



A dynamic interaction exists between people, ecosystems, and natural resources. Just as ecosystems and resources affect human populations, people drive changes in the natural world around them. In the case of climate change, these changes will be extraordinarily far-reaching, and are expected to include increased temperatures, changing weather patterns, more frequent and extreme weather events, rising sea levels, reduced mountain snowpack, and changing hydrology.

# Background

## INDIGENOUS PEOPLES AND CLIMATE CHANGE

Tribal nations will likely be disproportionately impacted by climate change due to several factors, including an intimate, long-standing relationship with the natural environment and its resources, limited and relatively non-diverse economies, limited energy security and transportation options, and the practice of subsistence activities in many communities. These characteristics make tribes more vulnerable to the impacts of climate change than most other North American communities. A broad range of tribal resources will be affected by climate change, including ecosystems, natural resources, human health, and energy production and use [1]. In addition to posing serious challenges in their own right, these vulnerabilities will also impact tribal cultures, traditions, and politics. “For indigenous peoples, the impacts of climate change extend beyond the physical environment to their responsibilities as governments and cultural continuity,” writes Gary Morishima in *Climate Change and Indigenous Peoples: A Primer* [2].

The effects—both direct and indirect—of climate change are already being felt in many tribal communities. Tribes should hold central roles in shaping local and regional climate policies and programs.

## FEDERAL RECOGNITION OF TRIBES’ VULNERABILITY TO CLIMATE CHANGE

One of the twelve major findings of the federal government’s 2014 National Climate Assessment is that “climate change poses particular threats to Indigenous Peoples’ health, well-being, and ways of life.” The Indigenous Peoples, Lands, and Resources chapter states that climate change impacts on many tribes “are projected to be especially severe,” and that “adaptive responses to multiple social and ecological challenges arising from climate impacts on indigenous communities will occur against a complex backdrop of centuries-old cultures already stressed by historical events and contemporary conditions.” This chapter



also remarks that Native populations are particularly vulnerable to climate change impacts because their cultures and ways of life are so closely tied to specific geographic areas and natural resources.

The National Climate Assessment also details the five climate change impacts expected to have particularly severe effects on tribal communities:

1	Reduced access to traditional foods, due to factors such as warmer temperatures, more frequent droughts, and longer fire seasons
2	Decreasing water quality and quantity, and less predictable availability, due to factors such as reduced rainfall and snowfall, melting glaciers, and shifts in ocean currents
3	Declining sea ice, which has widespread impacts in Alaska
4	Thawing permafrost, which is damaging infrastructure and stressing cultural traditions in Alaska
5	Relocation, in Alaska and among other coastal tribal communities

The Climate Assessment lays the foundation for what could become a comprehensive program to deal with climate change. Other steps toward the development of such a program include President Obama’s Climate Action Plan, issued in June 2013, and Executive Order 13653 on Preparing the United States for the Impacts of Climate Change, issued on November 1, 2013. The Executive Order recognizes that “[t]he impacts of climate change—including an increase in prolonged periods of excessively high temperatures, more heavy downpours, an increase in wildfires, more severe droughts, permafrost thawing, ocean acidification, and sea-level rise—are already affecting communities, natural resources, ecosystems, economics, and public health across the Nation.”

The White House has set a mission for the federal government to pursue new strategies to improve the Nation’s preparedness and resilience, in part through modernizing federal programs to support the efforts of states, regions, local communities, and tribes to invest in climate resilience; managing lands and waters for climate preparedness and resilience; and providing related information, data, and tools. When the President issued Executive Order 13653, he also created the State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience, which was charged with providing recommendations to the President and federal agencies on how the federal government can do the following:

- Remove barriers, create incentives, and modernize federal programs to facilitate increased resilience to climate impacts, including those associated with extreme weather.
- Provide useful climate preparedness tools and actionable information for state, local communities, and tribes.
- Support state, local, and tribal preparedness for and resilience to climate change.

That Task Force presented recommendations to the President in November of 2014. The two tribal leaders on the Task Force—Chairwoman Karen Diver and Mayor Reggie Joule—received and compiled input from hundreds of tribal leaders nationwide. The Task Force recommendations aim to guide the federal government toward properly supporting tribes and other communities in building resilience.

## GENESIS OF THIS PROJECT

The Port Gamble S’Klallam Tribe has been concerned about climate change and its actual and potential impacts for over a decade, with increasing focus in the last five years. The driving force behind this Climate



Change Impact Assessment and anticipated follow-up work is the high probability of climate change driving major changes to the Tribe's important natural resources, beaches, shorelines, and animals that the Tribe has depended upon for many thousands of years. Future generations are likely to have to adapt their fishing, hunting and traditional practices and could experience changes in their way of life here on the reservation.

While the Tribe agrees with and fully supports the need to minimize and mitigate the sources and causes of climate change, this effort is primarily focused on developing future adaptation strategies and actions to counter the anticipated effects of climate change on the reservation and in the Tribal community. This is based in large part on the recognition that political will and potential for minimizing future climate change impacts is low, and in light of the amount of anthropogenic greenhouse gases that are already in the atmosphere. While society as a whole must play a part in reducing emissions—through a combination of policy, regulatory, and mitigation efforts—it primarily falls to each community and local tribal government to determine their own needs and actions for preparing and adapting to climate change impacts in ways that are locally relevant and appropriate.

The Tribe began this impact assessment with initial funding from the Environmental Protection Agency (EPA), and was able to do most of the work with grant funding from the Bureau of Indian Affairs (BIA). The Tribe is grateful for the significant funding from the BIA, which brought this report to completion. The Tribe established a climate change working group led by the Natural Resources Department, and brought in research and writing support from Cascadia Consulting Group.

## FOCUS AREA: HOOD CANAL AND ADMIRALTY INLET



Area of interest

This report focuses on the Port Gamble S'Klallam Tribe's primary traditional use area, which is comprised of the upper half of Hood Canal and all of Admiralty Inlet. This is the central part of the Tribe's much larger Usual and Accustomed Area.

Hood Canal is a long and narrow fjord, with an average width of 1.5 miles (2.4 km) and average depth of 177 feet (53.8 meters). It has 212.9 miles (342.6 kilometers) of shoreline and 16.4 square miles (42.4 square kilometers) of tideland. Its surface area is 148.9 square miles (385.6 square kilometers) and it contains a volume of water totaling 17,000,000 acre-feet (21 cubic kilometers). Hood Canal extends for approximately 50 miles (80 km) southwest from the entrance between Foulweather Bluff and Tala Point to Union, where it turns sharply to the northeast—a stretch called The Great Bend. It runs northeast for about 15 miles (24 km) to Belfair, where it ends in a shallow tideland called Lynch Cove.

Along its entire length, Hood Canal separates the Kitsap Peninsula from the Olympic Peninsula. The U.S. Naval Base Kitsap, Bangor Annex, is located on the eastern shore of Hood Canal near the town of Bangor. Hood Canal has several internal bays, the largest of which is Dabob Bay. Most of Dabob Bay is a Naval Restricted Area, and is used by the submarines stationed at the Bangor Base. Quilcene Bay is an inlet extending northwest from Dabob Bay. Port Gamble Bay—and the town of the same name—sits near the north end of the canal.



Several rivers flow into the Hood Canal from the Olympic Peninsula, including the Skokomish, Hamma Hamma, Duckabush, Dosewallips, and Big Quilcene. Smaller rivers emptying into the canal from the Kitsap Peninsula include the Union, Tahuya, and Dewatto.

## CLIMATE CHANGE MITIGATION AND REGULATION

This effort focuses on climate change impacts. We recognize that mitigation—taking action to reduce greenhouse gas emissions—is most important for reducing the severity of future impacts. However, given the present-day atmospheric concentration of greenhouse gases, climate impacts will occur, and we need to take steps to prepare for them.

Climate change mitigation represents a serious challenge. Lack of political will, complex global needs for collaboration and funding, economic constraints, and pushback from special interests make progress on large-scale mitigation and adaptation policies difficult. That said, Washington State has succeeded in moving forward on some crucial mitigation strategies locally. For example:

- On October 28, 2013, the governors of California, Oregon, and Washington and the British Columbia Premier, as well as members of the Pacific Coast Collaborative, signed the Pacific Coast Action Plan on Climate and Energy. The plan brings together each jurisdiction's 2050 targets for greenhouse gas reductions and identifies benchmarks toward these long-term goals.
- Governor Jay Inslee put forth a suite of legislative proposals in 2015 aimed at reducing carbon pollution, including the Carbon Pollution Accountability Act to create a market-based program to reduce greenhouse gas emissions, as well as funding and incentives for clean energy development and energy efficiency.
- A state carbon tax was proposed through a citizens' initiative in the November 2016 election. Although it was not approved by voters, it is seen as a significant first step in developing a future state-level carbon tax for Washington.
- Beginning in 2017, the Washington Clean Air Rule will require businesses and large polluters to cap their emissions at 100,000 metric tons of carbon pollution and progressively reduce their emissions over time. The 100,000 metric tons cap will be reduced by 5,000 metric tons every two years until it reaches 70,000 metric tons. The rule is enforced by the Department of Ecology.
- The Department of Ecology has created an Excel-based Greenhouse Gas Calculation Tool meant for use during the development of environmental impact statements required by the State Environmental Policy Act (SEPA).



# WORKS CITED

- [1] K. Rose, "Tribal Climate Change Adaptation Options: A Review of the Scientific Literature," U.S. Environmental Protection Agency, Office of Air, Waste, and Toxics, Region 10, 2010.
- [2] G. Morishima, "Climate Change and Indigenous Peoples: A Primer," Advisory Committee on Climate Change and Natural Resource Science, 2014.