

Alaska's Climate Change Policy Development

March 2021

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CENTER FOR
ARCTIC POLICY STUDIES

University of Alaska Fairbanks



International Arctic
Research Center

LAND ACKNOWLEDGMENT

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ACKNOWLEDGMENTS

We are grateful to Enoch Mitchell of Noatak, AK for generously granting permission to share the quotation in Fig. 3. We also thank Dr. Nikoosh Carlo, Dr. Terry Chapin, Malinda Chase, M.A., Dr. Hajo Eicken, Dr. Adelheid Herrmann, and Danielle Meeker, M.A.S., for their generosity in providing feedback on drafts of this report. Any existing errors or omissions are the authors' own.

SUGGESTED CITATION

A. Steffen, S. A. Greenlaw, M. Biermann, and A. L. Lovecraft. 2021. Alaska's Climate Change Policy Development. Fairbanks: Center for Arctic Policy Studies.

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1 Introduction

Scientific observations have monitored High Northern environmental conditions for well over a century. Alaska Native and other Indigenous Peoples' knowledge systems have developed over millennia to promote human prosperity under a wide range of conditions. Both show rapidly changing environmental conditions in Alaska and the Arctic have been ongoing for over three decades. Observations reveal that ecosystems across the Alaska region have changed, affecting how people rely on food sources, plan their lives, and do their jobs. This report examines the evolution of climate change policy in the state of Alaska since the first major recognition of "global warming" in the late 20th century as a threat. Over time, in the absence of comprehensive and sustained federal or state policies, there has been an emergence of local-scale climate plans - municipal, borough, and Tribal - across the state. To assist the reader in understanding what climate plans have been developed, why, and what impacts they may be having, we identify emerging patterns of policy motivation, funding, and activities that can be traced within and between plans. The report ends with comprehensive contact information for each location and activity documented.

The United States exists as an "Arctic nation" by virtue of the latitude of the state of Alaska. As early as the late 1980s the science behind the characteristics of the Earth's changing climate began to demonstrate that the poles would be most affected.¹ The early evidence of changing climatic patterns for the environments of the Arctic Ocean and surrounding lands caught the attention of the state's executive and legislative branches. Concurrently, the state of Alaska was engaged with federal policy-makers in the development of the international institution that would become the Arctic Council, today's high-level intergovernmental forum for promoting cooperation and coordination among Arctic nations and Peoples. Alaska Governor Steve Cowper (1986-1990) took a lead in national and international discussions on climate change. Inspired by both the National Governors Association and the Northern Regions Conference he pressed for scientific inquiry on climate change impacts in Alaska. The 1990 report titled *An Alaskan Response to Global Climate Change* was a result of Alaska House Concurrent Resolution 56 (HCR 56), which requested the Governor's Office look into possible state policies in response to the impacts of changing environmental conditions. Although HCR 56 did not pass in the House, Governor Cowper nonetheless authorized a draft report. Prepared by the staff of the Office of the Governor along with the Alaska Science and Engineering Advisory Commission, and endorsed by the governor, the goal of the report was to "...examine the benefits, costs, and consequences of various actions for an Alaskan global climate change response upon which policy should be based".² The report identified sectors of concern for Alaskans, as well as action items and agencies appropriate for addressing them, and a framework for developing climate policy in Alaska. This initial focus faded over the ensuing years as the office of the Governor and legislative seats were held by different individuals who embraced or rejected this line of policy development. Remaining true today, there was no board or other sort of formal commission ever developed to carry the issue of climate change across administrations.

Despite the early interest in state-wide planning for changes to weather and climate, as of 2021 there have been no comprehensive and sustained climate action plans or similar policies at the state level, nor, it should be noted, at the federal level. Federal policy related to climate change has not been wholly absent. For example, the congressionally mandated United States Global Change Research Program (USGCRP) has put in place instruments such as the National Climate Assessments to identify and assess climate change impacts, risk, and adaptation. Mitigation efforts related to energy efficiency and greenhouse gas emissions reductions exist in the form of programs like EnergySTAR and NaturalGasSTAR and legislation such as the Clean Air Act after the U.S. Supreme Court determined greenhouse gases could be regulated by the federal government in a series of cases 2007-2014. The result has been a piecemeal and often voluntary suite of activities rather than an overarching coordinated climate action policy in the U.S., and many programs have not been sustained across election, and thus funding, cycles. However, there have been numerous plans at lower levels of government within the state of Alaska between 2007 and 2020. At the point of our research, we have identified 23 climate action plans (CAPs), adaptation plans (APs), and impact assessments with associated response strategies that have emerged (see Appendix B), as well as a number of other local climate-related task forces and resolutions, suggesting strong public and Tribal support at the local and regional levels for policies addressing climate change. Reasons for this may be the suite of internationally verified indicators demonstrating a climate system in flux at the global scale, with rapid changes happening in Alaska and across the circumpolar North, and the science of Arctic amplification demonstrating an unpredictable future.³

1.1 Climate change in Alaska: The physical basis

Scientific evidence distinctly indicates that the Arctic is undergoing rapid environmental changes driven by net global warming. According to the U.S. Global Change Research Program's 2017 Climate Change Special Report, over the past 50 years, annual average near-surface air temperatures across Alaska and the Arctic have increased at a rate more than twice as fast as the global average.⁴ This warming has precipitated other changes in Arctic systems, especially in places where frozen water is present (i.e., the cryosphere). These include melting land ice, such as glaciers; diminishing sea ice, with decreases in sea ice age, thickness and extent; and thawing permafrost, both on land and under coastal waters. Because of the interconnected nature of these cold elements that define the Arctic, interactions between them serve to speed up the rate of change in the Arctic, with impacts at the planet's mid-latitudes.⁵ The effects within Alaska are wide-ranging and, as recently documented in the *Alaska's Changing Environment* report (a comprehensive synthesis of climate change observations across a range of different subsystems within the state), they include more frequent larger fire seasons, earlier river ice break-up, more temperature extremes and fewer very cold days, changing precipitation patterns, declining sea ice, loss of glacial ice and permafrost, shifting geographies of vegetation, and significant impacts on wildlife and humans.⁶

The projected changes to the systems noted above are on a trajectory to continue as the planet warms. In fact, were we to cease the production of greenhouse gases in their

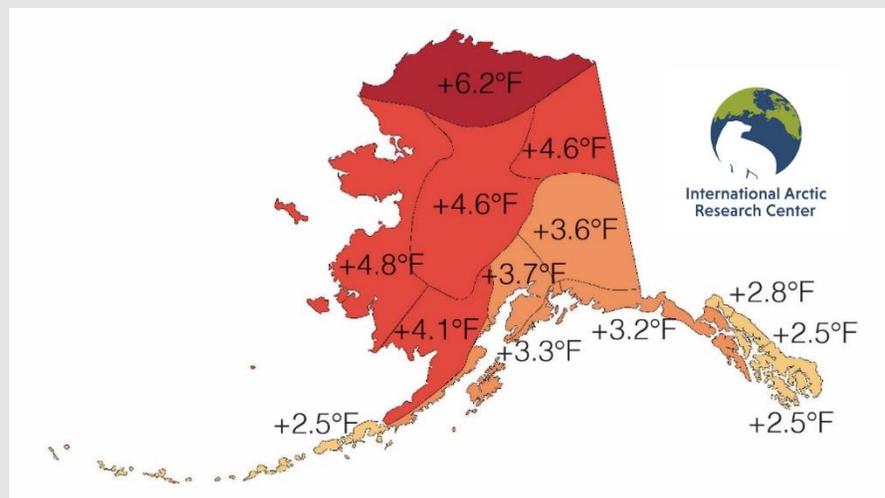
entirety tomorrow, the planet will still continue to warm for at least two decades before enough carbon is absorbed to result in modest cooling.⁷ The polar regions of the Earth are particularly affected. “Arctic amplification” is the phrase used to explain the phenomenon that any change in the net radiation balance (for example as a result of greenhouse gas emissions) tends to produce a larger change in temperature near the poles than the planetary average.⁸ The Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) states that the Arctic region is likely to continue to warm more rapidly than the global mean through the end of the current century.⁹ Recent research indicates that the Greenland Ice Sheet has undergone a transformation to a new dynamic state in which sustained mass loss will continue even if there is a decline in surface melt -- in other words, its current glacial melt trend appears irreversible.¹⁰ This does not bode well for Alaska and other places whose people and ecosystems are defined by annual cycles of cold. These cumulative effects have led scholars to declare that we are now no longer in the Holocene era but the Anthropocene, characterized by humans as a major influence on global changes in the biophysical environment.¹¹

A brief overview of the most recent *Arctic Report Card 2020* points to key indicators of persistent and ongoing climate changes.¹² The average annual surface air temperature north of 60° N was the second highest since at least 1900. Annual temperature trends in Alaska over the past 50 years show increases between 2.5- and 6.2-degrees Fahrenheit, with more extreme increases in the northern part of the state (see Fig. 1).¹³ Arctic warming is associated with a range of changes including loss of summer sea ice. Summer sea ice extent in 2020 was the second lowest over a 42-year period of satellite records; 2012 was the record minimum. Sea surface temperatures have risen over most of the Arctic Ocean. In addition, permafrost thaw

Figure 1. Alaska’s Annual Temperature Trend

Annual temperature trends in Alaska since 1970 show significant warming, with more extreme increases in the northern part of the state. Arctic warming is associated with a range of changes including loss of summer sea ice, permafrost degradation, and coastal erosion.

Annual temperature trend, 1970-2019. Credit: Thoman, R. (2020). *Summer’s getting hotter*. Alaska’s Changing Wildfire Environment, Grabinski, Z. & H. R. McFarland, www.frames.gov/afsc/acwe. Data source: NOAA/NCEI & NWS.



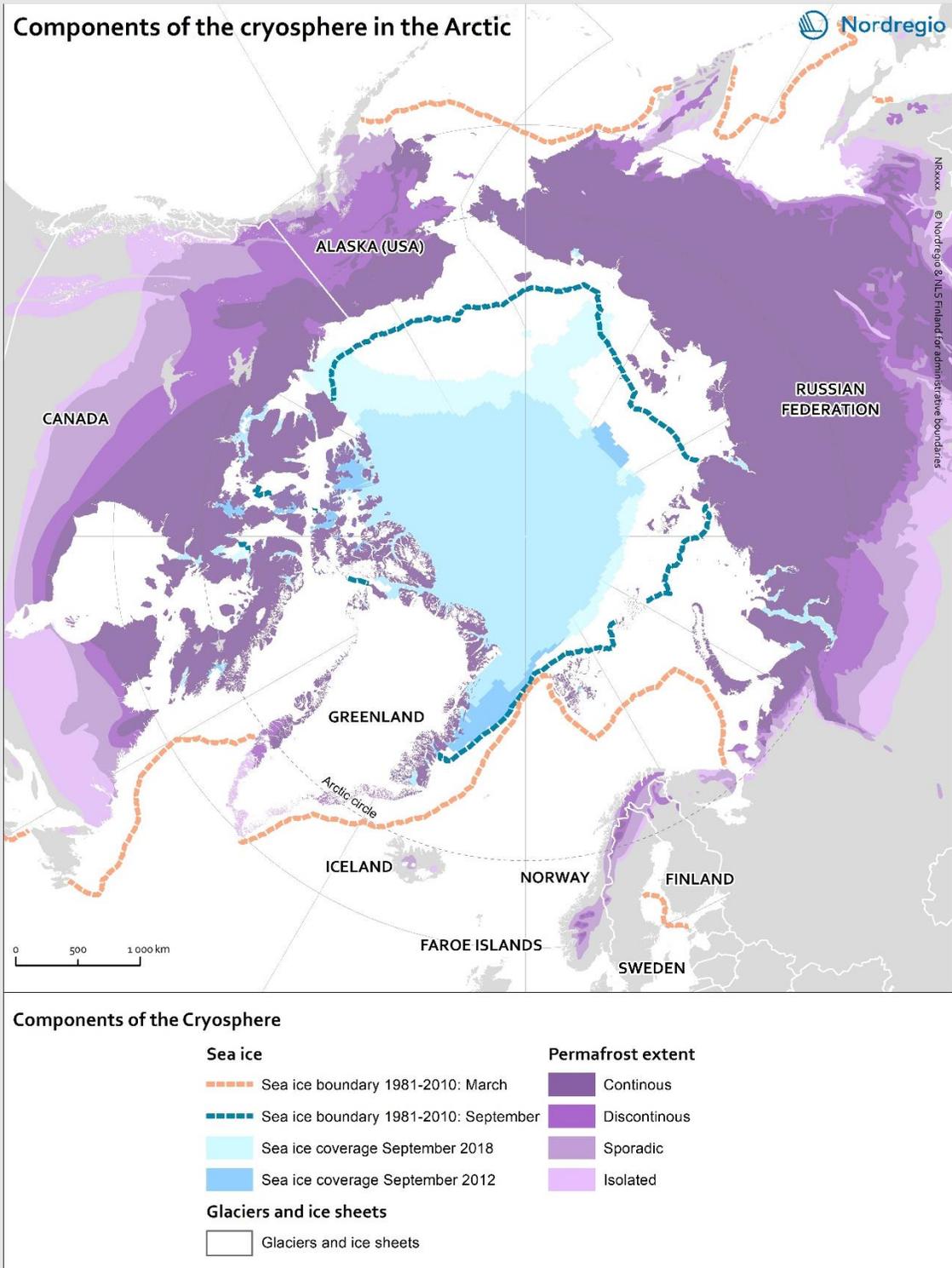
and coastal erosion rates are increasing even as there are record lows of snow cover across the Eurasian Arctic. Glaciers and ice sheets, not including Greenland, have continued to lose significant amounts of ice, with Alaska and Arctic Canada losing the most. In sum, the “sustained transformation to a warmer, less frozen, and biologically changed Arctic remains clear”.¹⁴ The consequences of this trend are significant changes to the seasonal and annual cycles that people in Alaska have adapted to and centered their lives around for millennia. This impacts not only cycles of hunting, harvest, and fishing, but also cultural events and celebrations, mobility (including village-to-village connections), health, food storage, and safety of people and infrastructure.

1.2 Climate change in Alaska: Human and social impacts

Environmental changes in the Arctic are directly intertwined with human lives. Residents across Alaska, from the northernmost city of Utqiagvik (formerly Barrow) to the capital in Juneau and further south, observe and interact with the effects of these changes. Extreme weather events, changing seasonal patterns, and deviations from historical norms are becoming increasingly prevalent. A 2018 report from the Alaska Department of Health and Social Services highlighted various aspects of the health of Alaskans that are impacted by climate changes, including mental health and well-being; accidents and injuries; exposure to hazardous materials; food, nutrition, and subsistence activities; infectious diseases and toxins; chronic diseases; water and sanitation; and access to health services.¹⁵ It is important to note that while all Alaskans are subject to the impacts of climate change, these impacts often affect Alaska’s rural and mostly Indigenous communities most strongly due to their tight connections to the environment via subsistence resource harvests, Indigenous Knowledge and worldview, and other practices going back thousands of years. While federal law defines subsistence as “the customary and traditional uses by rural Alaska residents...for direct personal or family consumption...; for the making and selling of handicraft articles...; and for the customary trade, barter or sharing for personal or family consumption,”¹⁶ for many Indigenous People, subsistence is much more than the use and provision of resources for consumption, and is linked with culture and worldview via knowledge sharing, learning about respect, and various meanings of food.¹⁷ Climate impacts on subsistence must therefore be understood in far greater terms than that of resource provision and consumption.

Utqiagvik, the furthest north city in Alaska with a population of approximately 4,400 as of 2020, experienced the five warmest winters on record from 2014-2019. This has affected many culturally significant activities, such as plant and animal harvests. In particular, winter mobility requires stable river and ocean ice for snowmachines that are central to day-to-day life a majority of the months in a year.¹⁸ The well-being of Indigenous Peoples described here extends beyond economic health, and should be understood in terms of intangible and subjective aspects of community wellness, including things like identity, social relationships, autonomy, connections to place and culture, and livelihood satisfaction.¹⁹ In addition, many non-Indigenous Alaskans rely on the marine and terrestrial systems for their livelihoods from family units fed by hunting and harvesting to commercial fishing and, further south, timber jobs.

Figure 2. Components of the Cryosphere in the Arctic



The main components of the cryosphere in the Arctic: sea-ice, permafrost, ice-sheets, and glaciers. Credit: Eeva Turunen, 2019, <https://nordregio.org/maps/components-of-the-cryosphere-in-the-arctic/>. Data source: Permafrost from Brown, Ferrians, Heginbottom, & Melnikov, 2002. Sea ice from NSIDC [2019.01.11].

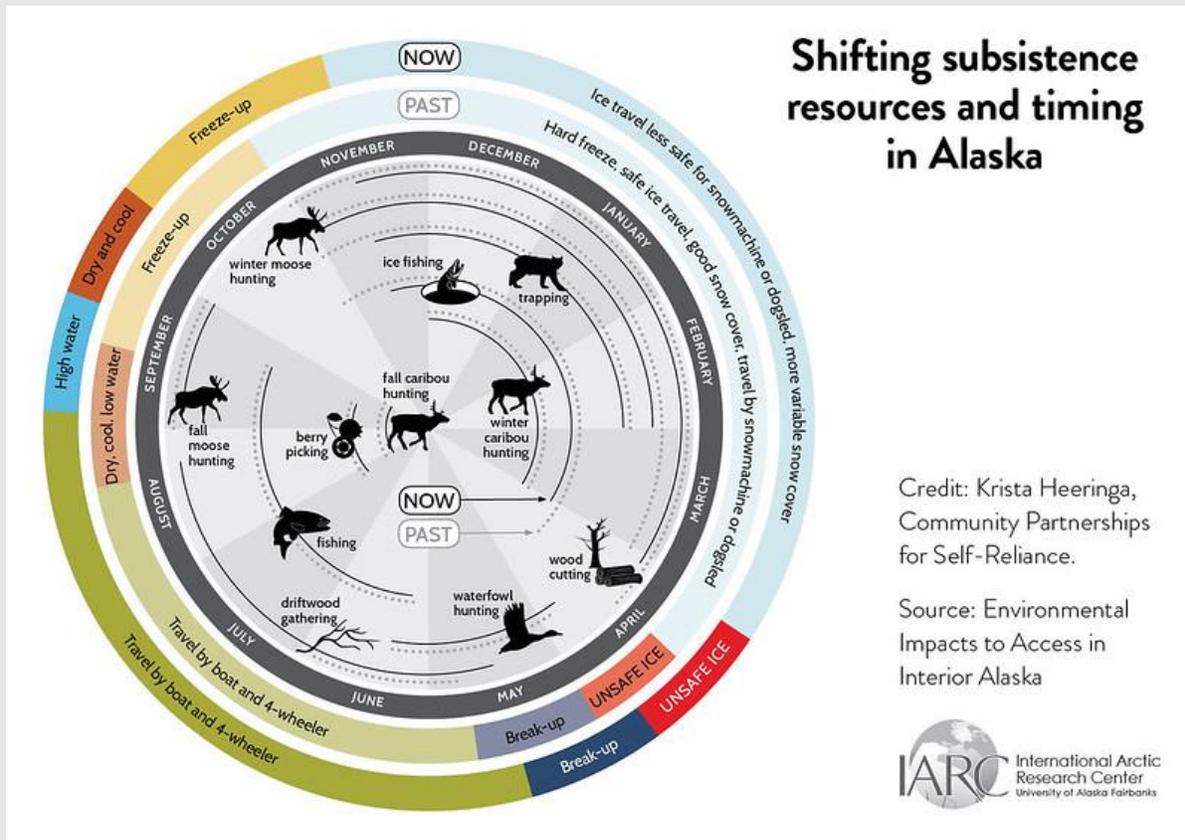
Some of the most notable changes are in the cryosphere, the portion of the Earth's surface characterized by the presence of frozen water (e.g., snow, ice, sea ice, permafrost, glaciers, and ice sheets—see Fig. 2)²⁰. In Alaska, as throughout much of the Arctic, cryospheric services (i.e. what is provided by the environment for humans) contribute significantly to human well-being (see Fig. 3).²¹ These “cryospheric services” regulate multiple environmental systems, such as the complex food chains of the Arctic Ocean; play key cultural roles; facilitate transportation; and support existing human and animal habitats.²² Permafrost thaw, for example, directly impacts the stability and vulnerability of infrastructure in Alaska. Climate-driven changes from thawing, flooding, and changes in precipitation are projected to cost the state of Alaska (without adaptation measures) as much as \$5.5 billion from 2015 to 2099 in damage to public infrastructure.²³ Other studies suggest that in the next 35 years, accounting as well for cost savings from less heating required, climate changes will cost the state \$340-\$700 million, or 0.6%-1.3% of Alaska's GDP over the same period.²⁴ The loss of coastal sea ice and river ice has significant impacts for people living in the region by eliminating opportunities for snow- and ice-dependent travel between communities in the Y-K Delta, the Kotzebue Sound region and the North Slope (for which there are also major impacts on industry).²⁵ The famed ice roads leading to the oil installations of Prudhoe Bay are significantly threatened²⁶ and as of yet there are no clear cost-effective alternatives to move supplies, including the industry rigs themselves, north to Prudhoe Bay and other oil and gas installations. As ocean temperatures rise and acidification increases, fish stocks' distribution, abundance, and behavior are shifting.²⁷ This directly impacts subsistence activities and sport and commercial fishing in Alaska. The state has the nation's largest commercial fisheries with the Alaska seafood industry creating over five billion dollars annually and employing over 50,000 people.²⁸ The uncertainty surrounding these, and other climate-related changes, has already led to “climate ready” fisheries management and other preparatory measures by agencies and fishermen alike.²⁹ In short, in an attempt to survive, many major industries, including the tourism sector, and subsistence users alike are compelled to cope with and adapt to the impacts of climate change.

Figure 3. The Impacts of a changing Cryosphere

Climate changes impacting the cryosphere are affecting subsistence in communities across the Arctic and Alaska in many ways. The use of underground ice cellars built within permafrost in Alaska, a traditional practice to store foodstuffs, has allowed year-round storage of essential foods. But as temperatures rise and these cellars thaw, any meats stored become inedible. Ice is also becoming much more unpredictable for subsistence users, making it dangerous for traveling and hunting on the thinning ice.

Climate change is taking its toll. The weather played havoc on our village. When I thought it's time to make quaq (frozen fish) and then it warms up too much for the quaq and spoils the fish... We had more people falling through the ice this year than the last five years put together.

– Enoch Mitchell of Noatak at a public National Park Service Subsistence Resource Commission meeting in Kotzebue, Alaska, in 2019



Some of the ways shifting environmental patterns impact subsistence. Credit: Krista Heeringa, 2019.

Living off the Land: Environmental impacts to access in Interior Alaska.

<http://mapventure.org/environmental-impacts-access/index.html>

1.3 Structure of the report

This introduction to the context of environmental and social relationships with “coldness” in the state begs the question why, given that Alaska is facing rapid change at twice the rate of the lower 48 states, has there been no comprehensive and sustained state plan to address climate change? The answer to this question is complicated and we cannot fully answer it in this report. Rather, we focus on the many well-documented “whats” - as in what is happening in Alaska at different levels? *In the context of a lack of consistent federal or state-level climate action, local (borough, municipal, Tribal) climate policies have emerged to fill community needs.*

The report examines these different activities to explain the development of climate plans and actions at the sub-state level which we will generalize as “local level”, unless there is need for specificity, for example when discussing differences between Tribal actions and municipal actions. We also acknowledge the unique positions of sovereign Tribal entities that, while local in the sense that they are geographically situated, have a unique government-to-government relationship with the federal government and work across scales (locally, regionally, nationally, and internationally) in ways that are distinct from that of other localities (boroughs, municipalities) discussed in this paper. In addition to this, we would like to note that we limit our paper to an examination of climate plans undertaken by governments. Because of the unique history of Alaska Native politics including the 1971 Alaska Native Claims Settlement Act (ANCSA), there exists an intricate multi-scalar network of organizational structures that support Alaska Native policy and self-determination: Indian Relocation Act (IRA) governments, Tribal councils, village corporations, for-profit regional corporations, non-profit regional associations, representative organizations, and multiple other non-profits, consortia and interest groups.³⁰ It is beyond the scope of this report to examine every climate-related activity that has occurred within each of these entities, though such an undertaking has not yet been done and would be a highly valuable contribution to our understanding of climate policy in Alaska. Of these entities, we address IRA governments, Tribal councils, and the unique Alaska Federation of Natives (AFN).

Lastly, the report serves as a comprehensive overview of the nature of different types of climate change policies in the state, including their locations, histories, and future outlook. We answer three main questions:

- *How have these local policies emerged and what do they look like?*
- *Why have these local policies emerged in different locations and with different activities?*
- *What is the recent context of the state in relation to climate change and the variety of affected actors in the region such as the military, Indigenous organizations, the Arctic Council, the private sector more broadly, and the general population?*

2 Development of climate change policy across levels of governance

How have climate change policies developed in Alaska? Our analysis moves between local to global scale to accurately capture the contexts that have produced the current policies. There is global recognition of the accuracy of climate change science and there are structures in place

to encourage global action, such as the IPCC and the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC was adopted in 1992 and has been ratified by 197 countries, who meet annually at the Conferences of the Parties (COPs). We note briefly here that the participation of Indigenous Peoples in the UNFCCC process is complex. Indigenous People and organizations do participate significantly in the UNFCCC and COPs as nonstate actors via the International Indigenous Peoples Forum, at the Local Communities and Indigenous Peoples Platform, and via special Consultative status granted to select non-governmental organizations. However, they are not parties to the convention and therefore do not have the ability to directly participate in the negotiations during the COPs (notwithstanding Indigenous members of member state delegations). The COP meetings have led to multiple international agreements in efforts to mitigate climate change, foster adaptation, and prepare the globe for a different climatic future. International organizations have set the stage for climate action, but these often face accountability challenges related to the intricate structure of agreements, the difficulties presented by transparency, monitoring, and reporting, and the availability and utility of sanctions.³¹ In other words, actually tracking, attributing, and reporting greenhouse gas reductions at multiple scales and across multiple sectors is challenging. It is not always clear what the consequences are for those countries not meeting their target emissions reduction goals, and countries that are not on track to meet goals may exploit loopholes to avoid consequences.³²

The U.S. government's participation at this global scale of activity has varied in the 20th and 21st centuries, as has action and encouragement domestically. In recent decades the U.S. has shown climate change to be a matter of concern and the topic has become an integral part of party and political platforms in election cycles. With this rise in attention, the demand for guidance on climate policy has also grown. Concurrently, climate policy and action options have become increasingly politicized, making consistent and effective actions more difficult to achieve at the federal level without unified control of both Congress and the presidency.

In part resulting from inconsistent action from the federal government, the U.S. has seen growth of subnational and local climate action with states taking it upon themselves to address climate change within their boundaries and, on an even smaller scale, cities, boroughs or counties, and Tribes are doing the same. These actions often refer to international agreements for guidance and adopt many of the principles and standards agreed upon on the global stage. In the case of nonstate actors, including Indigenous groups such as Alaska Natives, this is one way to assert their agency within the international climate regime, where they are often asked for input but are not allowed to directly participate in the decision-making process.³³ Indigenous Peoples' participation may be changing, however, since the 2015 establishment of the UNFCCC Local Communities and Indigenous Peoples Platform, which has sought to formalize the participation of these groups of nonstate actors in the international climate regime.³⁴

Alaska is large, spanning sub-Arctic to Arctic latitudes, home to Indigenous Peoples as nearly 20% of its population, and geographically disconnected from the rest of the country - closer to Russia than the American Pacific Northwest. As a state, Alaska is subject to all

national and state constitutional limitations, but as the only Arctic state in the U.S. it often plays a unique role in international affairs. Alaska's location is strategic and many international organizations and governments, as well as national agencies and industries have interests in the region. As such, it can be difficult to specifically prove why people and institutions have pressed for different climate change activities over the last few decades, but clearly there has been a growing awareness of the problems associated with increasingly unpredictable seasonal and annual environmental cycles. When they were apparent, we explain motivations for different policies. We analyze the interactions among governing levels, non-governmental organizations, and other civic society approaches as they have created contexts for climate change plan development. Lastly, when the information is available, we address funding streams for the plans noted.

2.1 Global-scale climate research and action

The recognition of climate change as a global threat was highlighted by the first international meeting on climate change, the World Climate Conference in 1979. This Conference declared an international goal to acknowledge and mitigate human-induced climate change. In 1988, the IPCC was established, creating the foundation for the UNFCCC in 1992. Through the UNFCCC, member nations gather at annual meetings (COPs) to assess the effects of the measures taken by participating parties and to discuss future goals and developments. This creates a regular platform for ongoing international interaction on the issue of climate change. In 1997, at COP3, the Kyoto Protocol was created, obliging Annex 1 countries (industrialized countries belonging to the Organization for Economic Cooperation and Development, as well as countries such as the Russian Federation with economies in transition) to cut greenhouse gas (GHG) emissions by 5% between 2008-2012. This protocol became effective in 2005, though the U.S. Senate declined to ratify it and instead passed the Byrd-Hagel Resolution (S.Res.98) in 1997, which placed significant constraints on the types of climate treaties the U.S. could enter into and effectively prevented U.S. ratification of the Kyoto Protocol. Throughout this time, the IPCC released Assessment Reports, pushing climate science further into societal consciousness than before. In 2016, the Paris Agreement included 196 countries as signatories and set significant goals for those involved including keeping long-term temperature increase to less than 2-degrees Celsius.

International climate policy actors struggle with the joint issues of accountability (described in Section 2 above) and voluntary participation. U.S. congressional resistance to the Kyoto Protocol, in spite of its arguably weak accountability and enforcement mechanisms, was based significantly on the Protocol's legally-binding nature. The Paris Agreement, in contrast, is voluntary and does not set legally binding targets, therefore avoiding the necessity of Senate ratification.³⁵ This has allowed the U.S. to enter the agreement via executive action by President Obama in 2016, but also allowed President Trump to initiate withdrawal from the agreement in 2017 without Senate approval.³⁶ In response to varied 'top down' leadership at the national and international levels, climate change governance structures around the world have begun to diversify, including vast networks and initiatives at multiple scales.³⁷ This

contributes to further challenges of transparency, monitoring, and reporting. As data and efforts increase globally, cataloging and coordinating these efforts becomes more difficult and more necessary.

Coinciding with the emergence of the UNFCCC in the mid-1990s, the Arctic Council was established (in 1996) to provide a forum for cooperation among the eight Arctic nations and including Arctic Indigenous groups as Permanent Participants. The Arctic Council's focus on issues relating to environmental protection and sustainable development in the Arctic has aided in creating regional climate assessments, such as the *Adaptation Actions For A Changing Arctic* project which has produced multiple regional reports focusing on the Bering-Chukchi-Beaufort region, Baffin Bay/Davis Strait, and Barents Area.³⁸ The Arctic Council has also provided a forum for negotiating binding international agreements related to search and rescue (2011), marine oil pollution preparedness and response (2013), and scientific cooperation (2017). The role of the Arctic Council in global affairs must not be underestimated, as “what happens in the Arctic does not stay in the Arctic,”³⁹ an aphorism that is especially true when considering climate change impacts in the Arctic. While rapid warming in the Arctic is felt most immediately by its inhabitants, it also has implications for the mid-latitudes. For example, as temperatures rise within the Arctic, permafrost thaws at more rapid rates, releasing more carbon dioxide and methane into the air creating a feedback loop that raises temperatures further. Sea ice patterns change, and the occurrence of natural disasters, for example inundation along coasts or large boreal forest fires, become more prevalent.⁴⁰

As of today, scientific observations and modeling have demonstrated that small-scale efforts at mitigation are not enough to restore the cryosphere at the poles and the expected weather patterns of the Holocene at a global scale. Any significant chances to reduce warming must be based on comprehensive and coordinated international action. While such global action may be appealing, it would require the cooperation of nations, their denizens and corporations, and the commitment to meet pledged goals that have yet to be developed. Currently, the best global plans and organizational approaches to action still rest in the hands of nations – their leaders, governance structures, and citizens' opinions – because these jurisdictional divisions determine where actors can be held accountable, and sanctions legitimately used. Thus, it is at the national level that climate change as policy issue is primarily defined, addressed in laws and regulations, and made feasible.

2.2 U.S. federal climate change recognition and policy approaches

The evolution of the modern environmental movement through the 20th century was accompanied by the creation of new federal agencies such as the Environmental Protection Agency (EPA), the Council of Environmental Quality (CEQ), and legislation at all levels of government to counter air, land, and water pollution.⁴¹ The creation of the EPA and CEQ accompanied regulations such as the Clean Air Act, the Clean Water Act, and National Environmental Policy Act (NEPA) that each set environmental standards for the country enforced and backed by the federal government. Climate-specific policy enacted through rules, statutes, and regulations has become increasingly popular in the decades since the 20th century.

As a signatory to the UNFCCC, the United States attends the annual COP meetings to assess progress in managing climate change globally. This, in turn, impacts climate and environmental policy in the United States. However, an oscillation in the relevance of climate policy in the United States has been made clear in the past several decades. With increasing polarization of political parties in the U.S., the party platforms related to climate change policy have likewise grown apart. For example, the Green New Deal, introduced by Representative Alexandria Ocasio-Cortez and Senator Edward J. Markey, both Democrats, calls on the federal government to take significant measures to detach from the fossil fuel industry while encouraging heavy investments into clean energy. While Republicans and conservative media have at times painted this proposal as a ‘socialist takeover,’⁴² the GOP has supported a variety of environmental initiatives over the years. For example, the Reagan administration worked with atmospheric scientists to press for an international treaty to address the stratosphere’s ozone hole and regulate chlorofluorocarbon emissions, and his successor President George H.W. Bush tackled acid rain. In this sense, there is not a permanent “environmental position” of either party except as decided in the context of electoral politics.

Politicians and journalists have debated the Green New Deal extensively and its proposal became a hot topic for political candidates during the 2020 election cycle, particularly in the presidential primary elections.⁴³ As political party affiliations have become more strongly aligned with personal ideals and values,⁴⁴ stances on climate policy are no exception.⁴⁵ Political polarization has led to very different climate change approaches from successive presidents as they shape their Cabinet and policies while in office. This has led to inconsistent and contradictory climate policy from the executive branch of the federal government over the last several decades, as seen for example in the U.S. joining the Paris Agreement under the Obama Administration in 2016, initiating withdrawal from the Paris Agreement under the Trump Administration in 2017, and subsequent executive action to rejoin by President Biden on his first day in office in 2021.

The participation of nations in international climate affairs generally mirrors what is accepted domestically. The commitment by the U.S. to global climate policy is similarly tied to the domestic agenda, set through election cycles. In the United States, between 1989 and 2021 presidential administrations have alternated between political parties, as have the majorities in the U.S. House and Senate. Shifts in the compositions of these branches bring changes to agenda priorities and can dramatically alter what is considered as a “problem.” These changes can complement or disrupt efforts made by previous administrations and legislatures across a whole host of issues, environmental and Arctic concerns included. This is seen in the U.S.’s fluctuating participation and commitment to both domestic and global action related to greenhouse gases.

The UNFCCC was created while George H. W. Bush was president. His environmental approach was fairly pragmatic and focused on both general environmental pollution and climate change. For example, his administration strengthened the Clean Air Act, established the Global Change Research Act in 1990, and created the Energy Policy Act in 1992. He also advocated for action on greenhouse gases and acknowledged climate change as a growing issue. Bush’s

successor, Bill Clinton, a Democrat following the single-term Republican, continued the United States' participation on an international scale and eventually signed the Kyoto Protocol in 1997, though the U.S. Senate declined to ratify it. President Clinton also established the Climate Change Action Plan in 1993, which included a series of new or expanded programs (including public-private partnerships with key industries) aimed at reducing GHG emissions, and the Climate Change Task Force in 1997. His successor, President George W. Bush, did not prioritize climate policy and withdrew the U.S. from the Kyoto Protocol in 2001, replacing it with an alternative voluntary strategy to reduce greenhouse gases. Under his administration, the presidential public-private partnership initiative Climate VISION (Voluntary Innovative Sector Initiatives: Opportunities Now) was created, with the goal of fostering cost-effective industry-driven GHG emissions. Some successful initiatives prompted by Climate VISION, such as EnergyStar and NaturalGasStar, are ongoing,⁴⁶ though the broader Climate VISION program platform disappeared in the 2010s with the transition of presidential administrations.

The U.S. pivoted toward more explicit recognition of climate change and attention to climate-related policies in 2009 under the administration of President Barack Obama, elected in 2008 on the Democrat ticket. During his tenure, the Council on Climate Preparedness and Resilience was created along with the State, Local, and Tribal Leaders Task Force. In addition, cap-and-trade legislation passed the House and more efforts pushing for cleaner energy emerged. The Clean Power Plan (under the Clean Air Act) was passed as law in 2015, setting state-by-state targets for carbon emissions reductions by 2050. There was an increase in investments into clean energy and encouragement by the Obama administration for federal agencies to develop adaptation plans. In 2016, Obama approved the U.S. adoption of the Paris Agreement by executive action, committing the U.S., with other countries of the world, to hold global temperature increase to less than 2-degrees Celsius above pre-industrial levels. Before the end of his second term, Obama released the *United States Mid-Century Strategy for Deep Decarbonization* to set goals and visions for the year 2050.

During the Trump Administration (2017-2021) many steps were taken to alter or abandon climate change actions and activities from previous administrations with a new heavy emphasis on resource extraction and energy independence. In 2017, President Trump signed the 'Energy Independence' executive order, reversing some climate and clean energy initiatives. Later that year, Trump withdrew the United States from the Paris Agreement with no alternative plan. During his tenure, Congress debated climate change issues without much progress, but the policies that have emerged generally focus on reducing greenhouse gases or improving existing environmental standards as attempts to curb climate change. Recently, as of 2019, there has been a renewed interest in climate change when the Democrats regained control of the House of Representatives. Developments included the introduction of the Green New Deal⁴⁷, the formation of a Select Committee on the Climate Crisis within the House, and the formation of a bipartisan Climate Solutions Caucus in the Senate.

The current political polarization and related ideological divisions in the U.S. pose a problem for large scale, international, or sweeping climate change policy. If there is not stability in the policy-making realm for long-term planning, funding, research, and environmental

monitoring, the result is inconsistent regulation and guidance. Both public and private sectors require a degree of predictability in this area. Reversals, such as between the presidencies of Obama and Trump, are also present on other political levels. State and local municipalities can face similar barriers to implementing climate policy. These governments will often look to the federal government for guidance in policy, but in the case of climate change, states and local municipalities have been taking actions such as committing to international standards and policies or completing local assessments and climate plans.

Inconsistencies in funding and guidance affect climate actions in Alaska because many local climate activities rely on some funding, guidance, and oversight from external sources and agencies at the federal and state levels. A 2017 review of documents related to climate adaptation planning among Alaska Native communities identifies inadequate funding as the most frequently cited barrier to climate adaptation planning.⁴⁸ This is often a function of institutional barriers, such as the process and requirements for receiving federal funding, or a lack of sufficient or timely support provided by state or federal agencies.⁴⁹ In fact, adaptation efforts are often stymied by the absence of an appropriate federal agency or framework under whose charge they clearly fall.⁵⁰ In other instances, adaptation actions are hindered by disagreements among multiple overlapping agencies under whose jurisdiction their activities fall.⁵¹ The coastal Alaska community of Kivalina, for example, encountered this when government agencies disagreed about the geophysical requirements for their village relocation site, significantly slowing down their relocation process.⁵² Support for many types of adaptation may also be limited by federal legislation, such as the Stafford Act (see Fig. 4), which can place boundaries on the types of funding and support that appropriate agencies are allowed to provide.⁵³

A series of reports produced by the U.S. Government Accountability Office (GAO) first drew attention to many of these issues in 2003, with their report *Alaska Native Villages: Most Are Affected by Flooding and Erosion, but Few Qualify for Federal Assistance*.⁵⁴ The report quantified 86% of Alaska Native villages as threatened by flooding or erosion but pointed out that many of these villages failed to qualify for funding due to agency requirements or the challenges of cost sharing. It also highlighted a lack of coordination where federal agencies invested in village infrastructure at existing sites without knowledge or consideration of village relocation plans. A follow-up 2004 GAO report reiterated the challenges faced by Alaska Native villages in qualifying for funding to address flooding and erosion.⁵⁵ In 2009, the GAO revisited the topic in a report that showed limited progress had been made on village relocation since their previous reports, and that the lack of a lead federal entity to address the problem continued to be a hindrance.⁵⁶ A new federal climate action was established in 2015 as a result of this report, with the White House directing the Denali Commission (an independent federal agency created in 1998—discussed more in section 2.3.2 below) to establish the Village Infrastructure Protection (VIP) program and serve as the lead agency for village relocation in Alaska.⁵⁷ However, while the Denali Commission serves as the lead agency for this particular climate-related issue in Alaska, there is still no federal agency set to serve as a single lead agency for addressing climate change-related policy more generally and in a coordinated way across state boundaries. Similarly, ongoing funding has been available for Tribal governments through the Bureau of

Indian Affairs (BIA) Tribal Climate Resilience Program, but there is no set entity responsible for addressing issues of overlapping jurisdictions or coordinating BIA-funded projects with other parallel initiatives. A supplementary report by GAO on federal climate change adaptation efforts identified 13 separate agencies working on adaptation as part of the U.S. Global Change Research Program alone, and the report notes that this list does not include recent and ongoing federal climate adaptation efforts existing independently and as a part of other programs (as of 2009).⁵⁸ A more recent GAO report on relocation efforts across the U.S. similarly notes the absence of federal leadership to support relocation efforts.⁵⁹ In an interesting response to this lack of top-down coordination, as part of the 2016 Alaska Community Coastal Protection Project--a state-level project supporting climate planning in Kivalina, Shaktoolik and Shishmaref--villages developed their own inter-agency planning work groups to coordinate resources and technical assistance from local, regional, state, and federal entities.⁶⁰ But while such coordinating bodies can overcome some of the challenges of fragmented climate policy, they are limited in addressing other aspects, such as federal requirements of local cost-sharing.

A 2014 oral testimony to the U.S. Senate Committee on Indian Affairs by Mary David, Executive Vice President of Kawerak, Inc., highlighted what the federal disaster response shortcomings mean for Alaska communities:

Our federal, state, local and Tribal governments are ill-prepared for both the natural disasters that we have already experienced and the potential future natural and man-made disasters in our region. Not only is there a lack of a lead agency spearheading comprehensive efforts to prevent, mitigate, and respond to disasters, there is a lack of coordination among the agencies that are tasked with carrying out the splintered components of these efforts.

In conclusion, The Stafford Act is a response when a disaster happens, which is important. But due to changing climate conditions, changing sea ice conditions and melting permafrost and the extreme variations in the weather, our communities are in imminent danger and preventative measures are needed. No person, in the most developed country in the world, should be subject to the threat of loss of life due to conditions that can be mitigated by governmental actions.⁶¹

David's comment underscores the challenges created by insufficient legislation and coordination among agencies, and how this leaves Alaska communities ill-prepared to undertake climate action and adaptation planning. Her comment strikes at the heart of the problem in her mention of the "lack of lead agency," which is a frequently-levied critique against current federal climate policy.⁶² Spread across agencies and legislation, U.S. federal climate policy is piecemeal and exists in ways that often not only fail to help climate action to take place, but may even hinder it. Strategic federal planning, clarification of federal roles and responsibilities, and the development of a national adaptation strategy could contribute to addressing these inconsistencies in the federal government.⁶³

Figure 4. The Stafford Act

Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) was signed into law in 1988 and outlines when and how the federal government will respond to disaster. The Stafford Act therefore defines (and limits) Federal Emergency Management Agency disaster relief and hazard mitigation activities.⁶⁴ Outside of drought, slow-onset ecological processes triggered by climate change have not been included in listed natural hazards that could trigger a disaster declaration under the Stafford Act. This has prevented many Alaska communities, such as coastal Shishmaref (pictured below), from seeking support to address concerns like sea-level rise and coastal erosion or permafrost degradation. Moreover, the Stafford Act confines activities to recovery—i.e., rebuilding on the same site—and therefore prevents support for Alaska village relocation projects.

Some federal legislation has marginally sought to remedy these shortcomings of the Stafford Act. The Disaster Mitigation Act of 2000⁶⁵ modified the Stafford Act to allow for pre-disaster mitigation but stipulates strict cost-sharing by local entities that prevents many localities from qualifying. Moreover, pre-disaster funds in this mechanism were limited and unpredictable. The 2018 Disaster Recovery Reform Act⁶⁶ channels more federal funds to pre-disaster mitigation and includes provisions that allow for rebuilding toward higher levels of resilience, though potentially prohibitive local cost-sharing remains in place.⁶⁷



Coastal erosion in Shishmaref, AK. Source: IARC, UAF, 2011.

<https://www.flickr.com/photos/iarcgroup/5660178810/in/photolist-9CaTXQ-9C7XK4-9CaHf1-9C7YfR-9C7TB4>

2.3 The Alaska climate change policy context

Despite growing efforts made by national and subnational groups, it remains reality that the 20 top-emitting global fossil fuel corporations are responsible for more than one third of all methane and carbon dioxide emissions since 1965.⁶⁸ This list includes companies such as Chevron, ExxonMobil, and BP (all within the top six contributors). Without transparency and accountability from these companies and the systems supporting them, those less responsible will continue to bear the brunt of the impacts from these fossil fuel emissions. Efforts to curb local greenhouse gas emissions pale in comparison to ongoing emissions from global companies. It is impossible to counteract these massive GHG emissions at the local level; global coordination and accountability is needed. Local efforts are thus limited in their ability to mitigate climate change--to address the causes of climate change in order to curb its effects before they are fully felt. Mitigation takes many forms, such as reducing GHG emissions or promoting sustainable practices. Adaptation efforts, by contrast, focus on adjusting to the impacts of climate change rather than reducing or eliminating these changes. Adaptation includes actions such as improving infrastructure to be safer and more sustainable or planning for future sporadic weather and natural disasters. This emphasizes a fundamental difference between mitigation and adaptation - you can adapt successfully at the local level, but local contributions to mitigation can be undermined by GHG emissions occurring in other parts of the planet.

Alaska is a global net creator of and contributor to climate change because of its extensive reliance on hydrocarbon extraction. As an 'oil state', Alaska's economy has historically relied on oil production, so much so that it has accounted for over \$180 billion in revenue since Alaska's statehood. Despite long-term declines in production, the North Slope produced an average 496,106 barrels per day in FY2019.⁶⁹ Planned and proposed expansion into previously untouched areas of Alaska is an ongoing, if contested process.⁷⁰ In part due to this complicated relationship with natural resources, the State of Alaska has an inconsistent record with enacting and maintaining climate policy. The people of the state struggle with the dynamic of being tied to extraction and home to the largest amount of federal and protected lands in the country. In addition, Alaska is also home to many Indigenous communities as well as vast areas of undeveloped land that are undergoing significant impacts due to climate change. A tension between the protection of natural resources and their development for modern marketplaces has existed since the beginnings of colonialism, when the arrival of settlers shifted decision-making power away from Alaska Native inhabitants.⁷¹

2.3.1 *The progression of climate policy in the Alaska executive and legislative branches*

The development of climate policy in Alaska has been directly affected by the electoral processes that change the composition of the state's political administration on a regular cycle. In Alaska, governors serve four-year terms and are limited to two consecutive terms; but after 'sitting out' one term they can serve again if elected. The governor oversees a "unified executive" meaning this position has extensive institutional authority such as appointing nearly

all the members of a cabinet and other top-level executive personnel.⁷² The Alaska Legislature is the smallest bicameral (two-chamber) state legislature in the United States, and the second-smallest of all state legislatures (the smallest is the unicameral Nebraska Legislature with only 49 members). The Alaska State Legislature consists of the 40-member House of Representatives (lower house) and the 20-member Alaska Senate (upper house). These 60 seats stem from 40 House Districts (numbered 1–40) and 20 Senate Districts (labeled alphabetically A–T). There are no term limits for either chamber which means that individual legislators can often be influential for long periods of time (e.g., decades) in either House seats (2-year terms) or Senate seats (4-year terms). Alaska’s Legislature is sometimes considered “non-professional” or a “citizen legislature” because its members meet in fairly short sessions allowing the Legislators to remain employed outside of government. However, this is not an entirely accurate label according to the National Conference of State Legislatures’ research indicating that Alaska’s legislators work more--if one includes time in session, constituent service, interim committee work, and election campaigns--receive higher pay, and have more staff than a majority of the other states.⁷³ The Alaska legislature met by statute for 120 days until 2006 when a voter initiative was passed to reduce session length to 90 days. It has been argued that this style of law-making has advantages related to keeping the numerical size of government employees small, minimizing the agenda of the legislature to match the low population of the state, and reducing the tendency of “career politicians” to exert too much influence. Counter to this, some argue there is simply not enough time in this brief of a session to address the complexities of the state in a national and global context, that corruption potential is possible if legislators retain outside employment, and an inconsistent relationship may be created between citizens and their representatives, if legislators function simultaneously as public elected officials and as private citizens with economic interests alongside their constituents.⁷⁴ In terms of sharing power to make law and policy it is important to note that the Alaska governorship is comparatively quite strong compared to other states. Because most programs legislated or otherwise put into place require funding, this aspect of the state’s constitution is important. In particular, the governor has the ability to line-item veto budgets passed by the legislature. It requires a super-majority of $\frac{3}{4}$ of the legislature to overturn any budget or revenue vetoes; a comparatively uncommon situation and one that gives the governor “enormous leverage” over the legislature in the budget process.⁷⁵

Despite the lack of consistent dedicated climate policy, climate change and its impacts are extremely relevant to Alaska, its peoples, and the private sector. The state executive branch and legislature have made various attempts to respond to the sense of urgency expressed by both scientists and communities and are not naive in understanding Alaska’s position within the climate crisis as an extractive state and Arctic state. Over time, administrations at different levels of government have brought their own climate change agendas with them. At the state level, Alaska has passed some legislation related to climate change, and some governors have created or endorsed climate policies (see Appendix B for a chronological list of State of Alaska executive action and legislation related to climate change).

The first of these was the early climate policy suggested in 1990 HCR 56, which, though it failed, resulted in Governor Steve Cowper endorsing the 1990 climate report *An Alaskan Strategy in Response to Global Climate Change* (see HCR 56 in Appendix B), the goal of which was to investigate the impacts of climate change on Alaska's economic, social and environmental sectors. Subsequent climate-related state policy has included executive action in the form of two Administrative Orders (AO) and legislative action in the form of two House Concurrent Resolutions (HCR), three House Joint Resolutions (HJR), three House Bills (HB), and one Senate Bill (SB).

The Alaska legislature saw little conclusive climate-related policy and action after the 1990 Governor's Report until 1999, when the Alaska House of Representatives passed a resolution urging the U.S. Senate to decline to ratify the UNFCCC Kyoto Protocol (HJR 33). While this piece of legislature died in the Alaska State Senate, the U.S. Senate still declined ratification of the Kyoto Protocol (as discussed in sections 2.1 and 2.2). It was not until 2006 that climate was again addressed when HCR 30 was adopted by the Alaska Legislature, creating an Alaska Climate Impact Assessment Commission tasked with studying and evaluating the impacts of climate change around the state and suggesting policies. In 2007, Governor Palin established a Climate Change Sub-Cabinet (AO 238), composed of the commissioners of Environmental Conservation, Fish & Game, Commerce, Transportation, and Natural Resources.⁷⁶ A year later, in 2008, the final commission report of the Alaska Climate Impact Assessment Commission was submitted to the legislature. Drawing on testimony from local public officials, Tribal leaders, and mayors of eight municipalities, the report identified various areas of concern and ongoing local efforts to identify and respond to climate impacts and advocated for the Governor's Sub-Cabinet for Climate Change to serve as the entity responsible for developing a statewide implementation plan.⁷⁷ The Sub-Cabinet for Climate Change established four advisory bodies: the Immediate Action Workgroup, the Research Needs Workgroup, the Adaptation Advisory Board, and the Mitigation Advisory Board. These groups produced multiple reports advising and making recommendations to the sub-cabinet related to near term goals, long-term research needs, and adaptation and mitigation plans and priorities.⁷⁸ In spite of both significant progress toward an Alaska climate change strategy under the sub-cabinet and recommendations by the Climate Impact Assessment Commission that the sub-cabinet be established as a recognized state council with guaranteed existence across administrations⁷⁹, Palin's successor, Governor Parnell, did not reauthorize the sub-cabinet to continue its work in 2011, and it functionally disbanded.⁸⁰

Subsequent climate policy was undertaken indirectly, as embedded policy within other legislative activities. The 2012 Alaska Northern Waters Task Force (ANTWF) Joint Committee report stressed the significant impacts of climate change in Alaska northern waters and encouraged the Alaska Legislature to develop an Alaska Arctic policy, laying the groundwork for the creation of the Alaska Arctic Policy Commission (AAPC) in 2012.⁸¹ In 2015, Alaska Legislature passed HB 1, placing Alaska's Arctic Policy into state statute and calling for funding, research, and new approaches for the region. This law stated that the policy of Alaska is to

“sustain current, and develop new, approaches for responding to a changing climate, and adapt to the challenges of coastal erosion, permafrost melt, and ocean acidification”.⁸²

Explicit climate policy reemerged in 2016, when HB 233 sought to establish a state Climate Change Commission under the administration of Governor Walker, though the bill died in committee. In 2017, HB 173 was introduced to create an Alaska Climate Change Response Commission; it also died in committee. This proposed commission would have set in place a board existing beyond individual governors or legislatures. This type of commission is not without precedent; Alaska has dozens of active (and even more inactive) boards and commissions in place, such as the Alaska Criminal Justice Commission or the Citizens’ Advisory Commission on Federal Areas in Alaska. In 2017, Governor Walker signed Administrative Order 289 and created a Climate Action Leadership Team (CALT) and Climate Change Strategy⁸³, similar to the sub-cabinet on climate change created by Governor Palin in 2006 (and subsequently rendered inert by Governor Parnell in 2011). In 2018, the CALT produced two key documents, *Climate Change Action Plan Recommendations to the Governor*⁸⁴ and *Climate Change Policy Recommendations to the Governor*.⁸⁵ The executive branch also released an “Early Actions Plan” based on recommendations from the Alaska Climate Cabinet and the CALT.⁸⁶ Activities in ten separate departments were highlighted in the plan, and additional actions took place including the creation of the *Potential Health Impacts of Climate Change in Alaska* report by the Department of Health and Human Services.⁸⁷ Again, in spite of the significant contributions of the CALT in a two-year period, it was rescinded by Governor Dunleavy as part of AO 309 in February 2019. While the executive branch under Governor Dunleavy has reversed directions with regards to Alaska state climate policy, there have been efforts at climate policy within the legislative branch. In 2019, there were failed attempts in both the House (HR 12) and the Senate (SB 216) to create official response committees on climate change, including a House Special Committee on Climate Change and Alaska Climate Change Emergency Response Commission.

The focus of this report is government planning and activities to adapt to and mitigate climate change before a disaster arises, however, it is likely that the state’s disaster declaration tool will be used again in the future to address wildfires, droughts, flooding, or other natural events that are due to changing climate conditions. A reactive form of managing some of the effects of climate change in the state is possible via disaster declarations. Pursuant to the laws and regulations of the state of Alaska and its constitution, Article 1 “Alaska Disaster Act” Chapter 23, Sec 26.23.010-.025 the governor is “responsible for meeting the dangers presented by disasters to the state and its people.” Furthermore, the governor “may issue orders, proclamations, and regulations necessary...” and these “...have the force of law”.⁸⁸ Once a disaster proclamation has occurred the disaster emergency rules can only remain in effect 30 days unless extended through the vote of the legislature on a concurrent resolution. For example, in August 2019 Governor Dunleavy issued a disaster declaration for the Matanuska Susitna Borough and Kenai Peninsula Borough for impacts from the McKinley, Dëshka Landing, and Swan Lake wildfires. In his management of this disaster Gov. Dunleavy in no way suggested that these fires were related to climate changes affecting Alaska, however one could imagine

the possibility of such a connection for future fires in the state due to the science demonstrating the link between shifting climate patterns and more frequent, intense, and larger fires in northern latitudes.⁸⁹

2.3.2 Intergovernmental climate policy in Alaska: The Denali Commission

Outside of executive and legislative climate activities, Alaska has some intergovernmental climate policy and activities produced by interactions of governments at multiple scales. The most obvious example of intergovernmental policy in Alaska has perhaps been the Denali Commission. The Denali Commission was established in 1998 by the U.S. Congress at the instigation of Senator Ted Stevens of Alaska. It is technically an independent federal agency with the objective of providing critical utilities, infrastructure, and economic support to Alaska communities through inter-agency cooperation and a focus specifically on remote communities.⁹⁰ However, the Commission has a special institutional structure that leads it to function as an intergovernmental entity linking the federal, state, and local governments.⁹¹ Its governance structure includes seven commissioners from federal and state government, the University of Alaska, Alaska Native entities, and the private sector, and is controlled largely at the state level.⁹²

The Denali Commission, as noted in section 2.2, was selected to serve as the lead agency addressing climate-related village infrastructure threats and relocation in Alaska through the Village Infrastructure Protection (VIP) program. This move was prompted by the 2009 GAO report identifying 31 rural Alaska communities at risk due to climate change threats⁹³, and also by a resurgence of national attention to climate change in Alaska and across the U.S. after President Obama's visit to Alaska in 2015.⁹⁴ In 2019, a Statewide Threat Assessment prepared for the Denali Commission by the U.S. Army Corps of Engineers (USACE) Alaska District, USACE Cold Regions Research and Engineering Laboratory, and the University of Alaska Fairbanks (UAF) Institute of Northern Engineering, assessed further threats to public infrastructure resulting from erosion, flooding, and thawing permafrost in 134 Alaska communities.

Funding streams for the Denali Commission's VIP program have been limited in terms of appropriations. Though, the Commission has used discretionary funds to support the program, focusing primarily on Newtok, Kivalina, Shaktoolik, and Shishmaref, the four communities identified as most vulnerable in the 2009 GAO report.⁹⁵ The majority of these funds have gone toward relocation support for Newtok, including developing a new townsite at Mertarvik.⁹⁶ Relocation of Newtok is anticipated to cost \$100 million to \$120 million⁹⁷, and as of 2019, the VIP program had channeled \$27.4 million toward Newtok's relocation. In its work on relocation and climate threats to infrastructure, the Denali Commission embodies an intergovernmental entity through its close partnerships with the Alaska Native Tribal Health Consortium (ANTHC), the USACE, UAF, and various State of Alaska agencies.⁹⁸ This structure has allowed for extensive state and local input, ensuring that the Commission initiatives are adaptable to regional needs.⁹⁹

2.3.3 Intergovernmental climate policy in Alaska: The Alaska Federation of Natives

The Alaska Federation of Natives (AFN) is another example of unique intergovernmental relations at work on climate issues in Alaska. The AFN was established in 1966 to address Alaska Native land rights and has since broadened its scope to address a wide range of issues related to enhancing and promoting the culture, economy, and political voice of the Alaska Native community.¹⁰⁰ AFN members include 168 federally recognized Tribes, 166 village corporations, eight regional corporations, 12 regional nonprofit associations, and Tribal consortiums contracted by the federal and state governments to key services and programs.¹⁰¹ As the largest statewide Native organization in Alaska, the AFN holds significant political power and has unique relationships with Tribal, municipal, state, and federal governments.¹⁰²

In 2019, the AFN passed Resolution 19-56 declaring a climate change state of emergency in Alaska. The resolution cited the rapid increase in water and land temperatures and unsafe environments. It is worth noting that this resolution was brought forward initially by Alaska Native youth, who expressed their concern for “the survival of their future generations, ways of life, traditional lands, intact ecosystems, emotional, spiritual, and mental well-being due to Climate Change,” and also included a resolve to reinstate a climate action leadership task force within the AFN to advocate for climate policy and ensure the survival of future generations.¹⁰³

It is important to note here that Alaska Natives are not a homogenous group and are comprised of people and communities with diverse interests and opinions. When the resolution was introduced at the AFN annual meeting, it was not well received by all parties, though it ultimately passed after lengthy debate. The Arctic Slope Regional Corporation (ASRC), the wealthiest of the thirteen for-profit Alaska Native regional corporations, with an annual revenue of approximately two billion dollars¹⁰⁴ due to its strategic location including Prudhoe Bay, voted to leave the AFN in the weeks following the passage of the resolution. This move was illustrative of ASRC’s reliance on the extraction of oil as a means of supporting its members, and tensions around this issue have been growing for some time.¹⁰⁵ However, this development has not caused AFN to shy away from further addressing climate change. Resolution 20-20 “Increased Coordination, Technical Assistance and Funding for Alaska Native Communities to Respond to Environmental Threats” was passed at the following annual convention in 2020. This resolution directed the AFN Board of Directors to follow Resolution 19-56 and develop a climate change task force to facilitate intergovernmental and interorganizational collaboration, and further requests federal support for Alaska Native communities to respond to climate change.¹⁰⁶

2.3.4 The role of Alaska’s extraction-based economy

As an “oil state,”¹⁰⁷ Alaska has a strong economic relationship with those industries extracting and developing non-living natural resources. This offers economic benefits to the constituents of Alaska as many are involved with the oil industry within the state. In 2018, more than 77,600 direct and indirect jobs, and \$4.8 billion in Alaska wages were attributable to the industry.¹⁰⁸ As

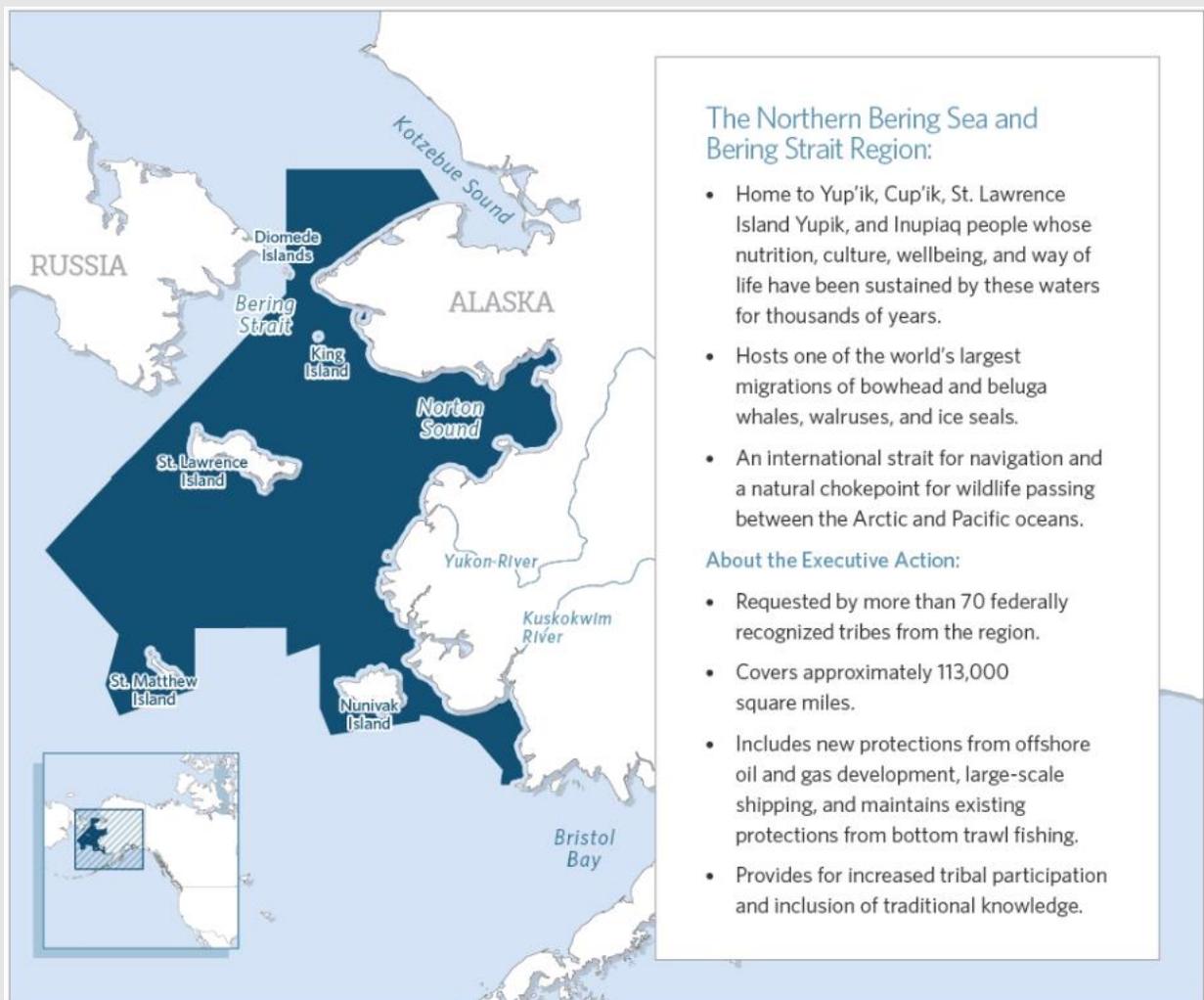
the association between Alaska and the oil market is over 60 years old, naturally the relationship between politics and the industry are deep today. The last four governors of Alaska have all had ties to the oil industry or have noted their favor for oil companies in the past. This has made it an important factor for political campaigns and an ongoing subject in the legislative and judicial branches. The existence of the Alaska Permanent Fund, an investment fund that accrues capital from revenue obtained from the state's oil and gas reserves, also creates a culture of reliance on and appreciation for Alaska's status as an oil state. However, the annual dividend, which returns a portion of State minerals revenue to Alaskans, has also become a political debate as oil prices currently drop and there are efforts to move away from big oil.¹⁰⁹ As many Alaskans consider the dividend a "right," debates related to it can be a motivator for electoral participation. For example, during the lead up to the 2018 election, Governor Dunleavy's campaign promised to pay residents a full dividend (which had previously been reduced to account for budget shortfalls) from the state's oil wealth fund - a source rarely touched for this purpose.

Over the decades these relationships have created strong economic ties between the State of Alaska and oil companies and their supporting businesses both large and small. For example, in the recent sale of oil leases in the Arctic National Wildlife Refuge (ANWR) in January 2021, which were shunned by many investment companies boycotting Arctic oil development, it was the state of Alaska itself that purchased the majority of leases.¹¹⁰ At the time of publication, President Biden, a Democrat elected in 2020, has placed a moratorium on drilling in ANWR. As part of a suite of executive policies the Executive Order on "Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis" issued 20 January 2021, there is a temporary moratorium on "all activities...relating to the implementation of the Coastal Plain Oil and Gas Leasing Program".¹¹¹ In addition, the Northern Bering Sea Climate Resilience Area (NBSCRA; see Fig. 5), revoked during the Trump administration, was reinstated by Biden "...thereby restoring the original withdrawal of certain offshore areas in Arctic waters and the Bering Sea from oil and gas drilling".¹¹²

Alaska's withdrawal from the National Coastal Zone Management Act (CZMA) is another example of the tension between the state's reliance on extractive industries and the increasing need to address climate change. In 2011, Alaska withdrew from the CZMA, making it the only U.S. coastal state without a coastal zone management plan, in spite of the fact that it has the longest coastline of the 50 states at almost 34,000 shoreline miles, more than four times the length of the shoreline of the next ranked state (Florida).¹¹³ Given this, and the many challenges faced by Alaska coastal communities described above, this decision had significant impacts. Activists in the state lobbied unsuccessfully to reestablish a state coastal management program with the argument that a coastal management program would give local residents more of a say in federal and state decisions in coastal regions,¹¹⁴ but they faced pushback from industry supporters who were concerned that such policy would limit coastal development opportunities.¹¹⁵ Another result of this is that Alaska coastal communities have been disqualified from applying for funding sources that could support adaptation efforts, such as the National Oceanic and Atmospheric Administration (NOAA)'s National Coastal Zone

Figure 5. Northern Bering Sea Climate Resilience Area (NBCSRA)

President Obama issued an executive order in December 2016 designating the U.S. northern Bering Sea and Bering Strait region as the Northern Bering Sea Climate Resilience Area.¹¹⁶ This designation was revoked, alongside restrictions in oil and gas development on the outer continental shelf in the Arctic, Chukchi and Beaufort Seas, in an executive order by President Trump in 2017. In 2021, at the request of more than 70 federally recognized Tribes in the region, President Biden reinstated the Obama-era executive order, which includes policies on marine shipping, pollution, marine debris and oil spills, and other Arctic marine-related issues. For Western Alaska communities that are rural and primarily Indigenous, the order is especially significant because it recognizes the importance of including local and Indigenous Knowledges, and the federal task force that will be responsible for the NBCSRA is set to include an intergovernmental Tribal advisory council.¹¹⁷



Source: White House

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The Northern Bering Sea Climate Resilience Area. Source:

https://www.pewtrusts.org/-/media/assets/2016/12/northern_bering_sea_climate_resilience_area_map_v2.pdf

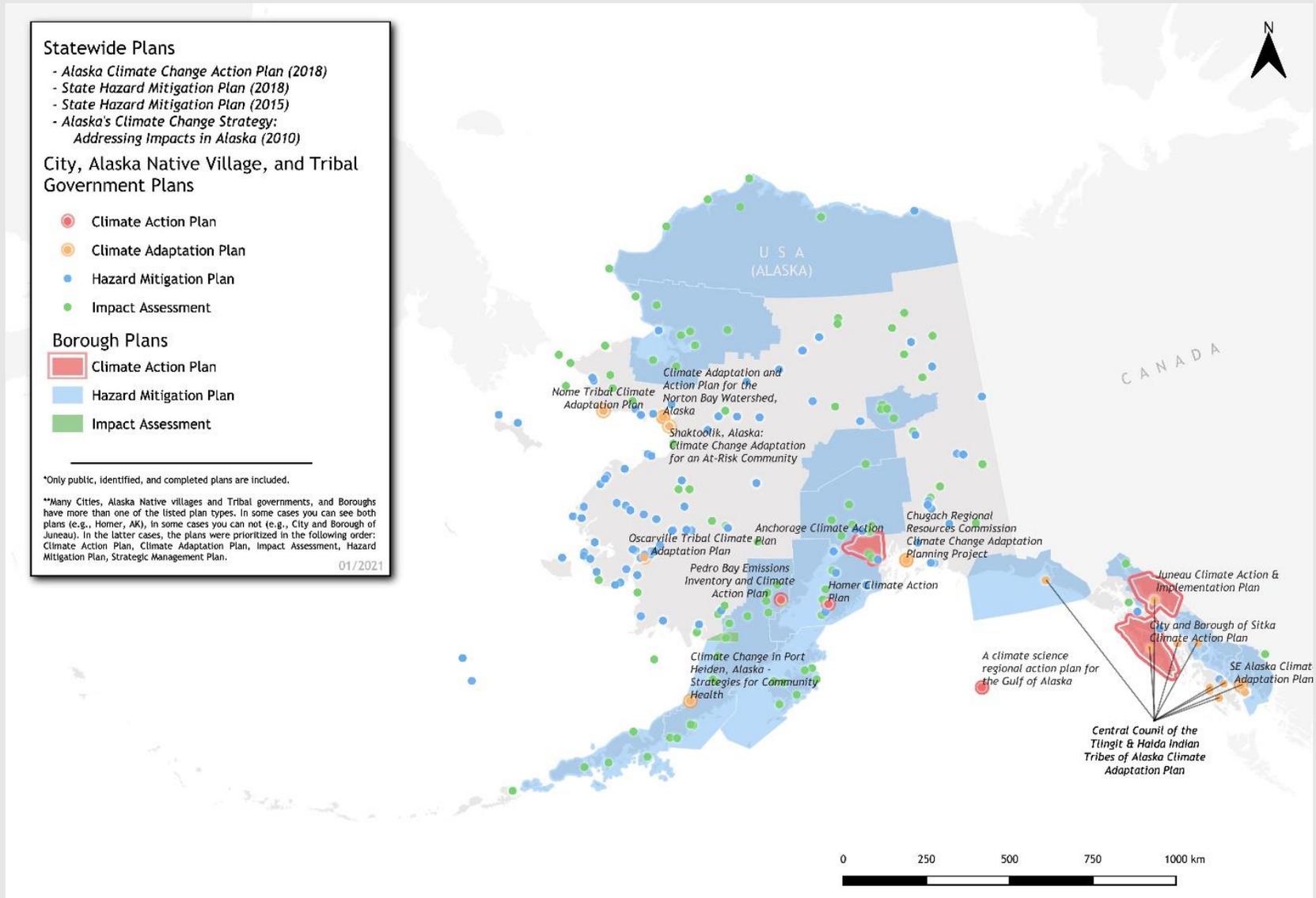
Management Program, which works to build coastal community resilience to threats including climate change.¹¹⁸ This functionally limits the availability of funds for local communities and governments to work in the context of coastal resilience frameworks.

The importance of local governments in a sparsely populated, remote, largely roadless state should not be overlooked. Despite the necessity that climate change be addressed at the global and national scale, without clear and consistent guidance from the state or federal government, many local entities such as boroughs, Tribes, and municipalities have taken it upon themselves to fill the gap. In particular, since the U.S. withdrawal from the Paris Agreement, subnational authorities have begun to gain more attention.¹¹⁹ There are a range of organizations and initiatives for smaller scale action to find inspiration, guidance, and resources. Organizations such as the International Council for Local Environmental Initiatives (ICLEI) and the Cities for Climate Protection Campaign have materialized to build capacity. ICLEI has become an influential global network of municipalities committed to building a sustainable future; it is open to any city or town and currently has over 1,750 local and regional government members, many within the U.S. A similar organization domestic to the U.S., the U.S. Conference of Mayors Climate Protection Center, currently has 1,066 signatories to the Climate Protection Agreement (as of November 2019). In Alaska, the first three cities with Climate Action Plans (Homer, Sitka, and Juneau) were members of ICLEI and were inspired by their recommended process for climate action.

3 Alaska climate change governance by local government actors

Despite the lack of consistency from the state and federal governments, there has been ongoing development of local-scale climate policies and plans in Alaska (see Fig. 6). Many communities, villages, cities, boroughs, and Tribes have begun to address climate change for themselves and have created climate action/adaptation plans, assessments, or strategies. In 2007, the City of Homer created the first climate action plan in the state, which was later followed by plans in Sitka (2010), and Juneau (2011). Most recently, Alaska's largest city, Anchorage, completed a climate action plan in 2019 and the Fairbanks North Star Borough passed a resolution in the same year to take action on the climate crisis by creating a climate action plan and advocating for state and national legislation to address climate change. Actions such as these are not unique to municipalities. Starting in 2010 with Port Heiden, the Alaska Native Tribal Health Consortium (ANTHC) began working with Tribal governments in rural villages to create a series of twelve climate impact assessments and associated response strategies (*Strategies for Community Health*). Seven additional plans by Tribal governments have also been created. Alaska now has at least 23 examples of local climate policy in the form of plans and assessments (see Appendix C) as well as additional task forces, resolutions, and strategies from around the state. The variety in the forms of action stems in part from a lack of top-down guidance or standardization, but also serves as an indicator of the diversity of Alaska. The state is home to many groups of people (e.g., Alaska Natives, permanent transplants from the lower 48 and beyond, short-term and rotational employees, military personnel). The

Figure 6. Alaska's Climate Action and Adaptation Plans



Credit: Kelsey Aho, Center for Arctic Policy Studies, 2019 and updated 2021. Data Sources: DEECD; Meeker & Kettle, 2017; this report.

impacts of climate change vary by community given the size and diversity of the state's ecology from rainforest in the South to Arctic tundra desert in the North. This calls for a variety of responses to address climate impacts. Many local entities have acknowledged their positions within the climate crisis and taken the initiative in responding. As a result, numerous civil society organizations have emerged to counteract the growing effects of climate change in the state.

In Alaska's larger cities and boroughs, there are opportunities for residents to participate in climate action. In Fairbanks, the Fairbanks Climate Action Coalition (FCAC) was formed in November of 2015. It was a result of community members organizing localized solidarity actions with the 2015 United Nations Climate Change Conference in Paris. Afterwards, FCAC hosted an event where individuals that attended the Paris conference shared what they had learned and what inspired them at the conference. From then on, FCAC continued growing as Fairbanks community members felt the need for action on climate change. Anchorage and Juneau have similar climate action groups that offer outlets for pushing legislation or carrying out local direct actions.

Tribal groups have been responding as well. Over 19 climate action efforts (i.e., plans and strategies) have emerged from Indigenous communities. These actions overwhelmingly focus on assessing and adapting to the current impacts of climate change that threaten ways of life, rather than focusing on climate change mitigation. For example, such plans mention threats to food and water security, public health, and physical security as their primary areas of concern. Only one Tribal Plan (the Pedro Bay Emissions Inventory and Climate Action Plan) has mitigation efforts as its primary objective, and it is worth noting that this is the sole Tribal plan to be initiated and undertaken by a State of Alaska governmental department (Environmental Conservation) on behalf of the Tribe.

3.1 Municipal-level action (cities and villages)

As local-scale climate actions grow, more numerous different methods of responding to climate change have arisen around the state. Most common is the creation of a climate action or climate adaptation plan, though there are many examples of indirect responses to the climate crisis that are beyond the scope of this report. Climate Action Plans (CAPs) and Adaptation Plans (APs) are commonly created out of a more formal political process such as within borough assemblies or village councils. As a comprehensive action, "Plans" tend to be expensive both to create and to undertake in part because their scope often asks for specific changes within city infrastructure and municipal governance. Climate Assessments (CAs) are reports that focus on establishing an understanding of how climate change is affecting an area and will sometimes make recommendations on how to react. Another form of action seen in Alaska are the *Strategies for Community Health* reports. These were a series of reports prepared by the ANTHC Center for Climate Health as a means of documenting baseline vulnerabilities from climate change in Northwest Alaska communities. As these community plans were undertaken on behalf of village Tribal governments, we discuss them in more depth in section 3.3 (Tribal actions).

As mentioned above, many of the first municipal climate action plans were inspired by initiatives taken on an international scale. Additionally, the founding documents of many call for more initiative to be taken by the federal and state governments. For example, the Homer Climate Action Plan was passed and adopted by their City Council in 2007. This plan was as a result of work led by Mayor Jim Hornaday and the Global Warming Task Force established by the Homer City Council. The plan focused on lowering greenhouse gas emissions. A CAP Implementation Project final report was released in 2009 in order to assist with implementation of the Homer Climate Action Plan.¹²⁰ In 2010, the Sitka Climate Action Plan was created. Work toward Sitka's plan started in December of 2007, when the city and borough of Sitka endorsed the U.S. Mayors Climate Protection Agreement. In 2011, the Juneau Climate and Implementation Plan was created. The same year, the Norton Bay Watershed Area Climate Adaptation and Action Plan was created.

In 2019, the Anchorage Climate Action Plan was created with the help of University of Alaska Anchorage (UAA). Anchorage's partnership with UAA granted access to funds that allowed a fairly swift completion of a climate action plan that comprehensively addressed both mitigation and adaptation. Anchorage is the largest municipality in Alaska but also has borough status as a "city-borough", meaning the borough and city are consolidated and operate as a unified government. The plan was created over a year-long process, with a goal of reducing greenhouse gas emissions 80% from 2008 levels by 2050, with an interim goal of 40% by 2030.¹²¹

3.2 Borough-level actions

Responses on a broader borough scale have been few, outside of the municipalities of Anchorage and Sitka, which both operate as consolidated city-borough with single unified governments. In 2019, the Fairbanks North Star Borough (FNSB) passed a resolution to create a Joint Climate Change Task Force to guide the borough while they created a climate action and adaptation plan. This resolution was drafted and presented to the borough by the local civil society organization Fairbanks Climate Action Coalition (FCAC) and sponsored by Borough Assembly members Leah Williams and Marna Sanford. This resolution was passed on the tail of Anchorage's adoption of a climate action plan and was at least partly inspired by Alaska's other urban hub taking action, as well as the political makeup of the Borough Assembly being ideal for passing the resolution.

Unlike a consolidated location, the FNSB is committing to creating policy on climate change, but the City of Fairbanks has chosen not to do the same, so as of now, no similar resolution has been presented to the Fairbanks City Council. Strategically, groups across Interior Alaska acknowledged that there was a better chance of passing climate policy with the more favorable Borough Assembly and took advantage of the timing. This demonstrates the possible barriers to comprehensive, or state-wide aligned, climate policy, as well as how pressure for climate policy adoption may be circumvented at different scales.

The FNSB is working to hire a third-party contractor to write the climate action plan with a task force made up of local representatives to guide the contractor. Currently the

Borough Assembly is wrestling with locating adequate funds to pay a contractor, as the Borough has neither the time nor the staff to create the plan itself. As FNSB falls into the category called third-class borough, it is screened out of many state grants that fund action and implementation but not planning. Federal and private funding are extremely competitive and are becoming increasingly geared towards funding direct action rather than planning projects. As of publication, despite the pandemic, there are efforts to link the FNSB planning process to the University of Alaska Fairbanks' research capacity.

Unlike Anchorage, neither the City of Fairbanks nor the FNSB secured funds before passing the resolution. Anchorage's CAP was in partnership with UAA, giving Anchorage access to key resources that aided in the completion of Anchorage's CAP within a year. This variation in resources, even amongst cities, is not unusual. If a municipality decides to take action on climate change, there is little guidance or funding available to kickstart a project or even to create policy. The administration of President Biden may create federal funds for such initiatives with its focus on climate change, but this remains to be seen as of early 2021.

3.3 Tribal actions

Climate action is also occurring throughout Tribal governments. Alaska is home to over 220 Tribes with their own governance structures, many of which are taking action to address climate change. Tribal plans frequently highlight the direct impacts that are currently being felt and the threat of a worsening environmental reality. Indigenous Knowledge, cultures, and ways of life are especially vulnerable to climate change in Alaska. The direct impacts felt by these communities amplifies the urgency to respond. Efforts to serve this need have been undertaken with federal backing through funding sources such as the BIA, the EPA, and more local and regional organizations such as the ANTHC. Coordinated attempts to address climate change across Tribes have occurred via multiple platforms (such as the AFN, discussed in 2.3.3 and regional cooperation, discussed in 3.4). Other coordinated activities exist within, for example, the 12 nonprofit Alaska Native regional associations, though these are outside of the scope of this paper's focus on governmental action.

Of the 23 plans examined in this paper (see Appendix C) seven were developed at the scale of Tribal government. The 2013 *Climate Adaptation and Action Plan for the Norton Bay Watershed* is the earliest of these and was created by the Norton Bay Inter-Tribal Watershed Council on behalf of the Norton Bay Alaska Native Villages of Elim, Unalakleet, Shaktoolik, Golovin, and Shishmaref. In 2014, the village of Shaktoolik worked with Alaska Sea Grant to create its adaptation plan. In 2017, the *Metlakatla Community Climate Change Adaptation Plan* was developed for the Metlakatla Indian Community on Annette Island Reserve (Alaska's only Indian Reserve). That same year, the *Nome Tribal Climate Adaptation Plan* was created with the assistance of the Alaska Center for Climate Assessment and Policy (ACCAP) for Tribal members of the Nome Eskimo Community (NEC), Village of Solomon, Native Village of Council, and King Island Native Community. The *Pedro Bay Emissions Inventory & Climate Action Plan* was also developed in 2017. This plan was unique in that it was initiated by the State of Alaska Department of Environmental Conservation (ADEC) as a pilot study for ADEC to carry

out emissions inventories across rural Alaska. It is thus the sole Tribal plan to focus more heavily on mitigation than adaptation. It is also unclear to what degree the plan has been codified within local government; locatable documents related to the plan are limited to a pair of presentation slide decks.¹²² The 2019 *Pektayiinata = We are Resilient* Oscarville Tribal Climate Adaptation Plan serves the remote, geographically-focused Yup'ik Oscarville Tribe, and in contrast to the top-down Pedro Bay plan, the Oscarville plan is a grassroots effort to address adaptation planning by blending Indigenous Knowledge and western science. Most recently, the 2019 *Central Council of the Tlingit and Haida Indian Tribes of Alaska Climate Adaptation Plan* serves 20 villages and communities across 43 thousand square miles of the Alaska panhandle.

The *Strategies for Community Health* documents (see Fig. 7), which comprise 12 of the plans examined in this report, also comprise a unique subset of Tribal climate plans. The creation of these strategies was undertaken by the ANTHC and funded through a U.S. Indian Health Service Cooperative Agreement. Though the scope of each of the strategies is at the

Figure 7. Climate Change and Strategies for Community Health

The ANTHC conducted a series of climate impact assessments for dozens of Alaska Native communities starting in 2010. A result of this initiative was 12 published *Strategies for Community Health* reports focusing on climate data and projections, local observations, impacts, and recommended mitigation and adaptation strategies.¹²³

In the *Strategies for Community Health* report *Climate Change in Kivalina, Alaska*, Lucy Adams shares the way changing climate has impacted her cultural and subsistence practice of processing seal skins:

I always bleach seal skins in mid-winter. It has to stay really cold. But since 2005, the weather always changes and every year it ruins the skins. I need to find a new way.

-Lucy Adams, Kivalina, AK¹²⁴



Sea ice and fishing boat near Wainwright. Credit: Todd Brinkman, UAF, 2011.

<https://www.flickr.com/photos/iarcgroup/5662625988/in/photolist-9Corgy>.

community scale rather than the Tribal scale, they are undertaken in partnership with Tribal governments and are done with a strong emphasis on community inclusion and incorporation of Indigenous knowledge and values. These various types of climate-oriented activities serve somewhat different purposes but allow communities to take the first step towards addressing climate change as a holistic concern.

3.4 Regionally coordinated action and coalitions

Due to the size of Alaska and the fact that 82% of its communities are not served by a contiguous road system,¹²⁵ accessible only by plane or waterways (in summer) or iceways (in winter), many organizations have formed coordinated actions. This can be seen with the CAP from Norton Bay Watershed and the CAP from the Central Council of the Tlingit and Haida Indian Tribes. The Norton Bay Inter-Tribal Watershed Council (NBITWC) partnered with the Model Forest Policy Program and the Norton Bay Alaska Native Villages for this project. The CAP followed guidance from the Climate Solutions University Plan Development Program, which empowers rural, underserved communities to become leaders in climate resilience.¹²⁶ The Central Council of the Tlingit & Haida Indian Tribes of Alaska is a federally recognized Indian Tribe that serves over 20 villages and communities. The Tribes, with guidance from the Institute for Tribal Environmental Professionals (ITEP), came together in a series of workshops and conferences to develop a list of priorities and stressors to address. They also collaborated with other Washington State Tribes that have already gone through this process.

Another example of broad coalition creation is the Fairbanks Climate Action Coalition, mentioned above. Its coalition of diverse and inclusive stakeholders advocates for climate action from a variety of approaches through their working groups that include Policy and Politics, Interfaith, Keep it in the Ground and others in an effort to spread the volunteer capacity across different community sectors. FCAC has brought together the local chapter of the National Association for the Advancement of Colored People (NAACP), Northern Alaska Environmental Center, Native Movement, the Alaska Center, and other local non-profits and faith groups. There are other satellite groups that have come about as a result of the coalition as well. This coalition is directly responsible for initiating the FNSB Resolution that currently has the Borough working to create a Climate Action Plan.

4 Analysis of local climate plans in Alaska

Local planning has become a popular response to climate change in Alaska for many reasons. Foremost is the rate of change across the Arctic and Sub-Arctic. The subsequent impacts are becoming increasingly obvious across ecosystems encompassing land, air, water, and of course all the frozen features of the state (e.g., glaciers, annual sea and river ice). The people of Alaska are also unique in the U.S. in their relationship to the land. Many Alaskans continue to practice subsistence living and for Indigenous Peoples there exists significant cultural connection to the land where their ancestors have lived for millennia. A growing sense of urgency has led many communities to take responsibility and work to protect their environments and constituents. In

this section, we talk about some of the similarities and differences that emerge across local climate plans in Alaska.

4.1 Motivations specifically identified in the local plans and actions

Actors from all around Alaska continue to respond to climate change with varying levels of commitment. A significant difference between Tribal and municipal action often lies in the motivation. While the initiatives for climate plans, assessments, or strategies all stem from a general impulse to address the new reality facing Alaska, the specific motivations for taking action vary by community. The variety of motivations within these can be seen through their goals and objectives. Alaska is a large state with various sizes and types of communities, cities, and villages so the impacts felt and the scale of what is possible as a response also vary.

Of the 23 Climate Action Plans and Assessments analyzed (see Appendix C), all mention specific motivations for developing the plans. Five of them particularly point to the lack of federal or state action. For example, the first climate action plan in Alaska, from the city of Homer, directly references the “failure of the United States government to develop and implement successful plans to mitigate greenhouse gas emissions” as a motivation for their decision to act.¹²⁷ In the absence of national policy, climate action plans by the governments of Homer, Sitka and Anchorage relied instead on international climate change negotiations and policy as a framework for these endeavors.

At least eighteen plans mention the need for adaptation as a means of preserving the current way of life--often citing traditional and cultural practices. All eight Tribal plans (except for Pedro Bay) and all 12 of the *Strategies for Community Health* reports highlight the unique challenges they face as mainly Indigenous communities and use their plans with the intent of continuing their ways of life passed down through generations (see Fig. 7). The sense of urgency surrounding the impacts in rural communities is much more prevalent than in CAPs developed in urban areas, as rural Indigenous communities in Alaska “are uniquely vulnerable to climate change because of [their] relationship with, and dependence on, the land, sea, and natural resources for their well-being”.¹²⁸

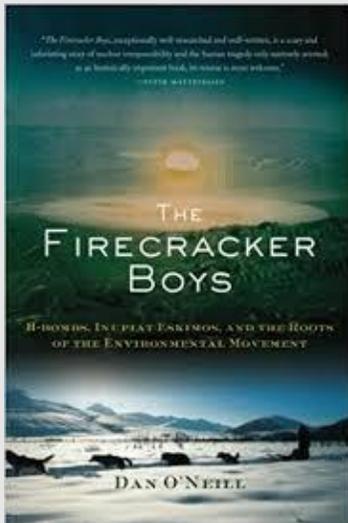
4.2 Rural versus urban Alaska climate change response

As climate change affects various regions of the state differently, the responses are varied. For example, coastal communities face erosion rates that are forcing relocations and massive infrastructure spending while Interior communities are concerned with terrestrial migration pathways. For example, the village of Newtok has been in the news in the last decade for its projected cost of relocation inland estimated to be as much as \$120 million dollars.¹²⁹ Of course, at a broader scale for all communities the, general trend seen in climate actions from rural Alaska is the recognition of tangible ongoing threats and hazards that threaten all types of security (food, physical, economic, etc.), ways of life, cultures, and traditions. Climate actions coming from municipal and more urban Alaska trend more in the direction of mitigating GHG emissions or adapting infrastructure as a means of protecting the community into the future.

Rural Alaska plans are more likely to reference immediate consequences of climate change that are already threatening daily life as motivation for taking action. Because core values that are interconnected with the natural environment are at a higher risk due to climate change, the direct threat of climate change to ways of life becomes a key motivator. This highlights the fact that the impacts of climate change are disproportionately felt by villages and small communities in Alaska, which are insignificant in terms of their GHG emissions. It is further reflected in the language of the climate action plans that come from rural Indigenous Alaska which include references to culturally important aspects of Indigenous Knowledge and connection with the environment.

The Norton Bay Watershed's CAP highlights the mistreatment of the land in the past by the U.S. government during the Project Chariot (see Fig. 8). Project Chariot represents a long battle between Indigenous communities and the federal agencies' desire to extract resources. This past mistreatment has been a source for environmental safeguarding in this region. The Norton Bay Watershed Plan employs restoration of Indigenous knowledge as a strategy to adapt to and mitigate climate change. Similarly, the Nome Tribal Climate Adaptation Plan includes impacts already seen by the Alaska Native population in Nome and surrounding villages. Tribal members were heavily involved in the development of the plan and a goal of the plan was to reflect community values. Within the plan, village economic welfare, subsistence ways of life, and water resources are highlighted as disproportionately threatened by climate change. This is amplified by the natural resource extraction industries that occur on the land.

Figure 8. Project Chariot



In 1958, the U.S. Atomic Energy Commission proposed the construction of an artificial harbor at Cape Thompson on the North Slope of Alaska, by burying and detonating a series of nuclear devices. The harbor was touted as key infrastructure that would secure the economic development of the state, though it functionally ignored the impacts on local, primarily Alaska Native, communities. Opposition led by Inupiat North Slope residents and centered on the environmental and cultural importance of the region was successful in preventing Project Chariot from being undertaken.

In his 2007 book *The Firecracker Boys: H-Bombs, Inupiat Eskimos, and the Roots of the Environmental Movement*,¹³⁰ Alaska historian Dan O'Neill tells the story of Project Chariot and the Alaska Natives and scientists that worked to prevent nuclear devastation off the north coast of Alaska, highlighting the tension between the U.S. government and Indigenous communities who sought to protect their way of life.

The Oscarville Tribal Climate Adaptation Plan directly cites a “lack of agency and funder understanding of culture, traditions and rural lifestyles” and a “lack of community involvement from initial planning” as struggles to past actions.¹³¹ While highlighting the uniquely vulnerable position Indigenous Alaskans are in, the report is an “attempt to bridge the gap between Indigenous knowledge and Western science” and is accordingly divided into three sections: “Where we are From: Our History,” “Where we are Today,” and “Where we are Going: A Path Forward.” Similar to other Tribal plans, this exemplifies the interconnectedness of nature and culture and identifies the impacts to the environment as a motivator to take action.

In city municipal plans CAPs were more frequently initiated by their elected leaders. In the cases of Homer and Sitka, for example, both plans were sparked by the U.S. Mayors Climate Protection Agreement and are involved with ICLEI. The involvement with organizations such as ICLEI is not uncommon for municipal plans as they offer guidance and clear goals that are not outlined elsewhere.

Urban Alaska has seen an expansion in climate action in recent years with the two biggest cities creating (or in the process of creating) CAPs. Urban plans tend to refer to GHG emissions reductions and focus on efforts to mitigate personal emissions more so than other plans. This may be because direct, tangible impacts (such as changes in hunting seasons or thawing permafrost impacts on traditional subsistence practices) are less evident to some residents. Municipal plans are more likely to focus on how to adapt in terms of infrastructure.

4.3 Relationships to grassroots climate movements

In Alaska, throughout the change in administrations at different levels of government, what has remained consistent is the push for climate action by grassroots climate movements. Grassroots movements often adapt their strategies based on political shifts in administrations that may work to their advantage. In regard to climate change, with the continued polarization of the issue, this tends to mean taking a more “defensive” stance (defending actions that have already been taken) under Republican-dominant administrations and an “offensive” strategy (pushing for more or new policy and action) under Democrat-dominant administrations.

Climate movements in Alaska are often comprised of coalitions of local grassroots efforts built over time. In Juneau, active organizations include Renewable Juneau, 350Juneau, and the local chapter of Interfaith Power & Light. In Anchorage, a range of active organizations exists including the Alaska Center, Alaska Rising Tide, the local chapter of the NAACP, the Alaska Climate Action Network (AK CAN), Defend the Sacred Alaska, Alaska Youth for Environmental Action (AYEA), Native Peoples Action, and a local chapter of Interfaith Power & Light. Similarly, in Fairbanks the climate movement includes organizations such as the Fairbanks Climate Action Coalition, Northern Alaska Environmental Center, Gwich'in Steering Committee, Native Movement, and the Hrrrl Scouts. At the heart of the climate movement in Alaska are intersections of environmental justice and Indigenous rights, reflecting a value system that recognizes that climate change vulnerability stems from a history of colonization and racism as climate change disproportionately impacts communities with fewer monetary and government resources.¹³² In order to address the roots of the issue, institutionalized

marginalization of people of different ethnicities, skin colors, and epistemologies have to be addressed.¹³³

It is these intersections that have motivated stakeholders to form coalitions and to work to bring underrepresented voices to the forefront of climate discussions. Moreover, these localized coalitions also work to support each other at a broader scale. For instance, Alaska Rising Tide (a statewide climate change activist group that works primarily out of Anchorage) came to Fairbanks in 2017 to protest ExxonMobil's long-time sponsorship of the Iditarod¹³⁴, and the Just Transition Summit in Fairbanks in January 2020 brought together different community organizations from around the state to create a space for Indigenous and non-Indigenous collaboration to address economic and social issues. The summit was organized by Native Peoples Action, Native Movement, The Alaska Center, Alaska Public Interest Research Group, Fairbanks Climate Action Coalition and the Gwich'in Steering Committee.

Some coalitions are inspired by international efforts such as the Paris Agreement of the UNFCCC COP22 in 2016. Adjacent to the Paris Conference, marches and rallies were held to call on world leaders to make more progressive changes.¹³⁵ Likewise, Pope Francis's encyclical on the environment titled *Laudato si'* inspired Catholics and non-Catholics around the state to act on climate change at the local level (as demonstrated above, interfaith organizing is a key part of the climate justice movement in Anchorage, Fairbanks, and Juneau).

5 Concluding thoughts

Absent consistent direction on climate change policy by either state or federal governments, Alaskans have been creating policies to take action on both climate mitigation and adaptation. Every ecoregion in the state – from southern rainforest to northern tundra – is affected by changing seasonal patterns and is experiencing these changes more rapidly than much of the rest of the U.S. and mid-latitudes. The majority of the climate policies we document here are located in small rural communities with negligible local contributions of GHGs to the global load, and have a focus on adaptation. The few policies that cover territories with larger populations (e.g., the Anchorage Climate Action Plan) tend to focus on mitigation approaches with little to no mention of adaptation. We have also explained some relevant intergovernmental activities such as the role of the Denali Commission and the Alaska Federation of Natives. However, the report was not intended to address every study, project, or ongoing activity in the state. We encourage our readers to delve more deeply into those we have not included. For example, the Tanana Chiefs Conference, a Tribal health and social services consortium established by the Interior Alaska Tribes and Tribal communities, has passed its own resolutions (2017-31 and 2019-23) to address climate change and its effects on the communities of Interior Alaska. While this is not a “government action” it demonstrates how significant actors in the state are creating their own climate change motivated policies, which over time will create pressure on the state for a response.

The Center for Arctic Policy Studies is housed at the University of Alaska Fairbanks, as a public university we are careful to not make distinct policy recommendations unless called

upon by the governments or citizens we serve. In this instance, the science of climate change is globally accepted, the planetary processes affected can be observed in many places, Alaskans are at the forefront of the impacts of these changes, and bipartisan acknowledgement of the need to address climate change is growing.¹³⁶ While we do not presume to recommend how the State of Alaska should create mitigation or adaptation policy, we do strongly recommend that the state develop an enduring Alaska climate change commission that serves to increase the information available about climate change for all Alaskans and provides a consistent accountable body of knowledge and suggestions to decision-makers. Such an idea is not novel; Alaska has twice established climate oversight entities by gubernatorial executive order, once under Republican Governor Sarah Palin and once under independent Governor Bill Walker. Strong attempts were even made to codify Palin's sub-cabinet as a recognized state council with guaranteed existence across administrations, similar to the commission that we are suggesting here.

Looking at our business climate, our infrastructure, and the needs of urban and rural residents, it is time for the state legislature to create an Alaska climate change commission that outlives the short-term politics of election cycles. Such a commission would provide consistent information and public accountability in facing this complex problem that will affect all Alaskans and all sectors of our economy well into the future. Communities across the state have been addressing climatic changes for themselves for more than a decade. For example, the Homer City Council created the first municipal climate action plan in 2007. Since then, at least ten such plans have been made in communities around the state. Even more communities have established local task forces to develop their own climate plans. Some, like Sitka, are committing resources to maintain and update existing climate plans.¹³⁷ Rural communities that are struggling to adapt to the major impacts of coastal erosion via village relocation have even created their own inter-agency planning work groups to coordinate resources and technical assistance from local, regional, state, and federal entities. Policymakers are starting to see that planning for climatic changes does not always have to come with a high economic cost. For example, Anchorage's Climate Action Plan prioritizes actions that result in not only environmental benefits, but also substantial economic and community benefits. By making investments that safeguard Alaska's environment, cultures, and economy now, we can save our cash-strapped state billions of dollars.¹³⁸

The Alaska "do-it-yourself" mentality can serve us well. Tackling climate change ourselves in-state, where we have the most knowledge of what is happening, can be easier, faster, and more effective than trying to steer the federal government. We also have a valuable public university system that can support the needs of a non-partisan climate change commission using nearly a century of data and observations. In fact, the Center for Arctic Policy Studies was established with the mission of linking UAF research with decision-makers, enabling them to develop well-informed policies for our communities.

While a permanent climate change commission would be new for us, as this report has shown, state-level climate policy in Alaska has a thirty-year history. Consider the state's Alaska Criminal Justice Commission, a state-wide commission with a limited tenure, set to expire in

July 2021, which has issued reports annually since 2015. Crime, like climate change, is a non-partisan phenomenon, though, like climate change, various partisan definitions of the problem of crime and potential solutions can be. However, this has not prevented the state from forming this board or creating a diversity of perspectives on it via its membership. Another example of an effective commission with a longer history is the Alaska Commission on Aging founded in 1982 to “insure the dignity and independence of all older Alaskans” with a mixture “of planning, advocacy, education, and interagency cooperation.” In both cases the commission has a roster that mixes seats reserved for certain government actors as well as the public. An effective climate commission would include representatives from across the state and various sectors: Alaska Natives, rural and urban Alaskans, natural resource managers, subsistence users, youth and elders, coastal and interior residents, and the private sector.

For the State of Alaska to *not* address many of the changes in an integrated way suggests two very likely outcomes. First, the costs of managing the results of the rapid changes across our state and region will be high. These will not only be monetary costs but also costs to values Alaskans hold dear – lives, livelihoods, distinct cultures, and a flourishing natural environment. Secondly, the window for addressing these changes through adaptation is narrowing because the options people, businesses, and governments can take decrease as the problems mount. Given this context, it is a prudent option to form a board or commission for the state that can, at a minimum, collect, curate, and pass forward the science and knowledge of climate change in the state and its surrounding waters across administrations. While state administrations’ interest in acting on climate change vulnerabilities may shift with electoral cycles, the science of the problem does not waver. In fact, valuable information for decision-makers only improves over time with further observations and improved predictions. The research doesn’t cease or suddenly start with new state or federal administrations, only the efforts by governments to acknowledge and address the problems do.

Alaska lawmakers are able to end the short-sighted and high-cost approach to climate change policy by creating an enduring climate change commission with public meetings and records preserved in perpetuity. In this way, scientific information, Indigenous Knowledge, and the expertise of diverse commission members can be maintained across administrations. We note the importance of incorporating Indigenous Knowledge and leadership, as predominately Alaska Native communities are at the forefront of climate change impacts and have developed innovative responses. Alaska has non-partisan boards and commissions for other issues—so why not to address the challenges of our changing climate?

When we consider the future, we can imagine how a state climate change commission with diverse expertise, the ability to escape short-term electoral pressures, and access to resources from the UA system could help communities meet Alaska’s climate change challenges. It is time for an Alaska Climate Change Commission, and we have what we need to make it a success.

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APPENDIX A. Acronyms

AAPC	Alaska Arctic Policy Commission
ACCAP	Alaska Center for Climate Assessment & Policy
ACRC	Alaska Climate Research Center
ADEC	Alaska Department of Environmental Conservation
AFN	Alaska Federation of Natives
AK CAN	Alaska Climate Action Network
AK DOT	Alaska Department of Transportation
ANCSA	Alaska Native Claims Settlement Act
ANTHC	Alaska Native Tribal Health Consortium
ANTWF	Alaska Northern Waters Task Force
ANWR	Arctic National Wildlife Refuge
AO	Administrative Order
AOOS	Alaska Ocean Observing System
AP	Adaptation Plan(s)/Climate Adaptation Plan
ASRC	Arctic Slope Regional Corporation
AYEA	Alaska Youth for Environmental Action
BIA	Bureau of Indian Affairs
CA	Climate Assessment
CALT	Climate Action Leadership Team
CAP	Climate Action Plan
CASC	Climate Adaptation Science Center
CDC	Centers for Disease Control
CEQ	Council of Environmental Quality
COP	Conference of the Parties
CZMA	Coastal Zone Management Act
EPA	Environmental Protection Agency
FCAC	Fairbanks Climate Action Coalition
FNSB	Fairbanks North Star Borough
GAO	Government Accountability Office
GHG	Greenhouse Gas
HB	House Bill
HCR	House Concurrent Resolution
HJR	House Joint Resolution
HR	House Resolution
ICLEI	International Council for Local Environmental Initiatives
IPCC	Intergovernmental Panel on Climate Change
IRA	Indian Relocation Act
ITEP	Institute for Tribal Environmental Professionals
NAACP	National Association for the Advancement of Colored People

NBITWC	Norton Bay Inter-Tribal Watershed Council
NBSCRA	Northern Bering Sea Climate Resilience Area
NCEI	National Centers for Environmental Information
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NSIDC	National Snow and Ice Data Center
NWS	National Weather Service
SNAP	Scenario Network for Alaska Planning
SB	Senate Bill
UAA	University of Alaska Anchorage
UAF	University of Alaska Fairbanks
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGCRP	United States Global Change Research Program
USGS	United States Geologic Survey
VIP	Village Infrastructure Protection Program
VISION	Voluntary Innovative Sector Initiatives: Opportunities Now

APPENDIX B. Chronological List of Alaska State-level Policy Activities Related to Climate Change

Year	Legislation Title/Action/Event	Brief Description
1990	HCR 56: Relating to Global Climate Change	HCR 56 resolved to ask the governor to investigate state policies and procedures to determine best practices to combat climate change. Failed on House floor, 17-10.
1990	<i>An Alaskan Strategy in Response to Global Climate Change</i> report endorsed by Governor Cowper	This report was prepared by the Alaska Science and Engineering Advisory Commission. The goal was to investigate the impacts of climate change on Alaska's economic, social, and ecological environment.
1999	HJR 33: UN Treaty on Climate Change	HJR 33 resolved to urge the U.S. Senate to decline to ratify the UN Framework Convention on Climate Change treaty adopted in December 1997 at Kyoto, Japan. Passed in the House 29-7, died in Senate Committee.
2006	HCR 30: Creating an Alaska Climate Impact Assessment Commission	HCR 30 was passed in both the house and senate, creating an Alaska Climate Impact Assessment Commission. The commission was tasked with studying and evaluating impacts of climate change around the state, suggesting policies, and examining alternative measures. The final commission report was produced on March 17, 2008.
2007 (Sept 24)	AO 238: Established the Alaska Climate Change Sub-Cabinet	AO 238, under Governor Palin, established a Climate Change Sub-Cabinet to advise the Office of the Governor on the preparation and implementation of an Alaska climate change strategy. Sub-Cabinet was composed of the commissioners of Environmental Conservation, Fish & Game, Commerce, Transportation, and Natural Resources.
2008 (March 17)	Final commission report of the Alaska Climate Impact Assessment Commission submitted to the legislature	Drawing on testimony from local public officials, Tribal leaders, and mayors of eight municipalities, the report identified various areas of concern and ongoing local efforts to identify and respond to climate impacts and advocated for the Governor's Sub-Cabinet for Climate Change to be established as a recognized state council with guaranteed existence across administrations and to serve as the entity responsible for developing a statewide implementation plan.
2008 - 2010	Sub-Cabinet for Climate Change advisory bodies (Immediate Action Workgroup, Research Needs Workgroup, Adaptation Advisory Board, and Mitigation Advisory Board) produce multiple reports.	Advisory body reports make recommendations to the sub-cabinet related to near term goals, long-term research needs, and adaptation and mitigation priorities. These reports include the Immediate Action Workgroup's Recommendations Report to the Governor's Sub-Cabinet on Climate Change April 2008 and Recommendations Report to the Governor's Sub-Cabinet on Climate Change March 2009 ; the Research Needs Workgroup's Recommendations on Research Needs Necessary to Implement an Alaska Climate Change Strategy (2009); Mitigation Advisory Group's Final Report: Greenhouse Gas Inventory and Forecast and Policy Recommendations: Addressing Greenhouse Gas Reduction in Alaska (2009); and the Adaptation Advisory Group's Alaska's Climate Change Strategy: Addressing Impacts in Alaska Executive Summary (2009) and Alaska's Climate Change Strategy: Addressing Impacts in Alaska (2010).
2011	Governor Parnell refuses to reauthorize the Sub-Cabinet for Climate Change's work.	Sub-Cabinet disbands.

2012	Alaska Northern Waters Task Force Joint Committee Report released.	The Findings and Recommendations of the Alaska Northern Waters Task Force , established in 2010 by the State Legislature to address state interests related to opening the Arctic waters, stresses the significant impacts of climate change in Alaska Northern waters and encouraged the legislature to develop and Alaska Arctic policy, which subsequently was created in 2012.
2015	HB 1: State Arctic Policy	HB 1 placed Alaska's Arctic Policy into state statute . Notable is that the law states that the policy of Alaska is to "sustain current, and develop new, approaches for responding to a changing climate, and adapt to the challenges of coastal erosion, permafrost melt, and ocean acidification." Passed the House 32-2, Passed the Senate 19-1.
2016	HB 233: Climate Change Commission	HB 233 sought to establish an Alaska Climate Change Commission to advise the governor, consult with experts, liaise with non-State entities, recommend actions, and provide annual reports. Died in committee.
2017	HB 173: Establishing the Alaska Climate Change Response Commission	HB 173 sought to create an Alaska Climate Change Response Commission, establish a climate change response fund and establish a surcharge on oil produced in the state. Died in committee.
2017 (Oct 31)	AO 289: Alaska Climate Change Strategy	AO 289, under Governor Walker, created a 20-person Climate Action Leadership Team (CALT) and Climate Change Strategy addressing adaptation, mitigation, research, and response, and formally revoking and replacing the previous entity established in AO 238 under Governor Palin.
2018	CALT produces two reports	Climate Change Action Plan Recommendations to the Governor and Climate Change Policy Recommendations to the Governor .
2018	Early Actions Plan released by the Executive branch under Governor Walker.	Highlights climate-related activities in ten separate state departments.
2018	Potential Health Impacts of Climate Change in Alaska report by the Department of Health and Human Services released.	Highlights various aspects of the health of Alaskans that are impacted by climate changes, including mental health and well-being; accidents and injuries; exposure to hazardous materials; food, nutrition, and subsistence activities; infectious diseases and toxins; chronic diseases; water and sanitation; and access to health services.
2019 (Feb 22)	AO 309: Administrative Orders to be rescinded	AO 309, under Governor Dunleavy, rescinded AO 289, dissolving the CALT and Alaska Climate Change Strategy.
2019	HR 12: Establishing a House Special Committee on Climate Change	HR 12 would have established a House Special Committee on Climate Change. Failed to move forward in House Resource Committee.
2019	SB 216: Climate Change Commission	SB 216 would have established an Alaska Climate Change Emergency Response Commission. Died in Committee.

APPENDIX C. Local-scale climate policy in Alaska

#. Climate Plan Title						
Link						
Year	Scale	Produced by/for	Motivation	Goals	Funding Source	Affiliations & Partnerships
1. City of Homer Climate Action Plan						
https://www.cityofhomer-ak.gov/sites/default/files/fileattachments/city_council/page/6722/climate_action_plan.pdf						
2007	Municipal/Homer is a city (pop. ~5700) in the Kenai Peninsula Borough.	By City Council's Global Warming Task Force for the City of Homer.	Urgency of IPCC reports, failure of state and federal action, U.S. Mayors Climate Protection Agreement.	GHG reduction, prepare for impacts of climate change, and to inspire further action and influence policy within other political bodies & governments. Reduction targets of 12 percent by 2012 and 20 percent by 2020.	Plan creation - N/A. Options identified for implementation: state and federal programs and private foundations, a Climate Action Plan tax.	Alaska Marine Conservation Council, Sustainable Homer, Homer Chamber of Commerce, Alaska Islands and Ocean Visitor Center, Alaska Conservation Solutions, ICLEI.
2. City and Borough of Sitka Climate Action Plan						
https://www.cityofsitka.com/government/documents/SitkaClimateActionPlan6-22-10.pdf						
2010	Municipal/Sitka is a city and borough (pop. ~8500) in the southeast panhandle of Alaska.	By the Sitka Climate Action Plan Task Force, for the Sitka Assembly.	Plan creation was spurred upon joining the U.S. Mayors Climate Protection Agreement.	Targets municipal operations and actions; focuses on reducing GHG emissions with an implementation plan from 2010-2020.	Plan creation: N/A. Options identified for implementation: Municipal funds, grants, revolving energy fund.	U.S. Mayors Climate Protection Agreement, ICLEI.
3. Climate Change in Point Hope, Alaska: Strategies for Community Health						
https://anthc.org/wp-content/uploads/2016/01/CCH_AR_082010_Climate-Change-in-Point-Hope.pdf						
2010	Tribal/ANTHC Assessment. Point Hope is a coastal Iñupiat Native Village (pop. ~700) in the North Slope Borough.	By M. Brubaker, J. Berner, J. Bell, J. Warren, and A. Rollin for ANTHC Center for Climate and Health and the Village of Point Hope.	Vulnerability of community, culture, and public health to climate change, need for adaptation.	To observe climate-related change & report on health effects; recommends increased monitoring and observation and local input in decision-making.	Strategy creation: U.S. Indian Health Service Cooperative Agreement No. AN 08-X59. Implementation: N/A.	City of Point Hope, Native Village of Point Hope, Tikigaq Corporation, Maniilaq Association, Northwest Arctic Borough, North Slope Borough, ACCAP, SNAP, ACRC, University of Alaska Fairbanks Geophysical Institute, University of Alaska Anchorage Environment and Natural Resources Institute, NWS, NOAA, USGS, USACE, Centers for Disease Control (CDC), Arctic Investigations Program, Alaska Ocean Observing System, Yale University School of Forestry, Kasitsna Bay Laboratory, various departments of the State of Alaska.

4. Juneau Climate Action & Implementation Plan

https://chstm2y9cx63tv84u2p8shc3-wpengine.netdna-ssl.com/wp-content/uploads/2018/04/CAP_Final_Nov_14.pdf

2011	Municipal/ Juneau is a city borough and state capital (pop. ~32,000) in the southeast panhandle of Alaska.	By the Juneau Commission for Sustainability and Municipal Staff for the City & Borough of Juneau Assembly.	Participation in ICLEI program centered on plan formation; cost savings from energy consumption reduction.	Reduce community-wide greenhouse gas emissions 25% by 2032; identifies the top actions that the community can take to reduce energy use and greenhouse gas emissions for Juneau; encourage other governments to reduce GHGs.	Plan creation: N/A. Options for implementation: Municipal, state, and federal funds, grants, revolving energy fund.	USCG, Alaska Conservation Alliance, Southeast Alaska Conservation Council, Tlingit Haida Regional Housing Authority, Alaska Light & Power Co, Skilbred Consulting, Sheinberg Associates, Alaska Energy Engineering, ENVIRON, ICLEI.
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5. Climate Change in Noatak, Alaska: Strategies for Community Health

https://anthc.org/wp-content/uploads/2016/01/CCH_AR_062011_Climate-Change-in-Noatak.pdf

2011	Tribal/ANTHC Assessment. Noatak is an Iñupiat village (pop. ~500) in the Northwest Arctic Borough.	By M. Brubaker, J. Bell, J. Berner, M. Black, R. Chavan, J. Smith, and J. Warren for ANTHC Center for Climate and Health and the Village of Noatak.	Arctic communities are vulnerable to climate change and seek to adapt to protect their health and infrastructure. Created based on requests from Tribal health representatives and local and regional leadership.	To document climate change impacts as described by local people and climate change effects or potential effects, especially related to health concerns and infrastructure; to make recommendations for addressing these impacts.	Strategy creation: U.S. Indian Health Service Cooperative Agreement No. AN 08-X59. Implementation: N/A.	Noatak IRA Council, Maniilaq Association, Northwest Arctic Borough, NANA Regional Corporation, ACCAP, ACRC, SNAP, UAF Geophysical Institute, UAF Permafrost Laboratory, UAA Institute for Circumpolar Health, UAF Water & Environmental Research Center, various departments of the State of Alaska, NOAA, NWS, USGS, USACE, CDC, EPA, U.S. Fish and Wildlife Service (USFWS, Selawik National Wildlife Reserve, Alaska Ocean Observing System (AOOS).
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6. Climate Change in Kiana, Alaska: Strategies for Community Health

http://anthc.org/wp-content/uploads/2016/01/CCH_AR_102011_Climate-Change-in-Kiana.pdf

2011	Tribal/ANTHC Assessment. Kiana is an Iñupiat village (pop. ~360) in the Northwest Arctic Borough.	By M. Brubaker and R. Chavan for ANTHC Center for Climate and Health and the Village of Kiana.	Arctic communities are vulnerable to climate change and seek to adapt to protect their health and infrastructure. Created based on requests from Tribal health representatives and local and regional leadership.	To document climate change impacts as described by local people and climate change effects or potential effects, especially related to health concerns and infrastructure; to make recommendations for addressing these impacts.	Strategy creation: U.S. Indian Health Service Cooperative Agreement No. AN 08-X59 and an EPA Indian General Assistance Program grant. Implementation: N/A.	Kiana IRA Council, City of Kiana, Maniilaq Association, Northwest Arctic Borough, NANA Regional Corporation, ACCAP, ACRC, SNAP, UAF Geophysical Institute, UAF Permafrost Laboratory, UAA Institute for Circumpolar Health, UAF Water & Environmental Research Center, various departments of the State of Alaska, NOAA, NWS, USGS, USACE, CDC, EPA, USFWS, Selawik National Wildlife Reserve, AOOS.
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7. Climate Change in Kivalina, Alaska: Strategies for Community Health

https://anthc.org/wp-content/uploads/2016/01/CCH_AR_012011_Climate-Change-in-Kivalina.pdf

2011	Tribal/ANTHC Assessment. Kivalina is an Iñupiat village (pop. ~400) located on a small barrier island in the Northwest Arctic Borough.	By M. Brubaker, J. Berner, J. Bell, and J. Warren for ANTHC Center for Climate and Health and the Village of Kivalina	Arctic communities are vulnerable to climate change and seek to adapt to protect their health and infrastructure. Created based on requests from Tribal health representatives and local and regional leadership.	To document climate change impacts as described by local people and climate change effects or potential effects, especially related to health concerns and infrastructure; to make recommendations for addressing these impacts.	Strategy creation: U.S. Indian Health Service Cooperative Agreement No. AN 08-X59. Implementation: N/A.	Kivalina IRA Council, City of Kivalina, Maniilaq Association, Northwest Arctic Borough, NANA Regional Corporation, Red Dog Mine, Glenn Gray and Associates, ACCAP, ACRC, SNAP, UAF Geophysical Institute, UAF Permafrost Laboratory, UAA Institute for Circumpolar Health, UAF Water & Environmental Research Center, various departments of the State of Alaska, NOAA, NWS, USGS, USACE, CDC, EPA, USFWS, Selawik National Wildlife Reserve, AOOS.
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8. Climate Change in Selawik, Alaska: Strategies for Community Health

https://anthc.org/wp-content/uploads/2016/01/CCH_AR_052012_Climate-Change-in-Selawik.pdf

2012	Tribal/ANTHC Assessment. Selawik is an Iñupiat village (pop. ~800) located in the Northwest Arctic Borough.	By M. Brubaker, P. Chavan, J. Berner, M. Black, and J. Warren for ANTHC Center for Climate and Health and the Village of Selawik.	Arctic communities are vulnerable to climate change and seek to adapt to protect their health and infrastructure. Created based on requests from Tribal health representatives and local and regional leadership.	To document climate change impacts as described by local people and climate change effects or potential effects, especially related to health concerns and infrastructure; to make recommendations for addressing these impacts.	Strategy creation: USFWS, EPA, U.S. Indian Health Service. Implementation: N/A.	Native Village of Selawik, City of Selawik, Maniilaq Association, Northwest Arctic Borough, NANA Regional Corporation, Selawik National Wildlife Reserve, Northwest Inupiat Housing Authority, ACCAP, SNAP, UAF, UAA Institute for Circumpolar Health, various departments of the State of Alaska, USACE, CDC.
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9. Climate Change in Nondalton, Alaska: Strategies for Community Health

https://anthc.org/wp-content/uploads/2016/01/CCH_AR_112013_Climate-Change-in-Nondalton.pdf

2013	Tribal/ANTHC Assessment. Nondalton is a Dena'ina village (pop. ~130) located in the Lake and Peninsula Borough.	By M. Brubaker, C. Balluta, S. Flensburg, J. Skarade, and R. Drake for ANTHC Center for Climate and Health and the Village of Nondalton.	Inspired by a 2011 workshop in Dillingham and assessment team was established following resolution of support from Nondalton Village (Tribal government).	To document climate change impacts as described by local people and climate change effects or potential effects as interpreted through the lens of public health; to make recommendations for addressing these impacts.	Strategy creation: Western Alaska Landscape Conservation Cooperative (Western Alaska LCC) and an EPA Indian General Assistance Program grant. Implementation: N/A	Nondalton Traditional Council, City of Nondalton, Bristol Bay Native Association, Bristol Bay Area Health Corporation, Ekuk Village Council, Lake and Peninsula Borough, ACCAP, ACRC, SNAP, UAF Geophysical Institute, various departments of the State of Alaska, NOAA, NWS, USGS, USACE, CDC, EPA, USFWS.
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10. Climate Adaptation & Action Plan for the Norton Bay Watershed

http://www.mfpp.org/wp-content/uploads/2011/04/Norton-Bay-Watershed-Climate-Adaptation-Action-Plan_2013-Final.pdf

2013	Regional (Inter-Tribal)/Norton Bay Watershed is located on the Seward Peninsula and is home to the Native Villages of Elim, Unalakleet, Shaktoolik, Golovin, and Shishmaref (combined pop. ~1,900).	By E. Murray (Norton Bay Inter-Tribal Watershed Council [NBITWC]), Laoch Consulting and Climate Solutions University on behalf of the NBITWC and the Norton Bay Alaska Native Villages.	Substantial impacts of climate change are already felt by Native Villages' cultures and economies.	The first step in a long-term objective of addressing the consequences of climate change and other non-climate stressors; to provide an example plan that can be used in locations throughout Alaska. Goals include increasing emergency preparedness; mitigating and adapting to environmental change; safe access to and protection of subsistence resources; education and outreach; improving economic conditions.	Plan creation: NBITWC, Climate Solutions University, the Kresge Foundation. Options identified for implementation: FEMA.	The Model Forest Policy Program, The Cumberland River Compact, the Native Villages of: Elim, Shaktoolik, Unalakleet and Koyuk, Kawerak Inc., UAF IARC, UAF Institute of Northern Engineering, Norton Sound Native Health Corporation, NOAA, National Marine Fisheries Service (NMFS), UAA, Western Alaska Landscape Conservation Cooperative.
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11. Climate Change in Pilot Point, Alaska: Strategies for Community Health

https://anthc.org/wp-content/uploads/2016/01/CCH_AR_092013_Climate-Change-in-PilotPoint.pdf

2013	Tribal/ANTHC Assessment. Pilot Point is a Yup'ik and Aleut village (pop. ~100) located in the Lake and Peninsula Borough.	By M. Brubaker, C. Balluta, S. Flensburg, J. Skarade, and R. Drake for ANTHC Center for Climate and Health and the Village of Pilot Point.	Inspired by a 2011 workshop in Dillingham and assessment team was established following resolution of support from Pilot Point Tribal Council.	To document climate change impacts as described by local people and climate change effects or potential effects as interpreted through the lens of public health; to make recommendations for addressing these impacts.	Strategy creation: Western Alaska Landscape Conservation Cooperative (Western Alaska LCC) and an EPA Indian General Assistance Program grant. Implementation: N/A	Pilot Point Traditional Council, Ekuk Village Council, City of Pilot Point, Bristol Bay Native Association, Bristol Bay Area Health Corporation, Lake and Peninsula Borough, ACCAP, ACRC, SNAP, UAF Geophysical Institute, various departments of the State of Alaska, NOAA, NWS, USGS, USACE, CDC, EPA, USFWS.
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12. Shaktoolik, Alaska: Climate Change Adaptation for an At-Risk Community - Adaptation Plan

https://www.commerce.alaska.gov/web/Portals/4/pub/2014_Shaktoolik_Adaptation_Plan_Final.pdf

2014	Tribal/Shaktoolik is a coastal Yup'ik and Iñupiat village (pop. ~250) located in the Nome census area.	By T. Johnson, Alaska Sea Grant Program & Glenn Gray, Glenn Gray and Associates, for the community of Shaktoolik.	Initiated by Alaska Sea Grant, following other projects that assessed and identified a high risk of flooding and erosion in Shaktoolik.	Outlines next steps for the community of Shaktoolik as it responds to threats, primarily erosion and flooding, resulting from a changing climate.	Plan creation: OAR National Sea Grant College Program. Options identified for implementation: grants, state or federal funding, Alaska Community Coastal Protection Project.	Native Village of Shaktoolik, City of Shaktoolik, Shaktoolik Native Corporation, Alaska Sea Grant, various departments of the State of Alaska, USCG, Alaska Village Electric Cooperative, ANTHC, EPA Indian General Assistance Program, USACE.
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13. Climate Change in Levelock, Alaska: Strategies for Community Health

https://anthc.org/wp-content/uploads/2016/01/CCH_AR_042014_Climate-Change-in-Levelock.pdf

2014	Tribal/ANTHC Assessment. Levelock is an Alutiiq and Yup'ik community (pop. ~70) located in the Lake and Peninsula Borough.	By M. Brubaker, G. Andrew, S. Andrew, S. Flensburg, J. Skarada, and R. Drake for ANTHC Center for Climate and Health and the Village of Levelock.	Inspired by a 2011 workshop in Dillingham and assessment team was established following a resolution from the Native Village of Levelock (Tribal government). Created based on requests from Tribal health representatives and local and regional leadership.	To document climate change impacts as described by local people and climate change effects or potential effects as interpreted through the lens of public health; to make recommendations for addressing these impacts.	Strategy creation: Western Alaska Landscape Conservation Cooperative (Western Alaska LCC) and an EPA Indian General Assistance Program grant. Implementation: N/A	Levelock Traditional Council, City of Levelock, Bristol Bay Native Association, Bristol Bay Area Health Corporation, Lake and Peninsula Borough, ACCAP, ACRC, SNAP, UAF Geophysical Institute, various departments of the State of Alaska, NOAA, NWS, USGS, USACE, CDC, EPA, USFWS.
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14. Climate Change in Atqasuk, Alaska: Strategies for Community Health

https://anthc.org/wp-content/uploads/2016/01/CCH_AR_072014_Climate-Change-in-Atqasuk.pdf

2014	Tribal/ANTHC Assessment. Atqasuk is an Iñupiat village (pop. ~240) located in the North Slope Borough.	By M. Brubaker, J. Bell, H. Dingman, M. Ahkivgak, D. Whiteman, and R. Drake for ANTHC Center for Climate and Health and the Village of Atqasuk.	Initiated in 2013 by the North Slope Borough Health Impact Assessment program with the recognition that changing permafrost and ice has impacts for infrastructure and public health and based on requests from Tribal health representatives and local and regional leadership.	To understand local impact of climate change in order to assess negative and positive effects and to suggest appropriate adaptation strategies.	Strategy creation: National Petroleum Reserve-Alaska grant through the Department of Commerce, Community and Economic Development and supplemental funding through an EPA Indian General Assistance Program grant. Implementation: N/A.	City of Atqasuk, Atqasuk Tribal Council, North Slope Borough, ACCAP, ACRC, SNAP, UAF Geophysical Institute, various departments of the State of Alaska, NOAA, NWS, USGS, USACE, CDC, EPA, USFWS.
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15. Climate Change in Nuiqsut, Alaska: Strategies for Community Health

https://anthc.org/wp-content/uploads/2016/01/CCH_AR_072014_Climate-Change-in-Nuiqsut.pdf

2014	Tribal/ANTHC Assessment. Nuiqsut is an Iñupiat village (pop. ~450) located in the North Slope Borough.	By M. Brubaker, J. Bell, H. Dingman, S. Evans, K. Kasak, M. Itta, and R. Drake for ANTHC Center for Climate and Health and the Village of Nuiqsut.	Initiated in 2013 by the North Slope Borough Health Impact Assessment program with the recognition that changing permafrost and ice has impacts for infrastructure and public health and based on requests from Tribal health representatives and local and regional leadership.	To understand local impact of climate change in order to assess negative and positive effects and to suggest appropriate adaptation strategies.	Strategy creation: National Petroleum Reserve-Alaska grant through the Department of Commerce, Community and Economic Development and supplemental funding through an EPA Indian General Assistance Program grant. Implementation: N/A.	City of Nuiqsut, Native Village of Nuiqsut, North Slope Borough, ACCAP, ACRC, SNAP, UAF Geophysical Institute, various departments of the State of Alaska, NOAA, NWS, USGS, USACE, CDC, EPA, USFWS.
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16. Climate Change in Wainwright, Alaska: Strategies for Community Health

https://anthc.org/wp-content/uploads/2016/01/CCH_AR_062014_Climate-Change-in-Wainwright.pdf

2014	Tribal/ANTHC Assessment. Wainwright is an Iñupiat village (pop. ~550) located in the North Slope Borough.	By M. Brubaker, J. Bell, H. Dingman, R. Morales, C. Tagarook, R. Drake, and K. Ramstad for ANTHC Center for Climate and Health and the Village of Wainwright.	Initiated in 2013 by the North Slope Borough Health Impact Assessment program with the recognition that changing permafrost and ice has impacts for infrastructure and public health and based on requests from Tribal health representatives and local and regional leadership.	To understand local impact of climate change in order to assess negative and positive effects and to suggest appropriate adaptation strategies.	Strategy creation: National Petroleum Reserve-Alaska grant through the Department of Commerce, Community and Economic Development and supplemental funding through an EPA Indian General Assistance Program grant. Implementation: N/A.	City of Wainwright, Wainwright Traditional Council, North Slope Borough, ACCAP, ACRC, SNAP, UAF Geophysical Institute, various departments of the State of Alaska, NOAA, NWS, USGS, USACE, CDC, EPA, USFWS.
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17. Metlakatla Indian Community Climate Change Adaptation Plan

<https://www.cakex.org/sites/default/files/documents/MIC%20CCAP%20secondary%20proof.pdf>

2017	Tribal/the Metlakatla Indian Community (pop. ~1500) is a primarily Tsimshian community located on Annette Islands, the only Indian Reserve in the State of Alaska.	By J. Scott, A. Wagner, and G. Winter for Metlakatla Indian Community.	Composed to provide support to the Metlakatla Indian Community as they are impacted by a changing climate on the Annette Islands Reserve;	To serve as a guide to preserving resources for food security, traditional practices, and sovereignty as a strong nation; to undertake resource analysis, vulnerability assessment, and potential adaptation strategies to assist the Tribe in preparation for a changing climate.	Strategy creation: BIA Tribal Cooperative Landscape Conservation Program. Options identified for implementation: Department of Interior, BIA, Department of Energy-Indian Energy, Division of Energy and Minerals Development, other state and federal sources.	Metlakatla Indian Community Tribal Council, Metlakatla Indian Community Department of Fish and Wildlife & Department of Forestry and Land Resources, Annette Islands Service Unit, BIA Northwest Region, Central Council of Tlingit and Haida, Department of Interior - Division of Energy and Minerals Development, UAF, U.S. Forest Service, USFWS, Sitka Tribe, Climate and Energy Grant Department, Tamgas Creek Fish Hatchery, Forestry and Natural Resources Department, Duncan Cottage Museum, Annette Islands School District, Sealaska Corp.
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18. Nome Tribal Climate Adaptation Plan

[https://www.necalaska.org/PDF/6.%20Tribal_Resources/Nome%20Tribal%20Climate%20Adaptation%20Plan%20\(Final-LowRes\).pdf](https://www.necalaska.org/PDF/6.%20Tribal_Resources/Nome%20Tribal%20Climate%20Adaptation%20Plan%20(Final-LowRes).pdf)

2017	Regional (inter-Tribal)/the four Nome-based tribes Nome Eskimo Community, Native Village of Council, Village of Solomon, and King Island.	By N. Kettle, J. Martin, and M. Sloan, the Nome Eskimo Community and ACCAP, for the Native Village of Council, Nome Eskimo Community, King Island Native Community, and Village of Solomon.	Nome Eskimo Community contacted ACCAP in 2014 to partner in the development of a climate adaptation plan, prompted by a need to address significant risks: public health & security, infrastructure, and increased shipping.	To familiarize tribal members with climate change and local knowledge using workshops, interviews, and outreach to identify and discuss current and potential climate change issues, concerns, and goals; to develop initiatives to address the expressed concerns.	Strategy creation: The BIA Tribal Cooperative Landscape Conservation Program Adaptation and Coastal Management Funding. Implementation options identified: various federal, state, and Tribal entities.	UAF, ACCAP, Kawerak, Sitnasuak Native Corporation, Native Village of Council, King Island, Bering Straits Native Corporation, Council Native Corporation, Village of Solomon, Solomon Native Corporation, Alaska Sea Grant, UAF Northwest Campus.
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19. Pedro Bay Emissions Inventory & Climate Action Plan

<https://www.uaf.edu/caps/our-work/climate-policy-in-alaska/pedro-bay-cap-2018.pdf>

2017	Tribal/Pedro Bay is a primarily Dena'ina village (po. ~30) in the Lake and Peninsula borough.	By the Alaska Department of Environmental Conservation (ADEC) (P. Goodfellow & A. Bus) and W. Knighton and B. Foss for the Pedro Bay Village Council.	Serves as a case-study for ADEC to carry out emissions inventories in rural Alaska, and as a data set for the EPA's National Emissions Inventory.	To profile yearly emissions of the community and outline the policies and measures that the community will enact to reduce its GHG emissions, and to identify ways the community will respond to impacts of climate change.	Plan Creation: Indian Environmental General Assistance Program. Implementation: N/A.	AK Dept of Environmental Conservation, Pedro Bay Village Council, EPA.
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20. Climate Change in Port Heiden, Alaska: Strategies for Community Health

https://anthc.org/wp-content/uploads/2018/10/ANTHC-Port-Heiden_Final.pdf

2018	Tribal/ANTHC Assessment. Port Heiden is an Alutiiq village (pop. ~75) located in the Lake and Peninsula Borough.	By E. Lujan, M. Brubaker, J. Warren, J. Christensen, S. Anderson, M. O'Domin, J. Littell, R. Buzard, J. Overbeck, D. Holen, S. Flensburg, and E. Powers for ANTHC Center for Climate and Health and the Village of Port Heiden.	Initiated by the Bristol Bay Native Association in 2017 to understand the scope, and impacts, of environmental change from the perspective of Port Heiden residents, followed by an adaptation plan.	To describe environmental change and its impacts in Port Heiden and to list priorities to be addressed that will help Port Heiden achieve its vision for the future (an adaptation plan).	Strategy creation: BIA Tribal Cooperative Landscape Conservation Program. Implementation: N/A.	Native Village of Port Heiden, Alaska Climate Adaptation Science Center, UAF Geosciences Institute, Alaska Division of Geological & Geophysical Surveys, Alaska Sea Grant, Adapt Alaska, Bristol Bay Native Association, Western Alaska Landscape Conservation Cooperative
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21. Pektayiinata = We are Resilient: Oscarville Tribal Climate Adaptation Plan

https://anthc.org/wp-content/uploads/2019/02/4-Oscarville-Adaptation-Plan_1-31-19_Screen-resolution.pdf

2019	Tribal/Oscarville is a small remote Yup'ik community (pop. ~90) in the Bethel census area.	By J. Q. Schaeffer, A. Rittgers, P. Johnson, A. Davis, B. Grunau, J. Hebert, and M. Doyle for ANTHC, Cold Climate Housing Research Center, and Oscarville Traditional Council.	Inspired as a "holistic approach" to adaptation planning that blends Indigenous Knowledge and western science.	To merge traditional wisdom of the Yup'ik people with Western science and research creating a new space for value-based decision making for adaptation; to identify history, present, and path forward in the future.	Plan creation: U.S. Department of Interior, BIA Tribal Resilience Program. Implementation: broad list of possible funding resources (p. 53).	Oscarville Traditional Village Council, Oscarville Native Corporation, Association of Village Council Presidents, ANTHC, Denali Commission, SNAP, ACCAP, AK CASC, Alaska Center for Energy & Power, UAF, Alaska Native Science Commission, NOAA, AOOS, UAA Institute for Social and Economic Research.
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22. Anchorage Climate Action Plan

https://www.muni.org/Departments/Mayor/AWARE/ResilientAnchorage/Documents/2019%20Anchorage%20Climate%20Action%20Plan_ADOPTED.pdf

2019	Municipal/Anchorage is a city and borough (pop. ~290,000) in southcentral Alaska on Cook Inlet.	By the Climate Action Plan Steering Committee for the Anchorage Assembly; "by the Anchorage community, for the Anchorage community" (p. 15).	Motivated by rapid climate changes, high costs of adaptation, and co-benefits of climate action (jobs & prosperity, environmental quality, equity, and health).	To reduce energy use, improve public health, promote energy independence, strengthen the economy, and build a more livable and resilient community.	Plan creation: UAA faculty received a grant through the Faculty Initiative Fund to write this. Implementation: local, state, federal grants; cost-saving co-benefits.	Municipality of Anchorage, UAA, many private and public partnerships listed at multiple scales.
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23. Central Council of the Tlingit & Haida Indian Tribes of Alaska Climate Change Adaptation Plan

<http://www.ccthita.org/services/community/environmental/documents/T&HClimateChangeAdaptationPlan.pdf>

2019	Tribal/The Central Council of the Tlingit & Haida Indian Tribes of Alaska is a federally-recognized Indian Tribe serving 20 villages and communities across 23,000 sq. mi. in the Alaska panhandle.	By and for the Central Council of the Tlingit and Haida Indian Tribes.	In 2015, the Tlingit & Haida and Sitka Tribes initiated a workshop with the Institute for Tribal Environmental Professionals to address environmental changes. The Tribes worked together to prepare to develop a CAP and collaborated with other Washington State Tribes that had already gone through the process.	To determine what changing climate conditions will occur in southeast Alaska, to prioritize each area of concern with a ranking based off of vulnerability and importance to citizens and cultures alike, and to identify next steps (action strategies, building community support, and incorporating climate preparedness into government and policy, and monitoring key changes).	Plan creation: N/A. Implementation options identified: grants from federal agencies and private foundations.	Sitka Tribe of Alaska, Jamestown S'Klallam Tribe, Institute for Tribal Environmental Professionals Northern Arizona University, Swinomish Indian Tribal Community, Tulalip Tribes, USDA-USFS Pacific Northwest Research Station, USGS, Alaska Climate Science Center, Geophysical Institute, ACRC, UAF, North Pacific Landscape Conservation Cooperative, USFWS, Southeast Alaska Fish Habitat Partnership, Alaska Sea Grant, , Tribal Climate Change Project University of Oregon, Affiliated Tribes of Northwest Indians, USGS, ACCAP, SNAP, IARC, AK CASC.
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