

# Priority Climate Action Plan

Building Sector of the  
Nisqually Indian Tribe



**Prepared for:**

State and Local Climate and Energy Program  
U.S. Environmental Protection Agency

**Prepared by:**

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- **ICLEI** - Alyssa Wilbur, Matthew Katz
- **Washington State Department of Commerce** - Dina Rae Geiszler
- **The Pennsylvania State University** - Renewable Energy and Sustainability Systems Masters Program Candidates
- **US Environmental Protection Agency** - Rebbecca Derr, Air and Radiation Division
- **Bruce Levins** - Art Director / Graphic Design

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## Definitions and Abbreviations

**ClearPath:** The leading online software platform for completing greenhouse gas inventories, forecasts, climate action plans, and monitoring at the community-wide or government-operations scales. This program was created by ICLEI who specializes in providing sustainability software for governments, tribes, and other entities.

**Climate:** the “average weather” generally over a period of three decades. Measures of climate include temperature, precipitation, and wind.

**Climate Change:** any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period of time (decades or longer). Climate change may result from natural factors and processes and from human activities that change the atmosphere’s composition and land surface.

**Climate Pollution Reduction Grant (CPRG):** one of many federal funding opportunities created through the Inflation Reduction Act (IRA) and run through the U.S. Environmental Protection Agency (EPA). This program provides grants to states, local governments, tribes, and territories to develop and implement plans for reducing greenhouse gas (GHG) emissions and other harmful air pollution.

**Commerce:** The Washington State Department of Commerce.

**Comprehensive Climate Action Plan (CCAP):** a narrative report that provides an overview of the grantees’ significant GHG sources/sinks and sectors, establishes near-term and long-term GHG emission reduction goals, and provides strategies and identifies measures that address the highest priority sectors to help the grantees meet those goals.

**Energy Information Administration (EIA):** collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment.

**Greenhouse Gas (GHG):** any gas that absorbs infrared radiation in the atmosphere; examples include carbon dioxide, methane, nitrous oxide, ozone, and water vapor.

**Low Income and Disadvantaged Communities (LIDAC):** communities with residents that have low incomes, limited access to resources, and disproportionate exposure to environmental or climate burdens. EPA strongly recommends CPRG grantees use the Climate and Economic Justice Screening Tool (CEJST) and the Environmental Justice Screening and Mapping Tool (EJScreen) to identify LIDACs in their communities. These tools identify LIDACs by assessing and combining indicators such as: pollution exposure, climate change risks, environmental hazards, health impacts, socioeconomic factors, and more.

**Medicine Creek Enterprise Corporation (MCEC):** the business arm of the Nisqually Tribe. They own several businesses both on and off the Nisqually reservation.

**The Nisqually Indian Tribe (the Tribe):** a federally recognized tribe located in Olympia, WA. They are the lead applicant entity for the Climate Pollution Reduction Grant and the focus of this Priority Climate Action Plan.

**Olympia Community Solar (OCS):** a nonprofit founded with the mission to steward an equitable and accessible transition to clean energy. We develop equity focused solar programs and support our partners installation of solar. OCS is the contracted service provider to help the Nisqually Tribe with the development of the PCAP.

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

**Puget Sound Energy (PSE)** is the electrical utility for all of the Tribe's buildings. Their programs supported the development of both the GHG inventory and mitigation plan for this PCAP, and they will continue to be involved in reducing emissions with the Tribe's buildings through their energy efficiency programs.

**Swiftsure Energy Services (SES)** is a local energy services contractor that audited the Tribe's rental homes to aid in the quantification of residential decarbonization efforts.

**Thurston Regional Planning Council (TRPC)** is a regional council of governments in Thurston County that carries out regionally focused plans and studies on topics such as transportation, growth management, and environmental quality.

## Executive Summary

The Nisqually Tribe of Indians received funding through the U.S. Environmental Protection Agency's (EPA) Climate Pollution Reduction Grant (CPRG) to develop plans for reducing GHG emissions and other harmful air pollution. The CPRG planning grant enables tribal governments to develop a Priority Climate Action Plan (PCAP), followed by an implementation plan, that will be deployed over a five-year period from 2025 to 2030. The EPA requires that all PCAPs include a GHG Inventory, quantified GHG reduction measures, a Low Income and Disadvantaged Communities (LIDAC) Benefits Analysis, as well as a review of authority to implement each measure.

The PCAP is the first deliverable for the CPRG from the Environmental Protection Agency. The Tribe secured the support of Olympia Community Solar (OCS) to develop the Tribe's PCAP, which is focused on reducing carbon emissions from the commercial and residential building sectors.

The PCAP development team consists of members both from the Tribe and OCS. OCS worked with the Tribe to collect energy use data for all tribally-owned buildings both within and outside the reservation to create a greenhouse gas inventory. The PCAP team used this GHG inventory and other building information collected through energy evaluations to develop the priority measures in this PCAP. These priority measures align with goals that the Tribe highlighted in their 2024-2028 environmental plan. Main areas of focus include hiring specific staff for climate-related projects, and improving climate resiliency through energy efficiency and renewable energy deployment.

## Introduction

The Nisqually People have inhabited around two million acres of land between the South Puget Sound and Mount Rainier for over 10,000 years, living in harmony with the river and land that provides them with the salmon, medicinal plants, and other natural resources that define their culture and way of life. The Nisqually People continue to embrace these aspects of their culture and for hundreds of years have fought to protect the land and maintain access to resources for their people. Since the mid-1800's when settlers and treaties began obstructing the Nisqually People's access to their usual and accustomed grounds for fishing and foraging, the Tribe began to navigate treaty agreements to preserve their culture. Today, the Nisqually reservation sits on 1700 acres in Thurston County, WA.

The Nisqually Indian Tribe is engaged in efforts to protect the environment and secure a sustainable future, including pursuing clean energy projects and creating an environmental plan, which includes goals that align with the CPRG program. The CPRG includes a diverse range of potential investment opportunities to decarbonize areas that are essential to maintain the Nisqually way of life. For this PCAP, the focus will be on decarbonizing the building sector and using funds to hire new staff, make energy efficiency improvements, install clean energy technologies, and provide incentives to tribal members for energy efficiency retrofits.

This PCAP will begin with a high-level overview of the CPRG process and PCAP elements. Following the high-level overviews, each section will provide a more detailed breakdown of each of the PCAP elements including approach for development, scope, PCAP management team, considerations for tribal entities, GHG inventory, quantified GHG reduction measures, benefits analysis, and a review of authority to implement.

## Climate Pollution Reduction Program Overview

The CPRG program provides \$4.6 billion in grants to states, local governments, tribes, and territories to develop and implement ambitious plans for reducing GHG emissions and other harmful air pollution. Authorized under Section 60114 of the Inflation Reduction Act (IRA), this two-phase program provides approximately \$300 million for competitive implementation grants exclusively for tribes and territories.



The Nisqually Indian Tribe chose to pursue the CPRG program because the tribal community is deeply committed to reducing their impact on the natural environment, enhancing community resilience, and being a leader in sustainability among Washington State tribes. Receiving funding through the CPRG program would support several important elements of their environmental plan. The image to the left contains a quote obtained from a tribal member who took part in the 2023 community environmental surveys, which summarizes the drive throughout the community for more sustainable energy.

The purpose of this PCAP is to evaluate the energy consumption and emissions from tribal buildings and create an action plan to reduce emissions in a way that

aligns with EPA and Tribe's environmental goals. The required deliverables include:

- Priority Climate Action Plan (PCAP): due April 1, 2024
- Implementation Plan: due May 1st, 2024

## Priority Climate Action Plan Overview and Approach

The Nisqually PCAP is focused on near-term, high-priority, implementation-ready measures to reduce GHG pollution from the building sector that can be achieved by 2030. The PCAP is not a comprehensive approach to Nisqually's GHG reduction strategy; that strategy will be addressed in the implementation plan.

This PCAP is organized into the following sections according to the [requirements from the EPA](#):

1. Introduction
2. Opportunity overview
3. PCAP Elements
  - a. Greenhouse Gas Inventory
  - b. Greenhouse Gas Reduction Measures
  - c. Low-Income Disadvantaged Communities Benefits Analysis (including Community Engagement)
4. Next Steps: Comprehensive Climate Action Plan

Through the planning phase the PCAP development team (commonly referred to as "we" or "our team" in the PCAP), made up of professionals from both OCS and the Tribe, have worked collaboratively to engage key stakeholders, conduct community awareness events, develop a GHG inventory for the building sector, create a carbon mitigation plan, and align the goals of the CPRG with the goals of the Tribe. We have connected with the electric utility, the Washington State Department of Commerce, the City of Olympia, Thurston Regional Planning Council (TRPC), and others to retrieve essential data and learn how to implement actions necessary to achieve the CPRG requirements. It was important for our team to complete a full building sector energy inventory to

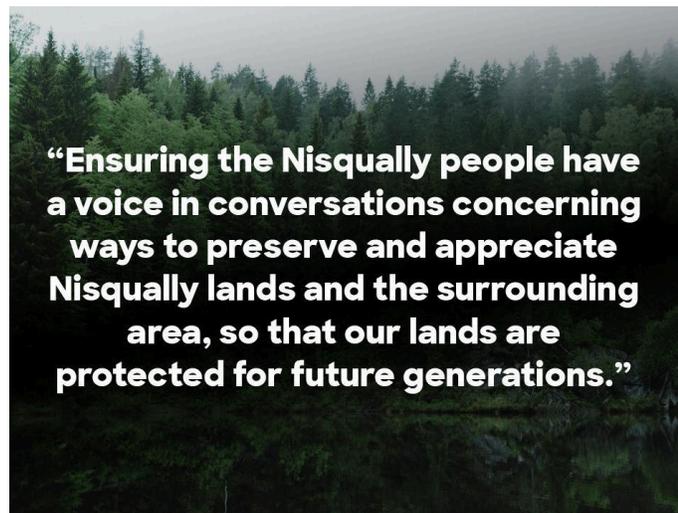
create a benchmark for decarbonization efforts across all tribally affiliated buildings. We successfully gathered detailed electricity consumption information from Puget Sound Energy (PSE), during which we learned that this level of detailed energy use data had not been secured by any other Washington State tribes. Between the electricity use data and gathering natural gas and propane data, we completed the Tribe's first GHG inventory which will serve as the baseline for measuring the success of emission reduction strategies.

## Identifying and Engaging Key Stakeholders

Key stakeholders for this project include:

- **The Nisqually Building Department** is the Tribe's lead for building construction and renovation. The Department has recently completed a new Tribal Health Clinic and Elder's Building, including a solar installation on the Elder's Building. The Building Department also constructs and renovates tribal homes throughout the reservation. In recent years, the Building Department has begun to focus on energy efficiency and renewable energy retrofits for tribal homes and buildings.
- **The Nisqually Planning Department** coordinates new tribal initiatives and works closely with the Building Department to implement Tribal renewable energy goals.
- **The Nisqually Housing Department** manages tribally-owned homes on the reservation. Housing staff provided critical support to help us meet Nisqually residents' needs and identify residents and homes for energy efficiency audits.
- **The Medicine Creek Enterprise Corporation** is the corporate entity that manages the Tribe's commercial enterprises. Their assistance was critical in completing the greenhouse gas assessment for the commercial buildings on the reservation.
- **Nisqually Natural Resources Department**
- **Nisqually Youth Program**
- **The Nisqually Public Safety Department** is composed of three major divisions – Police, Corrections, and Fish and Wildlife, making up the Tribe's Justice System.
- **Nisqually Community Members**
- **Puget Sound Energy**

Our team met with dozens of community members during the planning phase at evening events called Community Resource Gatherings. At these events, hundreds of tribal members engage with the organizations and departments that provide tribal services. Project team members attended two of these gatherings to educate the community on the CPRG program and our priority measures, speaking to dozens of tribal members. In preparation for the development of the 2024-2028 Nisqually Environmental Plan, the tribal community was surveyed multiple times in 2023 to gather tribal member's opinions on environmental priorities to be addressed in the future. Many of the priorities the community highlighted are addressed with the priority measures in this PCAP. Our team included several images with quotes from tribal members in this PCAP to emphasize the importance of capturing the voice of the community, such as the one pictured above.



## Greenhouse Gas (GHG) Inventory

The GHG inventory for this PCAP includes the building sector for the Tribe, including all buildings within the reservation boundary as well as all tribally-owned or affiliated buildings outside of the reservation. The building sector for the Nisqually Indian Tribe includes about 40 commercial buildings and 235 residences that collectively used 20,726 mWhs of electricity, 320,750 gallons of propane, and 7,715 therms of natural gas during the 2022 calendar year. In total, this energy consumption equates to 11,199 mtCO<sub>2</sub>e.

The methods used to collect this data and prepare the inventory required collaboration with many community organizations and stakeholders. We began by consulting the Thurston Regional Planning Council (TRPC), who has completed a GHG inventory for Thurston County. The TRPC provided data on community energy use and recommendations of how to make a request to the utility for energy consumption data. From these requests, the utility, PSE, provided detailed electricity use for all buildings owned by the Tribe and separately, all buildings within the reservation boundaries. PSE also shared their rate of GHG emissions per kWh based on their electricity generation portfolio, allowing our team to accurately calculate the indirect emissions for all tribal buildings.

Our team worked with the Tribe's building department to identify structures that utilize propane and natural gas as a fuel source. The Medicine Creek Enterprise Corporation (MCEC) delivered fuel consumption data for their businesses which completed the data for major propane and natural gas use outside of tribal government. For all residential buildings, we focused on estimating propane use using EIA estimates for the 235 homes.

The full inventory is included below in the PCAP elements.

## Quantified GHG Reduction Measures

Quantifying priority GHG reduction measures began with evaluating the energy consumption from all of the buildings in our GHG inventory, broken down by commercial and residential designation. On the commercial side, four tribal government buildings make up two-thirds of electricity use and only one of those four government buildings uses an alternative fuel source.

After identifying energy consumption of the priority buildings, we approached representatives of the Tribal government to establish these buildings as the priority for the PCAP and CPRG request. The next step was to conduct walkthroughs with local energy professionals and PSE to collect retrofit cost estimates, calculate avoided onsite fuel consumption, and estimate electricity use changes for the energy systems upgrades of those buildings. Using that information, our team created a list of emission reduction measures that meet the following criteria:

- They are implementation ready; the design work for the policy, program, or project is complete enough that a full scope of work and budget can be included in a CPRG implementation grant application.
- They can be completed in the near term; all funds could be expended, and the project completed, within the five-year performance period for the CPRG implementation grants.
- They will result in health, safety, quality of life improvements, or financial savings for tribal residents.

There are 62 residential units owned by Nisqually Housing that have similar energy consumption rates. Our team selected five homes that represented a spread of different home sizes, ages, and energy systems from around the reservation. We used Swiftsure Energy Services to conduct detailed audits of those homes and then collected estimates from local contractors to capture cost ranges for energy efficiency retrofits. Between the audits and estimates, we could then determine costs and energy savings for a range of homes that we could scale across the rest of the residential sector.

Priority Measures Summary	
Priority	Measure Description
1	Hire two new staff members. A Climate Resiliency Program Manager and Project Manager to take lead on CPRG and other sustainability-focused projects for the tribe.
2	Install heat pump systems at the Tribe's Public Safety building to reduce onsite propane consumption and direct emissions.
3	Install solar energy at the Tribe's Public Safety building to reduce their indirect emissions, electricity costs, and protect them against rising electricity costs.
4	Add 409 kW of solar to three tribal services buildings including the Youth and Community Center, Tribal Health Services, and Administrative Buildings to reduce their indirect emissions, electricity costs, and protect against rising electricity costs.
5	Install heat pumps in 31 Nisqually Rental Homes to reduce heating costs, reduce use of wood and propane stoves, and add cooling to protect vulnerable populations from heat events.
6	Install solar on 41 Nisqually rental homes to reduce monthly electricity costs and indirect carbon emissions, and protect tenants from rising electricity costs.
7	Provide residential and commercial energy efficiency incentives to tribal members on and off the reservation.

The new climate resiliency program manager and project manager will take lead on implementing all priority measures. The new staff members will have the support of the building department's staff to execute implementation plans. In addition to the director, the Building Department team is made up of an executive assistant, one senior project manager, two project managers, two managers, and a building inspector. To provide more support to oversee the implementation of priority measures, OCS may be retained as a contractor by the Tribe to help manage projects.

### Benefits Analysis

<b>Tribal Staff</b>	<ul style="list-style-type: none"> <li>• Additional staff capacity is needed to implement recommended measures.</li> <li>• The new staff members will secure funds and implement projects.</li> </ul>
<b>Clean Energy Development</b>	<ul style="list-style-type: none"> <li>• Reducing energy consumption.</li> <li>• Protecting against rising energy costs.</li> <li>• To be used as an educational tool for Tribal youth.</li> </ul>
<b>Heat Pumps, Weatherization, and Heat Pump Water Heaters</b>	<ul style="list-style-type: none"> <li>• Reducing the use of wood or propane fuel to improve indoor and outdoor air quality.</li> <li>• Adding cooling to homes to protect vulnerable populations during heat events.</li> <li>• Reducing utility costs.</li> </ul>

## A Review of Authority to Implement

The authority to implement any of the priority measures included in this PCAP will require the approval of the Nisqually Tribal Council, which is the elected governing body for the Tribe. These decision makers meet every two weeks to discuss any proposed programs or projects for implementation across the reservation. Depending on the weight of the proposed item, the decision to move forward with the project or program could be discussed one week, and fully decided on the next. Some decisions will take up to a month to receive approval. Our team gathers to discuss items we would like to prepare for proposal and to make sure those items align with tribal goals, and then we design a proposal for Tribal Council.

In addition to Tribal Council, another authority our team will need to interact with to implement priority measures is PSE, to obtain approval to construct and energize solar installations. Depending on the size of the installation, receiving approval to construct can take anywhere from one month to two months and approval to energize (officially connect to the grid) the project can take about four months. This will be discussed in further detail in the PCAP elements.

The Washington Department of Labor and Industries provides permitting services for the Tribe. Any project that requires a building or electrical permit will need to secure approval from Labor and Industries.

## Scope of the PCAP

The scope of the GHG inventory for the PCAP included all buildings within the geographic boundary of the Nisqually Reservation, and all buildings owned and operated by the Tribe as well as their business arm, the MCEC. The Nisqually Government and MCEC have departments that operate facilities and rental homes outside of the reservation. The energy use data used to generate the GHG inventory was measured for the full calendar year of 2022.

Primarily, the GHG emissions from the building sector are indirect emissions from electricity use, with the electricity being delivered by the Tribe's utility, PSE. The most recent energy mix data for PSE's electricity generation is from 2021 and was used as the emissions per unit of electricity for the building sector. The other forms of energy use included in the GHG inventory are propane and natural gas. The data for natural gas use was collected directly from the commercial Nisqually Government and MCEC buildings that use these fuels. The residential propane emissions were estimated using EIA resources.

Implementation Timeline	
Grant Year	Deliverables
1	<ul style="list-style-type: none"> <li>• Hire new staff members.</li> <li>• Perform detailed energy audits of tribal government buildings.</li> <li>• Install heat pump systems at the Public Safety Building.</li> <li>• Install heat pumps in three tribal-owned rental homes as a pilot program.</li> <li>• Install solar at the Tribal Health Services building.</li> <li>• Design residential solar and heat pump incentive programs.</li> <li>• Perform energy efficiency installations using incentive funding on 5-10 tribal buildings as a pilot program.</li> <li>• Community engagement efforts at community resource gathering events.</li> </ul>
2	<ul style="list-style-type: none"> <li>• Install solar at the Public Safety building.</li> <li>• Install solar at the Tribal Health Services building.</li> <li>• Install 3 to 5 residential solar arrays on tribal-owned rental homes as a pilot program.</li> <li>• Evaluate other tribal-owned rental homes for specific solar potential.</li> <li>• Install heat pumps in 8 tribal-owned rental homes.</li> <li>• Perform energy efficiency installations using incentive funding on 15-20 tribal buildings.</li> <li>• Community engagement efforts at community resource gathering events.</li> </ul>
3	<ul style="list-style-type: none"> <li>• Complete 5-10 tribally-owned rental home solar installations.</li> <li>• Install heat pumps in 10 tribal-owned rental homes.</li> <li>• Install solar at tribal services administrative buildings.</li> <li>• Community engagement efforts at community resource gathering events.</li> <li>• Complete GHG inventory for the building sector to benchmark progress on mitigation efforts.</li> <li>• Complete energy efficiency installations using incentive funding on 20-25 tribal buildings.</li> </ul>
4	<ul style="list-style-type: none"> <li>• Complete 10-15 tribally-owned rental home solar installations.</li> <li>• Install heat pumps in 10 tribal-owned rental homes.</li> <li>• Install solar at the Youth and Community Center.</li> <li>• Community engagement efforts at community resource gathering events.</li> <li>• Complete energy efficiency installations using incentive funding on 20-25 tribal buildings.</li> </ul>
5	<ul style="list-style-type: none"> <li>• Complete 10-15 tribally-owned rental home solar installations.</li> <li>• Community engagement efforts at community resource gathering events.</li> <li>• Complete energy efficiency installations using incentive funding on 20-25 tribal buildings.</li> <li>• Complete GHG inventory for the building sector to benchmark progress on mitigation efforts.</li> <li>• Complete all required grant reporting.</li> </ul>

## The Tribal/Territorial PCAP Development Team

### Nisqually Indian Tribe's Building Department

- **Lisa Breckenridge** is a planner with the Nisqually Tribe, has been managing tribal community development projects for 25 years. She was part of the team that wrote the 2023 Nisqually Community Environmental Plan and has worked with the Tribe's EPA GAP program for several years. Lisa is one of the three technical staff members for the PCAP team.
- **Wayne Lloyd** is the Building Department Director for the Tribe. He has two decades of construction project management, often managing multiple projects at the same time. His background includes power generation, new manufacturing facilities, plant repairs and numerous small builds and maintenance projects. Project budgets have ranged from a few thousand to \$300 million, and from simple updates to complex operations requiring dozens of people in multiple locations. Wayne focuses on quality, safety and customer satisfaction with his projects. Wayne is one of the three technical staff members for the PCAP team.
- **Jessie Fox** is a dedicated Executive Assistant with over 8 years of experience in the engineering and construction industries. She is currently supporting Wayne Lloyd and the staff of the Nisqually Building Department. Jessie also is the Quality Assurance Manager for the PCAP.
- **Mike Elliot** retired from the military in 1991 and has been an electrician since 1993. He owned his own electrical company before joining the Tribe in Nov. 2021 as the Electrical Project Manager, Inspector and Supervisor of the electrical apprenticeship program. Mike is one of the three technical staff members for the PCAP team.

### Supported By Olympia Community Solar

- **Mason Rolph** serves as the Executive Director of Olympia Community Solar. Mason, a graduate of The Evergreen State College, has co-authored publications with both the National Renewable Energy Laboratory (NREL) and the Smart Electric Power Association (SEPA). He received the Sam Garst Climate Champion award by Climate Solutions in 2018, and Emerging Clean Energy Leader award from the Northwest Energy Coalition in 2021. He was elected to the Washington Solar Energy Industry Association Board of Directors in 2022 and reelected in 2024. Mason is also the Quality Assurance Coordinator for the PCAP.
- **Zachery Miller** is the Grants Manager for Olympia Community Solar. Zachery is a recent graduate of the Renewable Energy and Sustainability Systems masters program at the Pennsylvania State University, with a focus in sustainability management and policy. Previously he worked with PSE for four years, marketing their renewable energy and energy efficiency programs. Zachery is the Project Manager for the PCAP.

### *PCAP Advisory Roles*

- **Thurston Regional Planning Council** is a regional council of governments in Thurston County, Washington. The TRPC completed a GHG inventory in 2021 and provided support to the PCAP management team on best practices for the GHG inventory.
- **Puget Sound Energy Tribal Relations** is a team within the utility serving the Tribe. Our team worked with PSE's Tribal Relations to gather important GHG inventory data and learn about programs that could help in the development of the PCAP and CPRG applications and the implementation of priority measures.

## Special Considerations for Tribal/Territorial Entities

In the past few months, the Tribe published a 2024-2028 environmental plan<sup>1</sup> which identified solutions from the collective voice of the tribal community. Using a series of community surveys in 2023, the Tribe was able to establish a clear direction for short-term and long-term environmental solutions including restoring salmon populations, adding staff to advocate for environmental issues, regulate water quality, climate resiliency, and many others. Pursuing CPRG funding is directly in alignment with many of these goals and this PCAP seeks to solve two major goals of improving climate resiliency and hiring climate-focused staff.

The Tribe has not previously completed a GHG inventory, so this building sector inventory for this PCAP will serve as an initial baseline for the Tribe. Although challenging, the completed inventory can be replicated rather simply given that only a few data resources need to be consulted, most of which are internal to the Tribe.

Each decision that is made to pursue a GHG mitigation measure will need to receive the approval of the Tribal Council, which is usually a month-long process. For the priority measures included in this PCAP, we will be focusing on retrofitting existing buildings so this will help ensure that for the priority GHG mitigation solutions, there are no concerns around impacts to the land or cultural sites. This has simplified the decisions made by the PCAP team to propose measures to Tribal Council, and to receive approval from council to submit this PCAP and pursue the listed measures.

## Collaborations

The PCAP team developed connections throughout the community that helped make this PCAP possible. At the beginning of the planning process, the team secured OCS as a contractor to help draft the PCAP, GHG inventory, priority measures identification, and benefits analysis.

The PCAP team worked closely with PSE, TRPC, and Commerce to learn best practices for conducting a GHG inventory and to gather electricity consumption data for the inventory. Two of PSE's departments, both Tribal Relations and Customer Insights, provided the energy use data necessary for our building sector inventory. PSE connected us with a federal program that assisted in providing site assessments to gather crucial information about building energy upgrades for the tribal government buildings. Commerce helped connect our team with valuable resources that other tribes were using to complete PCAP deliverables.

Our team also collaborated with various contractors and partners to gather estimates for solar installations, heat pumps, and energy audit services which we used to model the projects and programs we'd like to implement into the Nisqually community. Swiftsure Energy Services helped us conduct residential energy audits, which showed opportunities for Tribe's rental homes to lower heating energy use, reduce heating from wood and propane stoves, and provide cooling.

An HVAC contractor, Sunset Air, provided estimates for heat pump installation on a few rental homes, which allowed our team to model potential costs for the remaining homes. We collaborated with the Nisqually Housing Department to communicate with renters and ensure minimal disruption.

South Sound Solar helped our team gather residential and commercial estimates for solar installations to understand costs and energy generation potential.

For community engagement purposes, we collaborated with a local digital creator, Bruce Levins, to create educational posters for community gatherings, and graphics for this PCAP. Additionally, we will work with Nisqually Communications to prepare a podcast episode on our efforts with this PCAP so the community can hear about what the tribe is striving to accomplish.

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<sup>1</sup>The Nisqually Tribe's 2024-2028 Environmental Plan: [Nisqually Tribe Environmental Plan\\_FinalLowRes\\_010624\(1\)-compressed.pdf](#)

## PCAP Elements

### Greenhouse Gas Inventory

The scope of the following GHG inventory includes the total energy use for all buildings within the Tribe's reservation boundaries as well as all buildings owned by the Tribe outside of the reservation. The Tribe does not operate any industrial or energy production facilities, so this inventory will only include energy used onsite by commercial and residential buildings. The direct emissions from these buildings will include propane and natural gas use for space heating, water heating, and cooking equipment. The indirect emissions are a result of electricity used onsite, delivered by PSE.

Table #1 provides the complete energy use for each contributor for emissions in the residential and commercial sectors. As can be seen in the table below, 83% of emissions result from the delivery of electricity to Nisqually buildings and can be classified as indirect emissions. This means that only 17% of emissions are direct emissions.

Table #1: 2022 Energy Use and Emissions by Sector		
Sector	Energy Use	Emissions (mtCO <sub>2</sub> e)
Residential Electricity	4,490,253 kWhs	1,868
Residential Propane	191 gallons	1
Commercial Electricity	17,988,134 kWhs	7,479
Commercial Propane	320,750 gallons	1,811
Commercial Natural Gas	7,715 therms	41
<b>Total Direct Emissions</b>		<b>1,853</b>
<b>Total Indirect Emissions</b>		<b>9,346</b>

This inventory will serve as the baseline for measuring implemented GHG reductions in the building sector. Our team chose 2022 as the baseline year because we collected energy use data in October of 2023. 2022 was the first year that the energy use had returned to "normal" after COVID-19 halted many activities and use of resources.

The collection of energy use values began by collaborating with PSE Tribal Relations, TRPC and Commerce on the methods they used to collect high quality data. The Customer Data insights team shared the total number of residential/commercial utility meters and total energy use within the boundaries of the reservation.

In monthly PCAP meetings with Commerce, we talked about best practices and we described our success with acquiring PSE energy use data, and Commerce informed us that other tribes will want to hear about our methods of data collection. The project manager for the PCAP, Zachery Miller, joined a call with Commerce to describe and share a document on this process for other tribes pursuing the PCAP. The process began with identifying the different tax code areas for the reservation, so that PSE could accurately collect meter information within those boundaries.

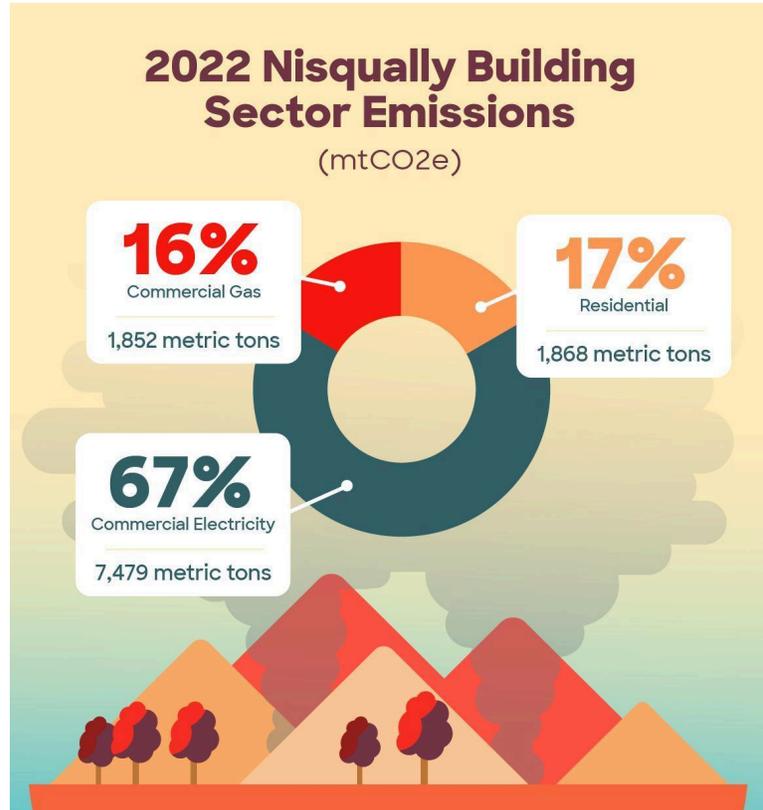
After we understood how many homes and businesses were on the reservation and how much energy they use cumulatively, we needed more granular data on which specific buildings are using the most energy. PSE Tribal

Relations helped us gather specific energy use data for all individual accounts under the broader utility account for the Tribe, which provided necessary depth for the inventory and helped us identify buildings we should include from outside of the reservation.

We estimated propane use utilizing EIA estimates for the 235 residential homes included in the inventory<sup>2,3</sup>. The Red Wind Casino and the Public Safety buildings are the only two commercial buildings that use propane, so we collected propane bills that gave our team the consumption figures.

We reached out to PSE to determine the emissions value of each kWh they generate. They provided us with their most recent inventory which was from 2021, and the emissions value per kWh was 0.9168 lbs of CO<sub>2</sub>e<sup>4</sup>. Our team used this value to calculate the total emissions from the Tribe's electricity

use, as well as to estimate the effectiveness of the GHG mitigation strategies from our priority measures. Our GHG inventory tool, ClearPath<sup>5</sup>, allowed us to enter the emission figures from PSE electricity generation. This meant that when we entered electricity use or carbon mitigation strategies, the emissions were automatically calculated. Each priority measure has an explanation of how the emissions reductions were calculated.



Emission Type	Emission Type Total (metric tons)
CO <sub>2</sub>	11,128
CH <sub>4</sub>	0.9834
N <sub>2</sub> O	0.1253
SF <sub>6</sub>	0.000479
<b>Total</b>	<b>11,199 CO<sub>2</sub>e</b>

<sup>2</sup> State Energy Profile Data. U.S. Energy Information Administration. (2024, March 21). <https://www.eia.gov/state/data.php?sid=WA>

<sup>3</sup> Annual household site propane end-use consumption in the United States by state—averages, 2020. U.S. Energy Information Administration. (2023, June). <https://www.eia.gov/consumption/residential/data/2020/state/pdf/ce4.6.jp.st.pdf>

<sup>4</sup> Puget Sound Energy Sustainability Commitments and Reporting. Puget Sound Energy. (n.d.). <https://www.pse.com/en/about-us/Sustainability>

<sup>5</sup> Statewide Energy Efficiency Collaborative. ICLEI. (n.d.). <https://clearpath.icleiusa.org/>

In Table #2 above, our team used ClearPath software to calculate the CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O totals from the building sector’s electricity, propane, and natural gas consumption.

The only category that was not included in ClearPath and that needed manual calculation were the emissions from SF<sub>6</sub>. We collected the value for SF<sub>6</sub> emitted per kWh from the PSE 2021 GHG inventory summary, which we applied to the residential and commercial electricity consumption only because SF<sub>6</sub> is released from electricity transmission.

## GHG Reduction Measures

Priority Measure #1: Hire Climate Resilience Staff	
Implementing Agency	Nisqually Indian Tribe
Description of measure	The Tribe expressed their need to hire new staff to implement the recommendations of this plan. These staff members will be responsible for overseeing the implementation of all of the priority measures and other sustainability projects the Tribe wants to pursue.
Implementation Milestones	<ul style="list-style-type: none"> <li>→ Budget created.</li> <li>→ Approval by Tribal Council.</li> </ul>
Geographic Location	Olympia, WA
Sector	Electric Power, Commercial and Residential Buildings
Metrics Tracking	N/A
Cost	\$1,473,060 (salary, benefits, and indirect costs)
Annual GHG Reduction Estimates (metric tons)	N/A
Implementation Schedule	<ul style="list-style-type: none"> <li>→ Grant Year 1: Publish job opportunity (two months).</li> <li>→ Grant Year 1: Screen and interview candidates (two months).</li> <li>→ Grant Year 1: Select final candidates (one month).</li> <li>→ Grant Year 1: Hire and orient the new staffers (two months).</li> <li>→ Grant years 2-5: Implement priority measures 2-7.</li> </ul> <p>Estimated time for completion: <b>7 months.</b></p>

Priority Measure #2: Heat Pump Installations for the Tribal Public Safety building	
Implementing Agency	Nisqually Indian Tribe
Description of measure	Installing heat pumps to replace air conditioners and mitigate boiler use in the public safety building will reduce the consumption of propane and improve the cooling efficiency for air conditioning.
Implementation Milestones	<ul style="list-style-type: none"> <li>→ In-person site assessment by local HVAC professional (completed)</li> <li>→ Estimate generated (completed)</li> </ul>

	<ul style="list-style-type: none"> <li>→ Secure funding from CPRG</li> <li>→ Complete competitive procurement for contractor</li> <li>→ Complete contracting</li> <li>→ Confirm commissioning and track economic and emissions impact</li> </ul>
<b>Geographic Location</b>	11702 Yelm HWY SE, Olympia, WA 98513
<b>Sector</b>	Commercial Buildings
<b>Metrics Tracking</b>	We can get daily to monthly updates on energy consumption from the utility for this building.
<b>Cost</b>	\$500,000
<b>Annual GHG Reduction Estimates (metric tons)</b>	CO2 = 222.16, CH4 = 0.03972, N2O = 0.003972, <b>MTCO2e = 224.33</b>
<b>Implementation Schedule</b>	Estimated time for completion: <b>6-12 months.</b>
<b>How were emission reductions calculated?</b>	A local HVAC contractor, Sunset Air, provided us with an estimate for the installation of the heat pumps. Their estimate included potential energy savings which we input into our GHG inventory tool to gather the emissions offsets for this project.

<b>Priority Measure #3: Add solar energy system to the Tribal Public Safety building</b>	
<b>Implementing Agency</b>	Nisqually Indian Tribe
<b>Description of measure</b>	A 252 kW solar array will reduce the Public Safety Building's electricity costs by approximately 30%, reducing indirect emissions, and protecting the Tribe against rising electricity costs.
<b>Geographic Location</b>	11702 Yelm HWY SE, Olympia, WA 98513
<b>Sector</b>	Electric Power
<b>Metrics Tracking</b>	System will include monitoring to gather real-time production data.
<b>Cost</b>	\$380,800
<b>Annual GHG Reduction Estimates (metric tons)</b>	CO2 = 104.3, CH4 = 0.0073841, N2O = 0.0010448, <b>mtCO2e = 104.78</b>
<b>Implementation Schedule</b>	<ul style="list-style-type: none"> <li>→ Site assessment by local solar installer (completed)</li> <li>→ Estimate generated (completed)</li> <li>→ Secure funding from CPRG</li> <li>→ Complete competitive procurement for contractor</li> <li>→ Complete contracting</li> <li>→ Confirm commissioning and track economic and emissions impact.</li> </ul>

	Estimated time for completion: <b>6-12 months.</b>
How were emission reductions calculated?	A local solar installer, South Sound Solar, provided us with estimates for system size and production for the building. After gathering the production estimates, our team put these values into our GHG inventory software which showed us the emissions reductions.

Priority Measure #4: Add Solar to Three Tribal Services Buildings	
Implementing Agency	Nisqually Indian Tribe
Description of measure	This group of solar arrays totalling 412 kW will save the Tribe \$45,000 in energy costs in their first year of operation, reducing indirect emissions, and protecting the Tribe against rising electricity costs.
Geographic Location	<ul style="list-style-type: none"> <li>• 4820 She-Nah-Num Dr, Olympia, WA 98513</li> <li>• 4840 Journey St SE, Olympia, WA 98513</li> <li>• 1937 Lashi St SE, Olympia, WA 98513</li> </ul>
Sector	Electric Power
Metrics Tracking	Systems will have tracking software to gather real-time production data.
Cost	\$1,000,000
Annual GHG Reduction Estimates (metric tons)	CO2 = 169.63, CH4 = 0.012010, N2O = 0.0016992, <b>mtCO2e = 170.42</b>
Implementation Schedule	<ul style="list-style-type: none"> <li>→ Site assessment by local solar installer (completed)</li> <li>→ Estimate generated (completed)</li> <li>→ Secure funding from CPRG</li> <li>→ Complete competitive procurement for contractor</li> <li>→ Complete contracting</li> <li>→ Confirm commissioning and track economic and emissions impact.</li> </ul> Estimated time for completion: <b>6-12 months for each site.</b>
How were emission reductions calculated?	A local solar installer, South Sound Solar, provided us with estimates for system size and production for the three buildings. After gathering the production estimates, our team put these values into our GHG inventory software which showed us the emissions reductions.

Priority Measure #5: Heat Pump Installations for 31 Nisqually Rental Homes	
Implementing Agency	Nisqually Indian Tribe
Description of measure	Half of the Nisqually rental homes do not have cooling and use electric forced air furnaces, baseboard heaters, or cadet wall heaters.

	High-efficiency heat pumps will improve heating energy efficiency, indoor air quality, and add air conditioning.
<b>Geographic Location</b>	Olympia, WA
<b>Sector</b>	Commercial and Residential Buildings
<b>Metrics Tracking</b>	We can get daily to monthly updates on energy consumption from the utility to track electricity use.
<b>Cost</b>	\$260,000
<b>Total Annual GHG Reduction Estimate for 31 Homes (metric tons)</b>	CO2 = 23.57, CH4 = 0.0016688 , N2O = 0.00023612, <b>mtCO2e = 23.68</b>
<b>Implementation Schedule</b>	<ul style="list-style-type: none"> <li>→ In-person site assessment by local HVAC company (completed)</li> <li>→ Estimate generated for three homes (completed)</li> <li>→ <b>Grant Year 1:</b> Install heat pumps in 3 homes as a pilot.</li> <li>→ <b>Grant Year 2:</b> Install heat pumps in 8 homes.</li> <li>→ <b>Grant Year 3:</b> Install heat pumps in 10 homes.</li> <li>→ <b>Grant Year 4:</b> Install heat pumps in 10 homes.</li> </ul>
<b>How were emission reductions calculated?</b>	The City of Olympia organized a heat pump installation program called Energize Olympia <sup>6</sup> that took place in 2023. From the installations completed through this program, they shared with us the average cost for installation and the average energy saved per home. Using those energy savings numbers, we input those into our GHg inventory software to calculate the emissions reduction impact.

<b>Priority Measure #6: Solar Installations for 41 Nisqually Rental Homes</b>	
<b>Implementing Agency</b>	Nisqually Indian Tribe
<b>Description of measure</b>	Currently, zero rental homes owned by the Tribe have solar but many of them have potential. To utilize this roof space, we propose solar installations that will reduce costs to renters and the Nisqually Housing Department. This will make housing more accessible and reduce indirect carbon emissions.
<b>Geographic Location</b>	Olympia, WA
<b>Sector</b>	Electric Power
<b>Metrics Tracking</b>	Systems will have tracking software to gather real-time production data.
<b>Cost</b>	\$1,025,000
<b>Total GHG Reduction</b>	CO2 = 151.61, CH4 = 0.010734, N2O = 0.0015187, <b>mtCO2e = 152.31</b>

<sup>6</sup> Energize Olympia. City of Olympia. (n.d.). [https://www.olympiawa.gov/community/climate\\_change\\_response/energize\\_olympia.php](https://www.olympiawa.gov/community/climate_change_response/energize_olympia.php)

<p><b>Estimate for 41 Homes (metric tons)</b></p>	
<p><b>Implementation Schedule</b></p>	<ul style="list-style-type: none"> <li>→ In-person site assessment by local solar company (completed)</li> <li>→ Estimate generated for three homes (completed)</li> <li>→ <b>Grant Year 2:</b> Perform estimates for remaining homes and install on 3-5 homes.</li> <li>→ <b>Grant Year 3:</b> Install solar on 5-10 homes.</li> <li>→ <b>Grant Year 4:</b> Install solar on 10-15 homes.</li> <li>→ <b>Grant Year 5:</b> Install solar on 10-15 homes.</li> </ul>
<p><b>How were emission reductions calculated?</b></p>	<p>A local solar installer, South Sound Solar, provided us with estimates for system size and production for five homes. Using those estimates and scaling for the other rental homes with solar feasibility, we were able to project the cost and production estimates for 41 homes. After gathering the production estimates, our team put these values into our GHG inventory software which showed us the emissions reductions.</p>

<p><b>Priority Measure #7: Residential and Commercial Energy Efficiency Incentives</b></p>	
<p><b>Implementing Agency</b></p>	<p>Nisqually Indian Tribe</p>
<p><b>Description of measure</b></p>	<p>An incentive program that will provide access for tribal members on and off the reservation to receive financial support for energy audits and the installation of heat pumps, insulation and air sealing, and heat pump water heaters. PSE has a program that matches incentive funding - we may be able to double the impact of every federal dollar invested in these incentives.</p>
<p><b>Geographic Location</b></p>	<p>Olympia, WA</p>
<p><b>Sector</b></p>	<p>Residential and Commercial Buildings</p>
<p><b>Metrics Tracking</b></p>	<p>The Tribe will track the buildings that receive upgrades from incentives and request energy use to track reductions as a result of energy efficiency upgrades to the building.</p>
<p><b>Cost</b></p>	<p>\$1,082,879</p>
<p><b>Total GHG Reduction Estimate for 100 Homes (metric tons)</b></p>	<p>CO2 =166.43, CH4 = 0.011783, N2O = 0.001667, <b>mtCO2e = 167.2</b></p>
<p><b>Implementation Schedule</b></p>	<ul style="list-style-type: none"> <li>→ <b>Grant Year 1:</b> Design incentive program structure and pilot the program on 5-10 homes.</li> <li>→ <b>Grant Year 2:</b> Install energy efficiency measures on 15-20 homes.</li> <li>→ <b>Grant Year 3:</b> Install energy efficiency measures on 20-25 homes.</li> <li>→ <b>Grant Year 4:</b> Install energy efficiency measures on 20-25 homes.</li> <li>→ <b>Grant Year 5:</b> Install energy efficiency measures on 20-25 homes.</li> </ul>

<p><b>How were emission reductions calculated?</b></p>	<p>The emissions value here includes totals from heat pump, insulation (attic, walls, floor, and duct), and heat pump water heater installations in 100 homes. The heat pump emissions savings were calculated from the City of Olympia’s Energize Oly program<sup>7</sup>. The weatherization and heat pump water heater emissions reductions were calculated from values found on the Northwest Power and Conservation Council’s tool called the Regional Technical Forum<sup>8</sup>.</p>
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## Benefits Analysis

Among the listed recommendations for reducing GHG emissions are solutions that will not only reduce local air pollution, but will also provide financial and health benefits to tribal members on and off the reservation. This is important as the Tribe is designated by the Council of Environmental Quality as both overburdened and underserved<sup>9</sup>. According to the TRPC and the Housing Authority of Thurston County, 24% of households are in poverty, 40% of households are considered very low-income, and 57% of households are low-income on the reservation<sup>10 11</sup>. Reducing energy consumption costs through energy efficiency and renewable energy will provide a financial benefit for tribal members who then will be able to spend that money on other needs. This benefit will protect the tribe from rising energy costs in Washington State, which have risen nearly 29% in the last ten years<sup>12</sup>.

According to the EPA, indigenous populations have higher rates of certain medical conditions than the general U.S. population. These conditions include asthma, heart disease, diabetes, obesity, and dementia. These chronic medical circumstances put the indigenous at higher risk of harm as the climate changes<sup>13</sup>. According to the Washington Health Disparities Map, the reservation ranks 6/10 on risk associated with death from cardiovascular disease, 6/10 on concentration of particulate matter 2.5 micrometers and smaller, and 8/10 with proximity to heavy traffic roadways<sup>14</sup>. Installing heat pumps accompanied by better air filtration systems in the Tribe’s rental homes and at the public safety facility will be important to reduce the use of wood burning stoves and propane fueled heating systems and to improve air quality for a vulnerable population.



<sup>7</sup> *Energize Olympia*. City of Olympia. (n.d.). [https://www.olympiawa.gov/community/climate\\_change\\_response/energize\\_olympia.php](https://www.olympiawa.gov/community/climate_change_response/energize_olympia.php)

<sup>8</sup> *UES measures: Regional Technical Forum*. Northwest Power and Conservation Council. (2023, December 5). <https://rtf.nwcouncil.org/measures/>

<sup>9</sup> *Explore the Map*. Climate and Economic Justice Screening Tool. (2022, November 22). <https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5>

<sup>10</sup> *Nisqually Reservation 2023 Statistical Profile - Demographics*. Thurston Regional Planning Council. (2023, November). <https://www.trpc.org/DocumentCenter/View/11443/Nisqually>

<sup>11</sup> *Eligibility Income Limits*. Housing Authority of Thurston County. (2023, June 22). <https://hatc.org/eligibility-income-limits/>

<sup>12</sup> *Average price: Electricity per kilowatt-hour in Seattle-Tacoma-Bellevue WA*. FRED Economic Research. (2024, March 12). <https://fred.stlouisfed.org/series/APUS49D72610>

<sup>13</sup> *Climate Change and the Health of Indigenous Populations*. EPA. (2023, December 27). <https://www.epa.gov/climateimpacts/climate-change-and-health-indigenous-populations>

<sup>14</sup> *Washington Environmental Health Disparities Map*. Washington State Department of Health. (2022, July).

<https://doh.wa.gov/data-and-statistical-reports/washington-tracking-network-wtn/washington-environmental-health-disparities-map>

The addition of heat pumps will improve climate resiliency to increasingly regular heat events in Western Washington. A study done by the University of Washington Climate Impacts Group found that the number of extreme heat events averaged three per year year from 1971 to 2021 and will increase 700% by the 2050s<sup>15</sup> to a whopping average of 22 extreme heat events per year. Adding heat pumps to the Nisqually rental homes will provide the homes with air conditioning to maintain comfort for tribal members who have health concerns.

The top priority measure for the Tribal Council and staff is to hire staff to focus solely on climate-related issues. Having two new staff members that have expertise in project management and solving environmental concerns for communities will expand the abilities of the tribe to act upon these projects, and give other staff who currently work on these matters space to focus on other projects that benefit the community. One of the primary duties of these roles will be to find and pursue funding opportunities that align with the goals within the tribe's environmental plan.

## Review of Authority to Implement

For all of the GHG reductions strategies proposed in this PCAP, the authority to implement these measures will be the Nisqually Indian Tribal Council. The Tribal Council meets every two weeks and they will often review a proposed project during one meeting, and then make a decision on the proposal during the next meeting. This process typically takes a month to receive approval.

For the solar installations, the ability to interconnect to the grid will depend on the approval of system design by PSE. There are two potential timelines for interconnection depending on whether they fall under Schedule 150 ([net metering](#)) or Schedule 152 ([distributed energy](#)). For schedule 150 projects, it may take 1-3 weeks from application to receiving approval to construct the system. Net metered projects are sized at 100 kW AC or less. For larger schedule 152 projects, the interconnection process includes feasibility studies for the site and the timeline until final approval can take up to 4-6 months. As an example of a simpler project design that would take much less time to receive approval, the proposed solar installation on the Public Safety Building is a good example. The system size is 252kW but will only account for approximately one-third of the building's energy use, which will not require as much research into impacts on the local grid because most if not all, energy will be consumed on-site as soon as it is produced.

Lastly, the Washington Department of Labor and Industries provides permitting services for the Tribe and any project that requires a building or electrical permit will need to secure approval from Labor and Industries.

## Next Steps

To be prepared for the implementation plan, the PCAP team needs to prepare the following items:

- Finalize a list of alternative funding sources.
- GHG emission projections and reduction targets for remaining reservation economic sectors.
- Finalize a detailed budget.
- Complete a workforce planning analysis.

In putting together this PCAP, our team has prepared a fair amount of content that will crossover into the implementation plan and move along our timeline for the completion of the full application for the CPRG competition. Our implementation plan will need to add the items listed above and to refine some of the topics already discussed in this PCAP to satisfy the application requirements.

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<sup>15</sup>*In the Hot Seat: Saving Lives from Extreme Heat in Washington State.* The University of Washington. (2023). <https://cig.uw.edu/wp-content/uploads/sites/2/2023/06/CI-Report-Heat-202-pages.pdf>