecock Nation, and therefore no entry was provided for solid waste.

### 3.1.4 Wastewater

100% of the population are served by some form of septic systems. 178 homes are served by facilities with denitrification, and about 130 served by facilities without denitrification. All homes are served with either septic systems with tanks and secondary treatment or cesspools. There are no industrial facilities located within the geopolitical boundary of Shinnecock Nation, therefore no entry was provided for industrial Nitrogen load. Information on the septic system technology was provided by the Indian Health Service (IHS) in 2023.

GHG Emissions Summary	
	MT CO <sub>2</sub> e
CO <sub>2</sub>	-
CH <sub>4</sub>	212.07
N <sub>2</sub> O	8.75
<b>Total Emissions from Wastewater Treatment</b>	<b>220.82</b>



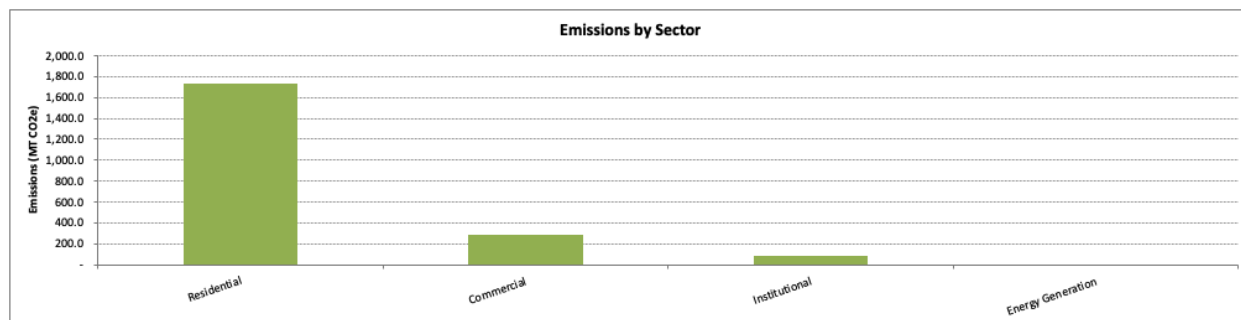
### 3.1.5 Electricity

The Shinnecock Nation is serviced by PSEG Long Island, which operates the Long Island Power Authority (LIPA)’s transmission and distribution system under a long-term contract. PSEG (Public Service Enterprise Group) is a publicly traded (NYSE:PEG) energy company that is one of the ten largest electric companies in the U.S. For location-based emissions calculations from electricity consumption, the Shinnecock Nation’s territory is located in the NYLI EGRID Subregion, which was used for subregion/location-based emissions factors (lb/MWh). PSEG Long Island was not able to provide utility-specific emissions factors for a recent year, but utility-specific emissions factors will be incorporated into the CCAP if more updated information is provided. These emissions factors were entered as instructed in the TGIT Control Sheet based on the EPA EGRID Subregion emissions factors provided online.

Through a Freedom of Information Law (FOIL) data request, PSEG staff provided electricity consumption data for 13 Tribe-owned institutional buildings by month for 2022 and 2023. Only 2023 data was used for this baseline inventory calculation. Consumption data for an additional 100 residential households and three businesses that are privately owned and managed by Tribe members but on the Nation’s territory was also made available with permission of Tribal staff, falling under the Residential and Commercial categories, respectively. There are no energy generation facilities on the territory that consume electricity, so there was no data collected in that sector, although there is interest in developing low-carbon energy generation facilities in the future. For all sectors, 2023 electricity consumption data was used for the GHG Inventory, although complete 2022 data is also available as an additional baseline. In developing the CCAP and further emissions inventory and monitoring, requests will be made for earlier years to help create a better understanding of changes in electricity usage over time and provide recommendations for sector-specific emissions reductions strategies. For electricity in particular, given that the Nation’s relatively small electricity consumption emissions emerge primarily from the Residential and Institutional sectors, these will be the focus of the initially identified emissions reductions goals in the PCAP.

Emissions by Sector (in CO <sub>2</sub> e)				
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total
Residential	1,723.8	5.0	6.0	1,734.9
Commercial	281.7	0.8	1.0	283.5
Institutional	88.3	0.3	0.3	88.8

Energy Generation	-	-	-	-
<b>Total Emissions from Electricity Use</b>	<b>2,093.8</b>	<b>6.1</b>	<b>7.3</b>	<b>2,107.2</b>



### 3.1.6 Agriculture and land management

Shinnecock Nation has no industrial or commercial agriculture. There is a quarter-acre community farm site and one community garden measuring around an eighth of an acre. No synthetic or manure fertilizers are used at these sites. The sites were fertilized with organic compost in 2022 by covering the land area with three inches of compost material. This process will be repeated in 2024. Therefore, it was estimated that approximately 150 cubic yards of compost is applied on a biannual basis, with an average calculated for 2023. Assuming the compost is at 30-50% moisture, 150 cubic yards weighs around 75 tons<sup>1</sup>. It is then estimated that an average of 37.5 tons of organic compost is applied in a calendar year.

There are also around 10-15 residential homes with small gardens within the Shinnecock Nation territory. Fertilizer application data for these home gardens was not collected at this time.

Fertilizer Application Emissions (MT CO2e)				
Sector	Synthetic N <sub>2</sub> O	Organic N <sub>2</sub> O	Manure N <sub>2</sub> O	TOTAL
Residential	-	-	-	-
Commercial	-	-	-	-
Institutional	-	9.43	-	9.43
Energy Generation	-	-	-	-
<b>Total Emissions from Fertilizer Application</b>	<b>-</b>	<b>9.43</b>	<b>-</b>	<b>9.43</b>

### 3.1.7 Waste production

There is presently no designated area on the Shinnecock Nation territory for tribal members to bring refuse. It is the responsibility of individual households to remove their own waste, which is done through off-reservation haulers. No Scope 3 inventory for waste production was done at this time. The Nation completed a Waste Stream Audit in 2015 to estimate the weight of waste that is generated by residents, which informed the Tribe's 2017 Integrated Solid Waste Management Plan. Another Waste Stream Audit will be conducted in 2024, allowing for potential pounds of waste generation to be extrapolated from the data and can be used to estimate its contribution to GHG emissions as part of the CCAP.

<sup>1</sup> Biernbaum, John, "Compost for Small and Mid-Sized Farms", Michigan State University.

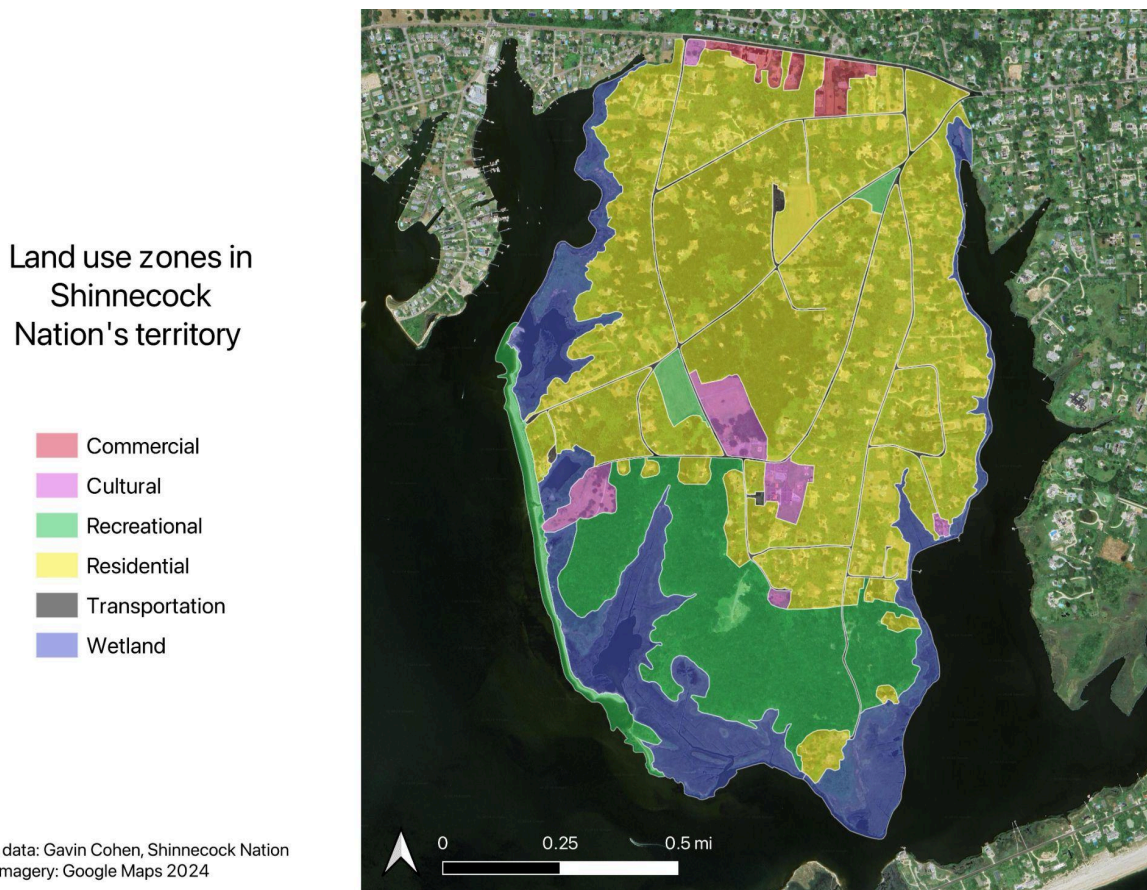
Shinnecock Nation has a community recycling program that previously included recycling drop-off sites and weekly collection from all tribal buildings. The program has since been scaled down due to logistical limitations, but the Nation hopes to expand it again in the future. Composting is also supported and encouraged within the community.

### 3.1.8 Additional emissions sources

There are no additional emission sources identified for Shinnecock Nation. The tribe does not have any non-energy-related industrial activities or product uses within the territory.

### 3.1.9 Urban forestry

Urban tree canopy coverage was estimated using random sampling statistics on [canopy.itreetools.org](https://canopy.itreetools.org) based on 2023 satellite imagery. The residential, commercial, and institutional areas sampled were drawn from a staff member’s approximation of land uses across the territory (below). The “Cultural” land use was used for institutional sampling. There are no energy generation uses present on the map.



Of the Nation’s 1.9 km<sup>2</sup> of residential land, an estimated 71% is tree-covered. As for the 0.05 km<sup>2</sup> of commercial land, an estimated 26% is tree-covered. Finally, an estimated 31% of the 0.11 km<sup>2</sup> of institutional/cultural land is tree-covered.

Carbon Sequestered (MT CO <sub>2</sub> e)		
Sector	Carbon Sequestration	TOTAL

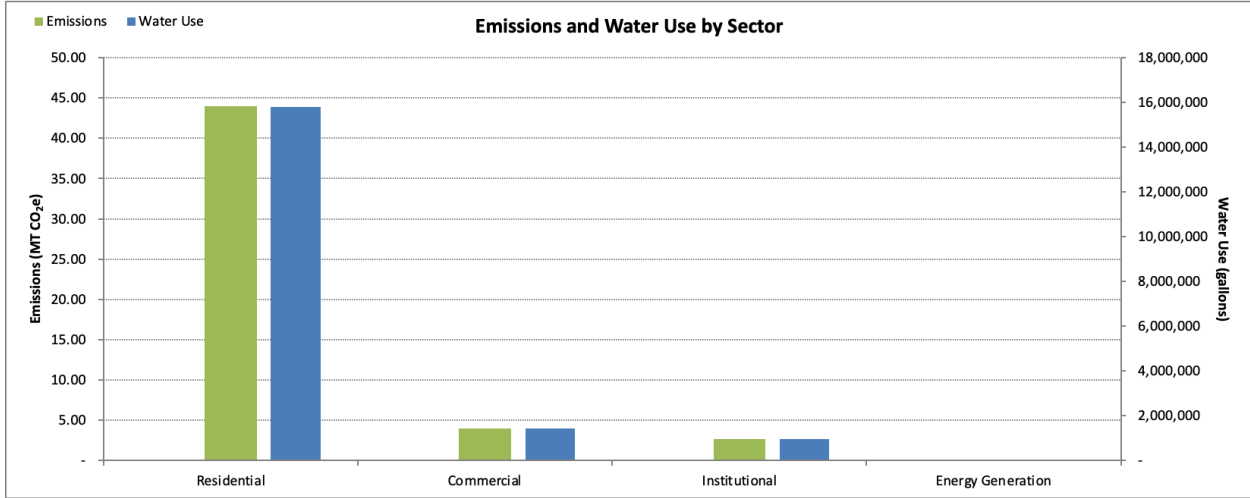


Residential	1,103.03	1,103.03
Commercial	10.63	10.63
Institutional	27.88	27.88
Energy Generation	-	-
<b>Total Sequestration from Urban Trees</b>	<b>1,141.54</b>	<b>1,141.54</b>

**3.1.10 Water**

Shinnecock Nation imports most of its water from the Suffolk County Water Authority (SCWA), serving both the commercial and residential sectors. A public records request to the SCWA provided data on 2023 water consumption by sector in the Nation. Individual water data from institutional buildings was not available, and was assumed to be obtained from private wells and Suffolk County Water Authority in this analysis. There are also around 4-5 residential homes with private wells within the Shinnecock Nation territory. Water data for those homes were not collected at this time, although the Suffolk County Health Department tested water content of the wells recently and found no contaminants. Due to the water account distribution, the emissions from institutional use were included in the “Residential” sector for carbon accounting.

Water Consumption Emissions (MT CO <sub>2</sub> e)				
Sector	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	TOTAL
<b>Residential</b>	43.73	0.13	0.15	44.01
<b>Commercial</b>	3.96	0.01	0.01	3.98
<b>Institutional</b>	2.68	0.01	0.01	2.70
<b>Energy Generation</b>	-	-	-	-
<b>Total Emissions from Water Consumption</b>	<b>50.36</b>	<b>0.15</b>	<b>0.18</b>	<b>50.69</b>



## 3.2 GHG Reduction Measures

### Goal 1. Increase renewable energy generation

Reductions Measure: Install a 600 kW solar community microgrid to contribute to powering electricity needs for existing Residential/Institutional buildings (963,600 annual kWh consumption avoided using Darwin, NT method)<sup>2</sup>

Estimated GHG Emissions Reductions	673 MT CO <sub>2</sub> e using the EPA GHG Equivalencies Calculator <sup>3</sup>
Emissions Categories Affected	Electricity (Scope 2), Mobile Combustion (Scope 1) through electric car charging
Lead Agency	Shinnecock Nation Housing Department
Milestones	Environmental review and feasibility analysis, partnership with developer or engineering firm for site design, permitting approval, construction, interconnection, commissioning, and ongoing maintenance/workforce training
Authority	Tribal Council of Trustees
Funding Sources	CPRG Implementation Funding, existing relationship with NV5, Section 48 Renewable Energy Tax Credit <sup>4</sup>
Cost	\$1.4 million
Cost/MT CO <sub>2</sub> e	\$2080.24 per MT CO <sub>2</sub> e

### Goal 2. Decrease vehicular emissions

Reductions Measure: Electrify Tribe-owned vehicle fleet

Estimated GHG Emissions Reductions	68.4 MT CO <sub>2</sub> e using the EPA GHG Equivalencies Calculator and estimated annual gasoline/fuel consumption per Tribe-owned vehicle <sup>5</sup>
Emissions Categories Affected	Mobile Combustion (Scope 1)
Lead Agency	Shinnecock Nation's Environmental and Transportation Departments

<sup>2</sup> <https://quotes.solarproof.com.au/system-sizes/600kw-solar-system-information-facts-figures/>

<sup>3</sup> <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results>

<sup>4</sup> <https://www.pwc.com/us/en/services/tax/library/pwc-proposed-regulations-define-section-48-tax-credit-energy-property.html>

<sup>5</sup> <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results>

Milestones	Update inventory and mileage estimates for entire Tribe-owned vehicle fleet, identify any redundancies in frequency and purpose of usage, scope potential electric vehicle options to replace existing Tribe-owned vehicles, procure funding, purchase new vehicle inventory, and complete ongoing maintenance and monitoring of emissions reductions and electricity usage
Authority	Shinnecock Nation's Environmental Department
Funding Sources	Environmental Protection Agency (EPA), Electric Vehicle Tax Credit
Cost	\$390,000
Cost/MT CO <sub>2</sub> e	\$5701.75 per MT CO <sub>2</sub> e

### Goal 3. Reduce building energy consumption

Reductions Measure: Weatherize and electrify 100% of institutional buildings and 70% of all homes.

Estimated GHG Emissions Reductions	<p>682.36 MT CO<sub>2</sub>e</p> <p>These estimates assume random distribution of homes electing into the energy retrofit (given architectural eligibility and resident willingness).</p> <p>The estimates also presume that Goal 1 will be implemented in parallel, with enough clean solar energy to cover increased electricity demands from energy retrofits. Thus, we assume that increases in electricity demand can be categorized as GHG emission reductions.</p> <p>With these assumptions, our model indicates that roughly 70% of residential emissions from stationary combustion and 100% of institutional emissions will be removed through electric retrofits.</p>
Emissions Categories Affected	Stationary Combustion (Scope 1), Electricity (Scope 2)
Lead Agency	Shinnecock Housing Department
Milestones	<p>The following milestones are recommended for eligible buildings and properties given current tax rebates and EPA incentives:</p> <ol style="list-style-type: none"> <li>1) Conduct a cost and needs assessment of all institutional buildings and residences that have opted into the Tribe's weatherization and retrofit plan on the territory. Hiring an external energy assessor can be coordinated centrally by the Tribe and funded by the DOE's Weatherization Assistance Program (for households under 200% AMI) or by a CPRG grant for non-eligible homes and institutional buildings.</li> <li>2) Offer ENERGY-STAR certified heat pump water heaters, space heaters and cooling, electric stove tops, electrical wiring equipment and</li> </ol>

insulation/sealing and installation to residents living in income-eligible homes on the territory (<150% AMI). We model that heat pump retrofits will reduce natural gas, fuel, and/or other stationary combustion needs to 0 while increasing electricity usage in each home incrementally. We set a goal of retrofitting at least 70% of homes with electric heat pumps and 0% of institutional buildings. We presume that roughly 30% of households may opt out of the retrofit opportunity or exceed eligibility requirements for HEAR retrofit rebates.

The [Home Electrification and Appliance Rebate \(HEAR\)](#) offered by DOE will offer point-of-sale rebates up to 50% of costs (up to \$14k per unit) and up to \$500 per unit in contractor installation fees for eligible units under 150% AMI.

HEAR rebates are administered for Tribal nations through the Bureau of Indian Affairs' [TEP program](#).

Additional costs that fall outside the DOE HEAR rebates can be covered by EPA CPRG implementation funding to help further offset costs for Tribe members residing in the territory.

- 1) Install heat pump water and space heaters and cooling systems in each of the 6 institutional buildings on the Tribe's territory. CPRG grant funding would constitute the majority of funds supporting these efforts including building feasibility assessment, permitting, material costs and construction, retrofit installation, and evaluation.

There is also an opportunity to integrate energy retrofits on Tribal government properties into the [Tribal Energy Efficiency and Conservation Block Grant \(EECBG\) program](#), of which Shinnecock Nation is [eligible to receive \\$10.570](#) if an application is submitted before May 2025. These funds can be used to retrofit government buildings or help cover costs for external consultants and contractors supporting the project.

Authority

Shinnecock Housing Department

Funding Sources

Environmental Protection Agency CPRG Implementation Grants; Bureau of Indian Affairs Tribal Electrification Program (TEP), Department of Energy and Bureau of Indian Affairs' Tribal Home Electrification and Appliance Rebate (HEAR) Program; DOE's Tribal Energy Efficiency and Conservation Block Grant (EECBG) Program

Cost	<p><i>Methodology:</i> The average single family home full electrification retrofit with an air or water-source heat pump in NY State costs \$17,400 - 31,700. For our estimates, we use an average retrofit cost of \$24,550 per household, and apply the HEAR rebate to reduce costs by 50% to \$12,275 per home.</p> <p>Electrification retrofits for office buildings cost roughly \$12 - \$21 per square foot in New York State (<a href="#">New York Building Electrification and Decarbonization Costs, June 2022</a>). We again assume an average of \$16.50 per sq foot and apply this metric to the size of all of our institutional buildings.</p> <p>Siting and assessments for these weatherizations will be covered by DOE's WAP and EECBG programs.</p> <p>Total Residential Program Cost (after rebates): \$12,275 x 171 homes = \$2,096,570 (not accounting for savings from reduced gas and electric costs)</p> <p>Total Institutional Program Cost (after rebates): \$788,189</p> <p><b>Total estimated cost:</b> \$2,884,759</p>
Cost/MT CO <sub>2</sub> e	\$4228 per MT CO <sub>2</sub> e (upfront costs)

#### Goal 4. Integrated Waste Management

Reductions Measure: Expand recycling and composting programs to reduce waste entering the disposal stream. Shinnecock Nation will also consider the feasibility and value of constructing a stand-alone anaerobic digester for biogas production.

Estimated GHG Emissions Reductions	195.45 MT CO <sub>2</sub> e Estimates using EPA Waste Reduction Model <sup>6</sup> , based on Shinnecock Nation 2015 Waste Stream Audit
Emissions Categories Affected	Waste production (Scope 3)
Lead Agency	Shinnecock Nation Environmental Department
Milestones	Implemented a community recycling program which has since been reduced due to logistical challenges. The Shinnecock Nation 2017 Integrated Waste Management Plan outlines goals for a new and expanded recycling program.
Authority	Tribal Council of Trustees
Funding Sources	CPRG Implementation Funding, Solid Waste Infrastructure for Recycling Grants, Recycling Education and Outreach Grants
Cost	\$1,200,000, referencing Lifecycle Analysis Costs from the Nation's Integrated Waste Management Plan

<sup>6</sup> <https://www.epa.gov/warm>

Cost/MT CO<sub>2</sub>e | \$6139.70 per MT CO<sub>2</sub>e

## Goal 5. Tree Replanting

Reductions Measure: Plant ten acres of trees to replace those removed during development in Westwoods.

Estimated GHG Emissions Reductions	1000 MT CO <sub>2</sub> e <sup>7</sup> assuming maturing of forested acreage over time
Emissions Categories Affected	Urban forestry (Scope 3)
Lead Agency	Shinnecock Nation Environmental Department
Milestones	Site review, tree purchase, tree planting, and regular pruning/maintenance.
Authority	Tribal Council of Trustees
Funding Sources	CPRG Implementation Funding,
Cost	\$300,000 <sup>8</sup>
Cost/MT CO <sub>2</sub> e	\$300 per MT CO <sub>2</sub> e

### 3.3 Benefits Analysis

Beyond direct emission reductions, the proposed goals provide the following benefits:

#### Goal 1: Increase renewable energy generation

- Reduce public health risks from power outages.
- Provide resilient, local, affordable power systems.
- Reduce utility bills, particularly for low-income households.
- Provide workforce training on emerging technologies.

#### Goal 2: Decrease vehicular emissions

- Improve air quality on the territory.
- Encourage EV use by demonstrating their viability.
- Provide workforce training on emerging technologies.

#### Goal 3: Reduce building energy consumption

- Create construction jobs.
- Reduce utility bills, particularly for low-income households.
- Provide workforce training on emerging technologies.

#### Goal 4: Integrated waste management

- Create jobs for tribal members.

<sup>7</sup><https://dec.ny.gov/nature/forests-trees/climate-change#:~:text=According%20to%20the%20US%20Forest,for%20the%20next%20100%20years.>

<sup>8</sup> <https://lawnlove.com/blog/cost-to-plant-tree/#average-cost>

- Generate revenues from the sale of recyclable materials

### **Goal 5: Tree replanting**

- Maintain a pleasant environment for tribal members.
- Decrease heat island effects and provide shade.
- Improve air quality on the territory.

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

As a sovereign, federally recognized tribe, the Shinnecock Indian Nation has the authority to enact the above GHG reduction measures on the tribal territory for the benefit of its members. The Shinnecock Indian Nation is a sovereign nation and has been since time immemorial. The Nation therefore possesses inherent sovereign power, the same as all governments, and shall exercise this inherent sovereign authority with no less rights or privileges than any other state or nation.

The Shinnecock Indian Nation territory is a communally owned *ohke* that is held, Restricted Fee, by all enrolled members. The authority of The Nation established by the Tribe's Constitution exists within the Tribal Government as set forth by the roles, responsibilities, and powers of two governing bodies, the General Council and the Council of Trustees. The General Council, consisting of the eligible voters of The Nation, serves to promote and protect the health, public welfare, safety, education, and cultural and political sovereignty of Tribal Citizens. The Council of Trustees consists of seven officers who serve as representatives of the people, to preserve and protect the Constitution, and to act as protectors and promoters of our Shinnecock lands, tradition and culture. Further, The Nation internally recognizes two additional bodies, a Council of Elders and a Youth Council, for the purpose of acknowledging the past and future. The authority of the Tribal Government extends over all Shinnecock Tribal Citizens and all persons, properties, subjects, activities, intellectual property, cultural resources and territories including land, water, natural resources, airspace and entry interest therein, either now or in the future, owned or held in trust for the Nation.

Shinnecock Nation additionally includes fourteen administrative departments, such as the Environmental, Housing, and Transportation departments. Departmental staff work on behalf of The Nation to develop and implement plans to address the Shinnecock Nation's concerns, including but not limited to climate change resiliency. Shinnecock Nation administrative departments will serve as the lead agencies for the identified GHG reduction measures, with ultimate approval from the Tribal General Council and the Council of Trustees. The Shinnecock Indian Nation is inextricably linked to its ancestral territories and will continue to respect and protect the lands and waters to maintain relationships with the natural world as land and water-based people.

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