

The State of Climate Change in AK:
Agency and Networking of the Governmental Kind

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Abstract

Alaska coastal villages are faced with relocating their communities' due to erosion, flooding, permafrost thaw and other slow-moving natural hazards that risk their safety. State and federal efforts to relocate, specifically, indigenous communities are thwarted by insufficient policy and restrictive agency missions, and coordination of actors, authority, responsibility, accountability, access and funding is lacking between levels of government, further complicating action.

Networks are created to view mission statements from tribal, state, and federal agencies, non-profits and private industry were coded to analyze coordination between key actors involved in climate governance and planned relocation. State and federal climate and disaster response policies are reviewed to identify areas to strengthen climate governance that is inclusive of indigenous communities' rights, culture, traditions and livelihoods.

Keywords: Alaska Native, climate change, slow-onset natural hazard, policy, climate governance, organizational communication, network theory

The State of Climate Change in AK:

Agency and Networking of the Governmental Kind

Alaska plays a lead role in arctic climate management induced by real-time events, such as climate change. Environmental changes pose significant threats to the health and well-being of Alaskans who have lived on this land for millennia. Alaska's environmental, social and economic infrastructure is currently fragile, and a catastrophic natural event within the state could be a tipping point for Alaska and the United States (Bankes et al., 2014; Huntington, Goodstein, & Euskirchen, 2012; Weber & Stern, 2011). As the only U.S. state in the Arctic, Alaska must be pro-active in addressing a rapidly warming climate now, or face the consequences later. Cochran et al. (2013) state that "There is scope for substantial innovation to link more effectively the communication networks of tribes, scientists, and managers who share a common goal in fostering effective adaptations to climate change" (Preparing for the Future section, para. 5).

The average temperature in northern latitudes is rising twice as fast as the rest of the United States. (Bronen, 2013; *Climate Impacts in Alaska*, 2017, *The Intergovernmental Panel on Climate Change [IPCC] fourth assessment Report*, 2007). Because of a warming earth, infrastructure such as homes, public buildings, airports, docks, and roads are at risk of damage from permafrost thaw, and with the reduction of sea ice strong storms are battering structures and eroding the arctic coasts (GAO, 2009). As environmental threats are no longer theories, but actualities, the need for defined policy, funding, government roles and responsibilities, and action has become critical, yet no one agency is responsible for the coordination and collaboration between local communities, tribal, state and federal governments. Several hundred agencies are involved in climate change governance, and coordination becomes extremely tricky when "slow-onset natural hazards" (Petz, 2015) or "slow-ongoing events" (Robin Bronen & Pollock, 2017) force communities to planned relocation. Fagers & Stripple define climate governance in a global context as "all purposeful mechanism and measures aimed at steering social systems toward preventing, mitigating, or adapting to the risks posed by climate change" (p. 385). This

project explores the network of agencies and organizations involved in climate governance in Alaska and how it is being implemented in theory and in actuality, and provides sample policy to put into place a governance structure to coordinate planned relocation as a “measure of last resort” (Brookings, UNHCR, & University, 2015).

Background

“The waves of relocation in American Indian and Alaska Native communities are rife with issues of social justice and demonstrate the continued marginality of minority and rural populations. That these communities have to justify their existence in the face of climate change – and that the communities find themselves at greater risk than other communities – demonstrates that vulnerability is the product of systems of inequity, not a characteristic inherent in a single community.”

Elizabeth Marino, Fierce Climate, Sacred Ground, 2015

In 2009, the Governmental Accounting Office (GAO) report recognized 86 percent of the 213 Alaska Native villages in Alaska were affected by flooding and erosion (2009). Three of the 31 communities designated as “imminently threatened” (GAO, 2009) are the Alaska coastal villages of Newtok¹, Shishmaref² and Kivalina³. These communities were built permanently on a promise of education for their children, jobs for their people and the comfort of oil. One could argue all these exist here. One could argue they do not. Either way, physical structures people call “home,” and “school,” and “clinic,” and “airport” are failing.

To understand the significance of these villages, one must look back to history and acknowledge that permanent Alaska Native villages did not exist until the late 1800s – 1950s when schools and churches were established, and the United States government forced Alaska Natives to

¹ located on the Ninglick River in the Yukon-Kuskokwim Delta Region, 94 miles northwest of Bethel

² Located on Sarichef Island, north of the Bering Strait in the Chukchi Sea, five miles from the mainland, and 100 miles southwest of Kotzebue

³ located on the southern tip of an 8 mi. long barrier island 80 air miles north of Kotzebue

assimilate to westernized society by living in wooden homes, wearing “white man’s clothing” and cutting their hair (U.S. Fish and Wildlife Service [USFWS], 2012). Many coastal communities were settled by westerners for easy dock access for materials. These inhabitants built post offices, schools and churches and required the state provide an educational framework that aligned with the rest of the United States (Robin Bronen, 2013; USFWS, 2012). After WWII, communities were largely vacated by missionaries and military, leaving traditional village population affected by disease and with inadequate housing after restricting indigenous ways of life, cultures and traditions. Even then, the elders of villages understood the changing environment (Cochran et al., 2013). Both Newtok and Shishmaref have documented moves from the original community sites since the late 1950s (Immediate Action Working Group [IAWG], 2009).

Alaska

“If they (Native Corporations) were to invest in Newtok, shareholders in the region would understand, but what about the shareholders in San Jose? They would question why their dividends were being invested in this one community of which they are not a part of... They must do it modestly because their shareholders could file a lawsuit. This is an inherent barrier with them being a business.”

Joel Neimeyer, Federal Co-Chair, Denali Commission

In 2009, a (GAO) report concluded that more than 200 Alaska’s Native villages were affected by erosion and flooding, and identified 31 villages facing imminent threats. Of those 31 villages, the GAO found 12 had decided to relocate (GAO, 2009). The Immediate Action Working Group (IAWG) further prioritized threatened villages and focused on six for relocation: Kivalina, Koyukuk, Newtok, Shaktoolik, Shishmaref and Unalakleet. The IAWG estimated that public infrastructure investment in these communities was roughly \$293 million (*Table I*). This project focuses on the issues and progress three of the six villages: Newtok, Shishmaref and Kivalina.

Newtok. The Native Village of Newtok, located on the Ninglick River in the Yukon-Kuskokwim Delta Region, 94 miles northwest of Bethel, has made the most significant advances toward planned relocation since their initial governmental request in 1983 (GAO, 2009). The Alaska State Legislature then granted funds to conduct an evaluation of the erosion of the Ninglick River bank (Department of Community and Regional Affairs [DCCED], n.d.). In an addendum to the report issued in 1984, the project manager, Larry Rundquist, Ph.D., P.E. of Woodward-Clyde Consultants, concluded that “relocating Newtok would likely be less expensive than trying to hold back the Ninglick River” (Rundquist, 1984). The community has been trying to move ever since. Several reports and requests from state and federal agencies developed over the next two decades, and community members struggled to agree on a plan to stay or leave the area. United States Geological Survey (USGS) topographic maps show the shore of the Ninglick River had eroded on average 68 feet from 1954 to 2003, projecting the barge, water source and school to be under water by 2027 (DCCED, n.d.). In 2006, the Newtok Planning Group was officially formed to represent the village with state and federal representatives working to coordinate their relocation to Mertarvik⁴, nine miles away. More than 50 planning reports from 1984 to 2017 are listed on the Newtok Planning Group page within the Department of Community, Commerce and Economic Development (DCCED) website (DCCED, n.d.).

Shishmaref. The community of Shishmaref is located on 2.8 square miles of land on Sarichef Island, between the Bering Strait and the Chukchi Sea, five miles from the mainland, 30 miles from the Arctic Circle, 126 miles north of Nome, and 100 miles southwest of Kotzebue. Shishmaref encompasses 4.5 miles of water and is located within the 2.6 million-acre Bering Land Bridge National Preserve (HDR & RIM, 2016). The community has developed erosion mitigation strategies for the last 20 years, and 2001 saw significant infrastructure building of sea walls funded and erected by the community, Kawarek, the Shishmaref Native Corporation, the state and the federal government, which has continued. In 2001,

⁴ The Yup'ik word Metarvik means “getting water from the spring” in the traditional language of the community.

formal efforts to relocate began, and the first strategic relocation plan was developed (Shishmaref, 2016; US Army Corps of Engineers [USACE], 2009).

Kivalina. The village of Kivalina lies on the southern tip of an 8-mile long barrier island 80 air miles north of Kotzebue. Since the early 2000s the residents of the village have noticed permafrost thaw affecting underground ice cellars used to store whale and seal meat, as well as sanitation and health due to poor solid waste disposal options, and increased anxiety in times of high river levels (Brubaker, Berner, Chavan, & Warren, 2011). The village has not yet found a relocation site that has been approved by the United States Army Corp of Engineers (USACE), though in 2010 a large rock revetment was constructed to reduce erosion. Kivalina has received disaster funding through the State of Alaska at least twice for sea walls to reduce coastal storm damage, though it has experienced several setbacks, including a storm that destroyed a sea wall just days after it was completed. The village remains on the island, and plans to find a location continue.

State Government. In 1998, Administrative Order 175 was authorized by Governor Knowles to establish an erosion management policy and authorized DCCED as the coordinating agency. In 2006, Governor Murkowski authorized \$235,000 for disaster relief to Kivalina. The Alaska Climate Impact Assessment Commission (ACIAC) was established in the same year, funded in FY 07 \$65,000 and in FY07 \$60,000. The ACIAC dissolved and was proceeded by Governor Palin's Sub-Cabinet on Climate Change (SCCC) in 2007. Administrative Order 238 established the cabinet and brought together individuals from within state agencies, local governments, academia and private companies to "research, develop and submit recommendations to the Governor for an Alaska Climate Change Strategy." The official strategy never came to fruition through the Governor's office, though the smaller, sub-group IAWG, released *Recommendations to the Governor's Subcabinet on Climate Change*, initially in 2008, and updated in 2009. This document was used as the first state comprehensive analysis of community impacts and costs of climate change and was to advance funding through the Alaska State capital budget. Additionally, other findings were reported to the Governor from the Adaptation, Mitigation and Research

Needs Work group (*Alaska Climate Change Strategy's Mitigation Advisory Group Final Report: Greenhouse Gas Inventory and Forecast and Policy Recommendations Addressing Greenhouse Gas Reduction in Alaska, 2009, Recommendations on Research Needs Necessary to Implement an Alaska Climate Change Strategy, 2009; ACIAC, 2008; IAWG, 2008, 2009*). After Governor Palin resigned in 2009, the sub-committee was sunset by the Parnell Administration, and any further progress from the group ceased.

"I think if we maintained that leadership through the sub-cabinet or the Immediate Action Working Group, we would find a lot of international partners, Canada, all the arctic countries of the world, would have included the State of Alaska in policy discussions because we would be doing things that preceded any international level that we were at least aware of."

*Michael Black, Alaska Native Tribal Health Consortium (ANTHC),
former Deputy Commissioner of DCCED*

The sub-cabinet recommended the DCCED as the head state agency to coordinate and implement climate change strategy, including relocation efforts, citing the agency had been authorized by Administrative Order (AO) 175 to manage rural erosion and flood mitigation programs, and act as the coordinating agency for these issues (IAWG, 2009; State of Alaska, 1998). The sub-cabinet recommended the Department of Military and Veterans Affairs (DMVA) to serve as the lead agency for the "Suite of Community Emergency Planning efforts,"; the Department of Natural Resources (DNR) to lead Community Wildfire Protection Plans and geologic mapping and hazards evaluations, and to "utilize the Denali Commission or similar MOU methodology to help address needed collaboration" (IAWG, 2009). The Alaska Center for Climate Assessment and Policy (ACCAP) prepared a white paper entitled "Decision-making for at-risk communities in a changing climate" in 2009, which detailed a risk assessment guide to prioritize need based on disruption to a place or community in question (Atkinson et al., 2009).

Alaska's Arctic policy, adopted in 2015, acknowledged the need for a coordinated effort on policy development and implementation plans, and called for the state to maintain an official body to

respond and further develop strategies concerning critical needs of state residents (Alaska Arctic Policy Commission [AAPC], 2015). The policy makers prioritized coastal erosion, permafrost thaw, and ocean acidification, and urged the state to participate and collaborate with all levels of governments, tribes, industry and non-governmental organizations (NGO), including Canada and the Arctic Council, for which the U.S. held the Chairmanship from 2015-2017 (Alaska Arctic Policy Commission, 2015). In 2016, the Alaska Institute for Justice (AIJ) in conjunction with the Alaska Native Science Commission (ANSC) held a workshop with the goals of sharing expertise and strengthening partnerships between tribes, state and federal governments. The outcomes of this workshop were published in the *Rights, Resilience, and Community-Led Relocation: Perspectives from Fifteen Alaska Native Coastal Communities* which highlights human rights principles, protecting and honoring traditional knowledge and building a governance framework for relocation (Robin Bronen & Pollock, 2017).

In late September 2017, Governor Walker announced the hiring of Dr. Nikoosh Carlo as the Senior Advisor for Climate Policy (Waldholz, 2017). In early October, a climate change roundtable was facilitated on behalf of the Lt. Governor's office. The two-hour public meeting was held in Anchorage on Oct. 4 at the Dena'ina Center where approximately 50 individuals participated in an open-group discussion format in four categories: adaptation, mitigation, research and response. Participants included staff and representatives from the Alaska State Legislature (3), energy sector (4), private industry (3), municipalities (2), federal representatives (2), Alaska Native Corporations (3), non-profits (5) research (4), resource development (oil, gas, mining) (6), and environmental NGOs (5). Fifteen representatives from state agencies attended. Absent were representatives from Newtok, Shishmaref and Kivalina.

On October 31, 2017, the Walker Administration established the Alaska Climate Change Strategy and the Climate Action for Alaska Leadership Team to advise the Governor on "critical and timely actions to address climate change challenges that will safeguard Alaska now and for future generations" through Administrative Order 289 (State of Alaska, 2017). AO 289 commits a 15 public-member board to work from the previous state-initiated efforts to develop a strategic plan for climate action in Alaska by September 1, 2018, and the committee selection process is underway.

United States

“When we got into this with the Palin Administration, Ted Stevens was still the senator and he had a really strong interest in trying to do something in coastal erosion and threatened villages and my impression is that he was a bit frustrated with the USACE and the progress they were making... The Corps had their thoughts based on geophysical conditions and groundwater [in Kivalina], and were trying to bring this together, but wasn’t making a lot of progress. [Stevens] had the ability to help steer money and hence the USACE were very willing to work with the state because they were trying to find a way to get closer to these communities, and so it was ripe at that time. You had people that had experience and knowledge and someone who could help bring the resources to the table. There was consensus among the state and federal agencies and the communities on what needed to be done in order to make rapid progress. The thing left was the funding.”

Larry Hartig, Commissioner, Alaska Department of Environmental Conservation (ADEC)

In 1993, Senator Ted Stevens noticed issues of coordination in rural villages and communities where severe climatic changes were occurring. That year, Congress created the Denali Commission to act broadly as a liaison between tribal local, state and federal bodies, reduce government administrative and overhead costs, provide workforce development for rural communities, and provide rural development. Generally put, Don Antrobus, project manager said, *“Our overall focus is on infrastructure and developing sustainable infrastructure in rural Alaska.”* Six commissioners are written into the authorizing legislation to identify annual investments (Denali Commission Act of 1998, 1999). The commission is mostly federally funded, though some matching funds are required, and is unique in that there are only two others (Appalachian and Delta Regional Authority) that are similar in the United States.

⁵ Joel Neimeyer, personal communication, August 3, 2017.

“In 2008 new federal administration comes in...funding dried up and you had Hurricane Katrina and Superstorm Sandy that took a lot of the USACE away and eventually you had the Obama Administration say they wanted to do something on coastal erosion and flooding and put the Denali Commission as the coordinator but no funding.”

– Larry Hartig, Commissioner, ADEC

President Obama’s 2015 visit showcased Alaska villages as the poster child of climate change. During his visit, he even announced federal assistance through the Denali Commission, though no funding was attached to his proclamation. Instead, the Denali Commission was interjected into a historically local-state driven effort without true federal authority and no monetary backing. Since 2007, funding to the Denali Commission has been in decline and will maintain at FY 17 spending levels in FY 18 at approximately \$18 million (*Denali Commission, 2017*). While the Obama Administration was successful in exposing the growing dangers of climate change on rural communities, his actions were not supported with funding, but with the creation of the Arctic Executive Steering Committee (ASEC), who developed the *Climate Resilience in Alaskan Communities Catalog of Federal Programs* (2015). This 41-page document details federal programs and departments is intended to provide support for communities seeking federal assistance with these issues. The catalog was recently updated by the Denali Commission and is being used to match possible federal funding programs to communities in need of specific funding.

“I think most of what has been done in U.S. is window dressing. They are politically visible, activities under the Obama Administration, for example, but in reality, there is nothing really much to do with addressing the issues the State of Alaska needed to address.”

Michael Black, ANTHC, former Deputy Commissioner of DCCED

As a changing climate impacts governmental responsibilities for safe infrastructure, public buildings, schools and roads, this has largely been an issue of deferred maintenance for more densely populated areas. What has become critical to address and implement is planned relocation of coastal communities, namely coastal Alaska Native communities. The State of Alaska’s greatest climate advance

was from the SCCC, but since then, recent administrations have not continued a formal effort to address impacts to communities. State policy has remained mostly untouched, while funding has deteriorated. In the meantime, temperatures have continued to rise, storms have increased in strength, and slow-onset natural hazards are becoming more frequent and dangerous, especially in coastal communities.

The Problem

“If you are talking about multiple millions of dollars and the need to coordinate 14 different state and federal agencies the planning to make that happen is a long-time period. So being able to let people know they only have seven years to figure this out, or three, or 15 will be really important in prioritizing the fact that there are 33 communities on the list of impending needs for relocation.”

*Scott Rupp, Scenarios Network for Alaska and Arctic Planning (SNAP)
Director*

Policies do not exist that define specific slow-onset natural hazards. There are a large number of tribal, local, state and federal agencies who have a responsibility to manage environment, communities, wildlife, ocean natural resources generally, however the ability to do so is often hindered by agency mission, administrative priorities and some would say, budget. Some key agencies and organizations piecemeal funding when able with “one-off” projects^{6 7}. As the rate of coastal erosion become more extreme and happens more often, as temperatures rise causing state roads to deteriorate, and as fish and wildlife patterns change, the very nature of climate change will seep into all areas of government, affecting decisions, budget allocations and simply the way the state does business (P. Larsen, Goldsmith, Wilson, & Strzepek, 2007; Melvin et al., 2016). To adapt, the state protocols, processes, and policies much reflect coordination of response to the exponential changes that are happening to the land, animals and people. However, no federal agency exists to oversee these environmental impacts to communities, an

⁶ Joel Niemeyer, personal communication, August 3, 2017

⁷ Anonymous Interviewee, personal communication, Sept. 14, 2017

issue noted by the GAO in 2009. The state has designated the DCCED to act as the “coordinating agency” for erosion management policy, but the authority and funding to support a much larger mission is missing. Is there an urgency for the state to create a climate change agency?

Slow-onset natural hazards

Changing times call for changes in language used in policy. Since effects of a changing climate are often not seen until years, sometimes decades later, a phrase that fully encompasses the dynamic picture of climate change can be elusive. Some terms such as “slow-onset natural hazards” are used to represent climate change and environmental impacts that happen over a long period of time. Scott Rupp, Director of the Scenarios Network for Alaska & Arctic Planning (SNAP), offered the following explanation of the term with real-time Alaska events.

“...a group of us ... have been using the term slow-onset natural hazards. One key here is that these slow onset hazards can ultimately result in catastrophic hazards that can happen in real time. A good example is the loss of sea ice. That has been a relatively slow process spanning two to three decades however now due to the massive loss in sea ice, fall storm impacts that historically would have been minimized by ice cover are resulting in storm surge damage where sea ice is not present. Utqiagvik sustained \$10+ million in storm damage just last month. Permafrost is a bit of a different beast but phenomena such as thermokarst and debris slides are approximately analogous to my sea ice example.”

Scott Rupp, SNAP Director

According to Daniel Petz (2015), the use of the word “hazard” is important to recognize here, rather than disaster. Hazards are components of disasters, and the “vulnerability and adaptive capacity” are factors that contribute to a hazard becoming a disaster (p. 5). *Planned Relocations in the Context of Natural Disasters and Climate Change*, differentiates natural disasters with a clear beginning and end, such as an earthquake, tsunami or flood, etc. Petz contends “to ascribe one hazard as the main factor is not always as clear-cut as it seems, as particularly in cases of anticipatory relocation many studies show that a number of hazards are involved, often both sudden-onset and slow-onset” (p. 5).

Climate change effects on three Alaska Native villages

“Agencies provide services to existing houses. Relocation [in policy] doesn't work because there are no houses and we can't even address sanitation facilities before there are mass housing on the ground.”

Joel Neimeyer, Federal Co-Chair, Denali Commission

Kivalina, Shishmaref, and Newtok have been addressing climate change issues, in particular relocation, for at least five decades, although each village remains in the original location (Koppel Maldonado, Shearer, Bronen, Peterson, & Lazrus, 2013) despite growing challenges threatening subsistence livelihood, sanitation and health (Cochran et al., 2013). While several federal and state agencies, as well as local organizations have attempted to coordinate adaptation and mitigation plans (*Alaska Climate Change Strategy's Mitigation Advisory Group Final Report: Greenhouse Gas Inventory and Forecast and Policy Recommendations Addressing Greenhouse Gas Reduction in Alaska*, 2009; Alaska Department of Environmental Conservation, 2009; Robin Bronen & Pollock, 2017; GAO, 2009; Native Village of Kivalina, 2015), progress has been drawn out – exposing residents to seriously unhealthy living conditions (Bronen & Chapin 3rd, 2013). Still, not even one community has been successfully relocated (P. H. Larsen et al., 2008; Melvin et al., 2016), although plans have been in the works for over 20 years (Marino, 2012).

In Newtok, the Ninglick River has consumed the shoreline at a rate of 36 to 83 feet per year; though in 2003, an estimated 110 feet of shore vanished into the moving river (GAO, 2009). During a strategic planning meeting with Newtok, tribal administrator Andrew John reported to state and federal agencies that 20 feet of the remaining 40 feet of shore crumbled away during a recent storm⁸. In 2015, the Kivalina airport was severely damaged during a storm that eroded the runway approximately 10 feet in one day (Native Village of Kivalina, 2015). Poor land stability affects infrastructure and health conditions, which in turn affect small communities facing complex social and cultural issues. Bureaucrats

⁸ Newtok Planning Group meeting with Newtok, DCCED, Oct. 16, 2017

largely ill-prepared to encounter tribal governance and cultural traditions, tap into deep social rifts dating back to native settlement claims (Bronen, 2013; Cochran et al., 2013) that question trust and authority between tribes and state and federal government (Marino, 2012).

As ice becomes thinner year after year, hunting becomes more dangerous for sea harvest and snow machines cannot be used to travel in confidence on rivers typically used for frozen winter transportation (Banks et al., 2014). Many homes in small villages do not have running water or sewer, and those that do frequently experience broken pipes due to thawing permafrost or strong storms, increasing the chance of infectious diseases, as water sources could become contaminated (Brubaker, Berner, Chavan, & Warren, 2011; Cochran et al., 2013;). Underground ice chests meant to store whale and seal throughout the year are thawing, rendering large stores of subsistence food unfit to eat (Cochran et al., 2013), while the risk of fires threaten Interior communities, animals such as caribou change their migration patterns, making subsistence hunting more difficult to travel and track (Banks et al., 2014; Brubaker, Chavan, Berner, Black, & Warren, 2012). Rural Arctic communities are the most negatively impacted by living in environments where climate change is undeniable (Cochran et al., 2013).

Policy & Funding

“Disaster response is a problem in the U.S. Policy [because it] is not anticipatory. It treats disasters as a one-off phenomenon. It isn’t flexible enough to deal with baselines changes, which we know is happening.”

Anonymous Interviewee

The scope of governmental responsibility of any level (tribal, local, state, federal) can be limited in policy, further complicating the problem of climate change effects on communities. Federal policy, such as the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act⁹), and the National Environmental Policy Act (NEPA), can pose significant roadblocks for communities facing imminent threats from climate change because the policy is simply not written for on-going natural

⁹ The Stafford Act is a 1988 amended version of the Disaster Relief Act of 1974.

events, leaving a significant amount of room for miscommunication, confusion and inaction to occur. For example, the Stafford Act allows for assistance to citizens in disaster declared communities, though the policy is clear: structures are to be rebuilt in the same location, with no improvements from the previous structure (Disaster Relief Act, 1974; Marino, 2015). Further, funding and response is dispersed amongst several agencies committed to respond based on their defined responsibility, diluting coordination and funding efficiencies.

“...the only FEMA-sponsored hazard mitigation strategy that incorporates migration and relocation in order to reduce risk is only applicable at the individual household level and does not accommodate community-wide migrations. This is insufficient when entire communities need to be relocated, and it is insufficient in communities (such as indigenous communities) where there are multiple reasons (social, cultural, and economic) to stay or relocate as a group in order to avoid dispersal.”

Elizabeth Marino, Fierce Climate, Sacred Ground, 2015

Alaska state code details disaster response and funding in the Alaska Disaster Act. The Disaster Relief Fund (DRF), which has an unobligated balance of \$5,023,610, as of November 13, 2017 is accessed through either a Governor’s declaration of disaster emergency or an Administrative Order. According to the DMVA’s Commissioner’s Office,

“The DRF consists entirely of State of Alaska General Funds appropriated annually (or as needed) in accordance with AS 26.23.050 (a): “It is the intent of the legislature, and declared to be the policy of the state, that funds to meet disaster emergencies will always be available. When the President declares a disaster, FEMA typically reimburses the State not less than 75% of emergency work and permanent repair costs. The remaining 25%, and any additional costs not eligible for reimbursement through FEMA, are funded through the DRF. AS 26.23.020 (h) authorizes the Governor to expend not more than \$500,000 per

incident, or not more than \$1,000,000 per declared disaster, without further approval from the Legislature (AS 26.23.020(k)). The DRF is funded through annual appropriations, or through supplemental appropriations as necessary. Since Statehood, Alaska has experienced an average of one state and/or federally declared disaster every 90 days. In most cases, those declarations of disaster emergency require funding from the DRF. In rare cases, disasters are declared to access other federal (non-FEMA) funds, and to invoke the provisions of AS 26.23.020 (g). An example would be the disaster declared for the North Slope Borough in May 2015 that authorized the suspension of certain State statutes and regulations to allow DOT&PF to perform emergency work on and near the Dalton Highway, and to direct DOT&PF to access emergency relief funding from the U.S. Federal Highways Administration. In that specific disaster, no funds were expended from the DRF.”¹⁰

From 2014 to 2017, Alaska state government has faced a 40% reduction in budget, which have forced agencies to cut programs and services from their budgets. One specific climate program currently available, but not funded in the FY 18 budget is the Alaska Climate Change Impact Mitigation Program (ACCIMP) housed in a division of DCCED, the Division of Community and Regional Affairs (DCRA).¹¹ According to the project page on the DCCED website, the program was set up to “assist impacted communities develop a planned approach to shoreline protection, building relocation and/or relocation of the village (DCCED, 2017).

¹⁰ Office of DMVA, personal communication, Nov. 13, 2017

¹¹ Sally Cox, personal communication, August 3, 2017

“It’s [ACCIMP] still up on the website, but we don’t have funding to do it, still. That program has been morphed into the RISKMAP program, funded through FEMA, through which flood insurance rate maps and studies are developed, but intended to be this very holistic all-hazards program. So the flood insurance rate maps are just one product, a regulatory program, but it’s an information-gathering-risk-assessment-integrating-into-community-plans type of program.”

Sally Cox, Local Government Specialist IV, DCCED-DCRA

While state employees and budgets have been reduced, the scope of outreach and mechanisms for implementation are driven by policy. Even if state government was operating at 2008 Palin-era funding levels, relocation would still be cost prohibitive for the state to do alone. With conservatively estimated costs identified for village relocation between \$80-200 million (GAO, 2009), other sources of funding are needed.

Although villages qualify for federal agency programs, the GAO (2009) determined there is no comprehensive program to assist villages in relocation efforts (p. 20). The report, noted a significant bureaucratic hurdle facing 64 Alaska Native villages. In the case of three Alaska Native communities identified at that time as “imminently threatened,” specific disaster federal relief funding was declined due to the unique governmental structure within Alaska. The report notes that villages located in an unorganized borough are ineligible to receive funding from the U.S. Housing and Urban Development (HUD) Community Development Block Grant¹² because no recognized local government existed to disperse the funding (p. 26). Federal law does not accept tribal governments of unorganized boroughs as a recognized local government unit, and HUD determined the state was not eligible to administer the funds on their behalf, as they considered this an act to administer the funds to themselves (p. 25-27). In 2015, Governor Walker’s transition team identified a “lack of recognition of tribal authority,” as a challenge preventing relocation (Hoffman & Halford, 2015).

¹² 26 Housing and Community Development Act of 1974, Pub. L. No. 93-383, 88 Stat. 633 (1974) (codified in scattered sections of Titles 12 and 42 of the U.S. Code). 27

“The complexity with some of these communities as I see it, is that when you get to ‘protection in place,’ when you get to ‘relocation,’ when you get to ‘emergency community response plans,’ they are more structured around imminent things like earthquakes, so there is no federal or state program that deals with that kind of relocation and community resilience issue. If you try to do this as you implement your regular program, those programs are funding and structured in a way that you don’t presume you need to relocate a whole community.”

Larry Hartig, Commissioner, ADEC

The IAWG (2009) proposed state agencies develop recommendations for changes to the Stafford Act, with the help from the DMVA, the Alaska Legislature (in the form of a resolution), and the Alaska Municipal League (in the form of a resolution) (p. 71-72). The Stafford Act outlines the way to restore communities after disasters to repair, restore, reconstruct and replace public and private non-profit infrastructure, with conditions (*The Disaster Relief Act, 1974*). This federal legislation also outlines mitigation planning for communities, although the ability to utilize these funds effectively may be limited by community capacity to leverage available dollars through several agencies.

The Stafford Act explicitly details program services as a function to reconstruct and rebuild infrastructure, and while the Act does allow for use of funds to support mitigation planning, it does not include relocation until after a disaster is declared by a state governor or a federally recognized tribal government. Further, funds do not include upgrades to damaged infrastructure, even if old, decrepit and without running water (Marino, 2015). In other words, the Stafford Act is disaster response policy by nature, though it is being used as a default for disaster funding and mitigation in lieu of a direct policy to manage disaster control efforts. Many of the functions within the Stafford Act, such as interagency coordination can be utilized as a structure to begin strengthening through policy, particularly for climate mitigation defense, but the details of the coordination must be specifically identified for the most efficient execution. The Stafford Act allows structures to be rebuilt to existing conditions and locations only after a disaster is declared. In the case of Shishmaref, Newtok and Kivalina, those locations will not exist to rebuild on, and funding and coordination issues become ever more problematic in this case.

There are plenty of ways to improve existing policy that will better equip agencies to plan for and implement relocation of threatened villages, and most studies have broadly suggested doing so (Alaska, 2015; *Alaska Department of Fish and Game Climate Change Strategy*, 2010; *Alaska Climate Change Executive Roundtable Structure and Governance for Multi-Agency Collaborative Action*, 2007; *Findings & Recommendations of the Alaska Northern Waters Task Force*, 2012; Robin Bronen & Pollock, 2017; Cox, 2015; IAWG, 2008, 2009; Josephson, 2017; McNamara, Bronen, Fernando, & Klepp, 2016; ACIAC, 2008; U.S. Fish and Wildlife Service, 2012, GAO, 2009). However, specific reform on existing policies have been slow to materialize in part because the problem is big and fractured between agencies and within existing code, and in part due to employee turnover, internal communication protocol, political will, and effective advocacy (Marino, 2015). The lack of one person or agency to be held responsible and accountable potentially places any forward movement at risk of being dissolved by a new administration. While mitigation planning may be included in policy, funding is attached to governmental agencies with specific missions and restricted budgets.

“If you're sitting in remote Alaska and you see people come in and they say they are going to do THIS, they will build THIS, it's very hard for a leader in the community - or anyone - to say, You know, I think if you did it this way, we could get more benefit.” And the response to that is We can't do it any other way than what we are doing.” Or Yeah, you may think that, but we know better. It's very frustrating. Not a lot of common sense comes into what many agencies do and funding limitations and the designing of solutions somewhere other than Alaska, or even in the urban areas as opposed to rural areas, is very hard for the village leadership to recognize how limited the organizations and agencies are sometimes, and it seems nonsensical, almost crazy, what agencies often do as a result.”

Mike Black, ANTHC, former Deputy Commissioner of DCCED

Many employees with tenure in government recognize the nature of an agency mission is to, “stay in your lane,”¹³ but climate change transcends agencies and missions, making clear definitions of

¹³ Mike Black, personal communication, Aug 16, 2017

authority and coordination a key to success. While individuals in agencies typically subscribe to their department missions, this may be considered restrictive to their ability to coordinate with others who are also mandated by their own missions. Further, the heightened political rhetoric of the Trump Administration against climate change on a national and global level (Davenport & Rubin, 2017) poses risky business for individuals and agencies who have political power to lose, as was the case for Joel Clement (Rott, 2017).

“I see these federal agencies very much engaged in climate change - especially for communities - continuing to do the work they are doing because they believe very strongly in it, but still very fearful about what’s going to happen in the future.”

Sally Cox, Local Government Specialist IV, DCCED-DCRA

Purpose

The purpose of this project is to 1) identify the perceived and realized network of agencies and organizations who are involved in coordinating government policy and process regarding climate change; 2) identify actionable items that can be implemented to address core issues within the network coordination efforts and provide language to update existing statute; and 3) draft the Alaska Planned Relocation policy.

Methodology

This research began with an overview of public documents pertaining to climate governance in Alaska and in the Arctic and stemmed mostly from the working groups of the SCCC, particularly the IAWG *Recommendations to the Governor’s Sub-Cabinet Report* from 2008 and 2009. Individuals who have served in a public capacity or are still in a public role addressing climate change in Alaska were identified through the analysis of these documents mainly from the SCCC, as well as work done namely by the Alaska Climate Impact Assessment Commission (ACIAC), the Arctic Council, and the Alaska

Arctic Policy Commission. The information provided in these public documents and other sources, including meeting minutes, white papers, government reports, academic journal articles, and media article served as the basis of understanding of the history and process of previous efforts concerning climate change in the Arctic. I reviewed the content to initiate interviews, used the snowball method to recruit individuals willing to be interviewed, and coded interviews using grounded theory. (Biernacki & Waldorf, 1981) note the snowball technique as a means to identify “hard-to-reach” networks through recommendations from an identified group. Strauss and Corbin (1994) maintain grounded theory as the process of which theory is contrived from systematic data collected and categories developed to understand and compare theories.

Between May and September 2017, ten individuals were interviewed using semi-structured questions regarding climate governance generally, and planned relocation specifically. From these interviews, data was collected to map a network of the existing agencies and organizations involved in climate change implementation, policy and funding, and specifically, the mechanics of moving a rural Alaska village. Content was coded to test concepts that emerged during the interviews and was compared to the literature for a more comprehensive understanding of the network. Using UCINET, a visual representation of the three networks was crafted and used for analysis of mission statements and how the network is understood based on the response from interview participants.

Interviews

From the content reviewed, nineteen individuals were identified who represented local, state and federal agencies, non-profits, tribes, and private businesses, and five agreed to an interview. These interviewees were: Sally Cox, DCCED, DCRA; Michael Black, ANTHC, former DCCED commissioner during Palin Administration; Luke Hopkins, former Fairbanks North Star Borough (FNSB) Mayor; Larry Hartig, Commissioner, ADEC; and James Hornaday, former Mayor of Homer. All of these individuals were active in the Immediate Work Action Group of the SCCC, though they represent different municipalities, agencies and missions. A subsequent group of individuals were referred by the original

sample to have information pertaining to the structure of the network, though these people may not be as obvious within the examined documentation. Using the snowball method, six more individuals agreed to an interview. They were: Craig Fleener, Arctic Policy Advisor, Alaska Governor's Office; Jack Hebert, Cold Climate and Housing Research Center (CCHRC); Nils Andreassen, Institute of the North; Scott Rupp, SNAP; Joel Niemeyer, Denali Commission; and one individual to remain anonymous.

Information was gathered from the semi-structured interviews regarding past experience working on community impacts caused by climate, as well as their current experience addressing climate-focused community issues. Some questions were directly related to climate-induced village relocation due to climate impacts such as erosion, rising sea levels, flooding, etc. Other questions pertained to organizational communication and process, and were developed to understand relationships between individuals participating in varied levels of government and to identify challenges and areas where the process was not advancing community stated goals and objectives.

Federal and state agencies, as well as non-profits, tribal governments, science-based institutions and countries, called actors, were mentioned during the interviews. This information was collected and vetted for relevancy to the overall question: "Is there an urgency for the state to create a climate change agency?" Some actors mentioned were particular to a region or very specific issues, while some were mentioned several times by different individuals. These organic mentions were tallied and used to visualize three networks, based on existing relationships and organizational mission statements.

"There have been so many interactions and organizations, and collaborations and groups dedicated to adaptation and relocation over the years and it changes every two years. There is a different acronym every two years of people who are working on it. [It's] hard to think what we really need is a new one. But if there was a way to harness the institutional knowledge that is present, that would be good. I don't know if a different organizational structure [existed], how much better it would be... An agency would assume that there is a priority to consistently fund climate change."

Anonymous Interviewee

Every federal and state agency has a mission statement, sometimes with an accompanying vision statement and goals. According to Swales & Rogers (1995), mission statements are created to “stress values, *positive* behavior and guiding principles within the framework of the corporation’s *announced* belief system and ideology” (p. 227). Frost, Moore, Louis, Lundberg & Martin (1985) contend mission statements are the written projection of an organization, which may differ from the actual day to day operations of the agency. In relation to government agencies, Hyndman & Eden (2000) discuss the nature of mission statements as being the directive and operational functions, while management has the responsibility of developing how these objectives are interpreted and thus carried out (p 177-179). Applying these definitions to the data collected for this research, mission is derived from policy, or law, that was created when the agency was established within the government. To Hyndman and Eden’s point, although written in law, missions can and are interpreted based on the current administration’s priorities and leadership of the agency. This was the case when the SCCC was sunset after Governor Parnell succeeded Palin after she resigned in 2009.

“The problem is you had a concerted effort with a supportive administration and when they weren’t there anymore it’s no longer a priority. Tricky to get established.”

Sally Cox, Local Government Specialist IV, DCCED-DCRA

Network Analysis

Three networks were created from the interview content. The first represents a broad snapshot of governmental agencies, NGOs, working groups, communities and other organizations involved in climate change and relocation in Alaska based on an online search. The second network reduces the number of agencies and organizations involved based on the intent of the research to find a more localized network. The third network was created from the interview data of individuals who mentioned other organizations they typically work with on the subject matter.

Stakeholder Base Network. A comprehensive online search was conducted to establish the boundaries of the network in the form of agencies and organizations involved in climate governance and Alaska. These boundaries were established based on online searches that involved words likely to be used from stakeholders (Alaskan residents, elected officials, researchers, government workers, non-profit agencies, etc.) and key terms relevant to this research (i.e. climate change, environmental, native, infrastructure, disaster) and subsequent terms that could further define these broad subjects. Thirty-six searches returning the top 50 results from the Google search engine, resulted in an initial 1800 hits. These hits were then cleaned to the domain path and eliminated based on their relevancy to active climate governance participation in Alaska resulting in about 400 left from the query. Because the research is focused on an analysis of governmental networks, excluded were private companies such as engineering firms and consultants and international organizations. Beyond strictly governmental organizations, non-profits, Alaska Native Corporations, and state programs remained. The first base network represents 79 sites that matched the search boundaries and were considered relevant and manageable to the specific research problem.

The remaining organizational missions were found on website searches and coded based on broad subject areas (themes) that emerged from the literature and mission statements. Once themes were developed, the mission statements were reviewed again and assessed for context within each theme. The more themes assigned to each mission, the more diverse their mission appeared to be. Usually these corresponded to larger agencies that are broadly directed by policy and programs, such as the Department of the Interior (DOI) (very broad mission). As could be expected, child agencies within large departments typically were assigned more themes than the parent agency mission, which was true for the National Parks Service (NPS) and USFWS, both child agencies of the DOI, because they have very specific mission statements. However, some parent agencies were so broad, that they were only coded for one theme, whereas a child agency would be coded for more as their particular mission is more specific (i.e. The DCRA has more themes than the parent agency DCCED, which details only economic development as their mission).

Mission statements were coded based on themes identified from interviews and literature. Initially, nine categories were created to represent the issues of *relocation*: science, culture, health, environment, property, security, natural resources, money and energy. The theme “natural resources” was divided into two categories - one for fish and wildlife (NR1) and a second for oil, gas, mining and energy (NR2), making 10 final themes. Mission themes were not particular to development and protection. Mission statements required some level of interpretation by the researcher based on the codes and the understanding of how the mission is implemented, and further insight was sometimes cultivated from their website (i.e. ADFG is not coded for “environment.” After reviewing the ADFG website, the codes of NR1 and NR2 covered what appeared to be the main mission of the agency). Some missions are inferred as to their practical meaning (i.e. SNAP does not directly say “research” though it is understood that through their research they provide their product: scenarios for planning). Figure II represents the network of organizations and agencies identified by a robust online search coded by mission using the above 10 themes.

Interpretation. *Figure II* is, by design, a robust picture of climate governance in Alaska pertaining to relocation. Here, the specific communities of Kivalina, Shishmaref and Newtok and any planning or relocation groups are represented by pale pink circles called nodes (Borgatti, Halgin, Carrington, & Scott, 2011; Monge & Contractor, 2001). Native Corporations specific to these three communities are red nodes. State agencies are pale blue, federal agencies are cobalt blue. Programs are represented in yellow and other organizations are represented with green nodes. This network indicates that, by mission, there appears to be coordination between actors identified by the boundary searches. We notice clusters between “NR 1,” “land” and “science” and between “environment,” “international” and “security.” We can make sense of these clusters by thinking logically about their meaning and scope; themes that are broadly recognized as environmental in nature are grouped closer in the system.

Most of the local communities are represented by nodes with only one connector to the network, which indicates the network does not highly involve these actors, *based on mission*. A limitation of the exercise could be that no missions were coded for Alaska Native-specific themes, so there is an absence

of this theme as a connector, although it most likely exists. The code “community” served as the connection representing Alaska Native themes. A code for Alaska Native is included for future networks. Still, the network could provide evidence of weak connections, based on mission, between active and influential organizations and local communities within the network. Another interpretation could be that these Alaska Native communities are insular from state and federal governments to protect their communities from exploitation by state and federal government, as well as the media (Marino, 2015). Based on historical factors of colonialism, a lack of trust between communities and government exists.

The network is large and messy, but indicates there is significant attention per theme, though “infrastructure” and “energy” appear to be not as heavily connected as others such as “money,” “health,” and “culture” which could serve as a main entry into the network, aside from an overtly environmental or climate-related mission. All the nodes are the same size, as degrees or “betweenness” (Borgatti, 2005) of the nodes are not considered, which would indicate the number of connections each node has within the network. Figure II identifies where organizational mission statements overlap, that is, where there is sufficient attention – at least in policy (mission statements) – within departments most frequently involved in climate change governance, and where more attention could be focused on for coordination. The network map based on mission statements is different in nature to the actual process and understanding of how agencies are working within their missions and within the larger picture, though relevant as this is an existing network based on a widely cast net of stakeholders accessing information from the internet. The network also provides a transparent understanding of government function, based on written mission statements.

SOA Climate Governance Network. After the missions were coded, the list was further reduced to remove any sites that were particular to a program, a child agency that was not considered able to influence or implement policy directly, non-profits, NGOs, international agencies, policy and planning groups that were located in the periphery of the network. This left 40 agencies and organizations. The ten themes were then refined to better reflect broad categories based on the original boundary search terms and expanded to include specific for frequent subject matters within missions *Table III*.

The code “community” was deleted as nearly every organization represented that theme within their mission. Community as a theme representing government function makes sense as it can be assumed that the core value of government agencies and organizations is, by definition, to enhance community well-being. Because of this, the themes research and education (RE) were created and combined as an emerging theme. Two other themes were then added to reflect their frequency in mission statements: “International” and “Alaska Native.” These codes were important to understand the connections they represented within the broad network, particularly with Alaska Natives. These three codes were then added to the above nine (“community” being removed), for a total of 12 themes, used to generate the next network.

Interpretation. *Figure III* shows, again, there is an assumed level of coordination between nodes based on mission statements. Nodes here are represented by different sizes based on their eigenvector properties. The Eigenvector Centrality takes into consideration how many connections a node has (degree), and also the degree of the nodes it is connected to (Borgatti, 2005). Now the network begins to show us a little personality with different sized nodes.

The themes are depicted by square boxes and are colored maroon. All of these nodes have arrows pointing to them, as the organizational missions were coded to the themes. There are no arrows pointing outward from the themes, as this is a one-way relationship, meaning the themes are connected only to the organizational node. The size of the box is larger as more mission statements connect to this theme. Here we can see that the largest themes are “economic” and “environment,” followed by “security.” These nodes are also central to the map, indicating connectivity and proximity between the nodes. The smallest nodes are located on the outside of the network. These are “international,” “infrastructure,” and “energy.” By contrast, these show a lesser connection between the nodes, and are located on the outside of the network, possibly indicating a peripheral influence within the network. The green nodes are state agencies and the largest and most centrally located is the Alaska Department of Environmental Conservation (ADEC).

*“to conserve, improve and protect Alaska’s natural resources and environment
to enhance the health, safety, economic and social well-being of Alaskans.”*

ADEC Mission Statement

As such, six of the 12 themes were represented in this mission statement. This broad mission statement is coded to the largest themes (environment, economy and energy) increasing ADEC’s location and potential influence in the network because of the high degree of connectivity. Because these three themes are the most connected throughout the 40 organizations, the eigenvector centrality measurement is larger, showing that the ADEC has the most “influence” within the network, based on their mission, relative to the other organization’s missions. It makes sense that ADEC is viewed as a central actor to this network, based on mission statement, as it is an Alaskan agency, and, this agency has been assigned considerable oversight in climate governance throughout Alaskan history. Observing the smaller size and proximity toward the outside of the network, the DCRA appears to have a less influential role based on its mission statement, despite the agency’s specific mission of assisting local governments, and housing climate programs, planning groups, and grant administrators.

“Promote strong communities and healthy economies.”

DCRA Mission Statement

The orange nodes represent United States federal agencies and are all about the same size throughout the network and relatively equally placed throughout. Many of these node structures resemble what (Barnes et al., 2017) describe as a “social-level” network in a social ecological system (SES), which emphasizes the interconnectedness between nature and humans. The node structures in *Figures IV(a)* and *IV(b)* represent building blocks within the network, that act as “key features” in order for the network to function. When looking at climate governance on levels, here meaning various levels of government (tribal, local, state, and federal), the federal agency relationship to the rest of the network is a “key

feature” in order for the network to respond to climate events through action or policy, as it serves as a foundational agency for local governments.

Interview Network. The semi-structured interviews revealed relationships of organizations and agencies addressing climate-focused community issues. This network details responses from all interviewees to the question “Who do you regularly work with on these (relocation) issues?” In context, these responses are either directly (working with a village on relocation) or indirectly (working as a member of the IAWG or as a researcher on relocation) applicable to relocation, as a specific topic within climate governance. Consider this network a “live” picture based on the actors’ relationships regarding relocation of an Alaskan village due to “slow-onset natural hazards.”

Federal and state agencies, as well as non-profits, tribal governments, science-based institutions and countries were mentioned during the interviews. This information was collected and vetted for relevancy to the overall question: “Is there an urgency for the state to create a climate change agency?” Some departments mentioned were particular to a region or very specific issues, while some were mentioned several times by different individuals. These organic mentions were tallied and used to visualize a relational network shown in *Figure V*.

Interpretation. *Figure V* is considered a one-mode relationship network as the nodes connect to each other from organization to interviewee, and are again measured using eigenvector centrality (Borgatti, 2005). The interviewees are represented as the bright pink squares and serve as “hubs” for other nodes. These hubs show us a different picture of the network with two personalities. Although it is different in scope, the same network exists in practice, where the other networks in *Figure II* and *Figure III*, exist at least on paper (by their mission statements) and perhaps in practice.

Figure VI show us that the inside of the network is very connected. Based on the research, the most central hubs are actors who are most directly involved in planned relocation. Boxes most central are DCRA (2), Denali Commission (3), ANTHC (7), and the Anonymous Interviewee (11). Larger

organizational nodes centrally located are Tribes*¹⁴, POTUS (Obama Administration), the Governor's office, DCRA, ADEC, Alaska Legislature, FEMA, Department of the Interior (DOI) and the Department of Military and Veteran's Affairs (DMVA). This network alone describes a fairly accurate picture of the active organizations responsible for planned relocation matters, compared to the mission network which was drawn upon logical searches by stakeholders and missions of the resulting agencies. From these organizations, we can return back to the mission themes to double check their relevancy. In addition to government agencies involved, this network shows political actors who were not previously identified using only our stakeholder boundaries, such as countries, Congress, and Alaska Senator, Lisa Murkowski.

Figure VII (a and b). show two examples of hubs and spokes located on the periphery of the network. These organizations are connected to the network, but only through one interviewee, meaning there are no other entry points into the network other than the person who identified them. This indicates there is a group of individuals or organizations who, while may be considered an actor in the network to one person or organization, may be getting their information from other sources, or are involved in a particular issue or matter that is not central to the subject at hand: planned (climate) relocation. Some of the spoke and hubs make sense, such as the countries (purple nodes) that were listed by Institute of the North (5) (*Figure VII (a)*). They are actors in Alaska's climate governance picture, because they are arctic countries, and similar events and policy development may be underway that could be useful information for Alaska and the United States. System actors may see these outer spokes as opportunities to connect within the system, or access other networks that exist, but are not represented here.

There are also a few spokes that may raise the question "Why are they not as connected?" It is important to remember that this network is a snapshot of 11 individuals' relationships, and does not mean that it is inclusive to every relationship that exists. However, it is reasonable to conclude that the organizations and the relationships represented in this network pose a believable picture of an active network that could be further explored. Keeping this in mind, we question why such agencies as the

¹⁴ The word "tribe" or "tribes" was used by interviewees very broadly, as ways assign meaning to tribal governments, villages, or Alaska Native Corporations.

United States Department of Agriculture (USDA) has a low connection into the system through ANTHC (7). We know the USDA houses the child agency Office of Tribal Relations (OTR) who is responsible for government relations between USDA and tribal governments and specifically the Alaska Native Claims Settlement Act (ANCSA). This particular agency is unique to Alaska, based on the specific Alaska Native programs it oversees, and one could surmise based on their mission, that they would be more involved as shown in the Visualization of Federal Arctic Research Coordination (*Figure 1*). The agency is mentioned in some documents and literature, but is not an emerging agency throughout these works.

Figure VII (c) illustrates University of Alaska Fairbanks (UAF) and SNAP are important connecting nodes. Because the hub of SNAP (6) appears somewhat removed from the system, we can make a conclusion that science is not integrated into the core of the network where the bulk of decision-maker actors lie. UAF and SNAP act as strong actors to connect largely science-based institutions and organizations into the system to incorporate science into decision-making. This is an understood weakness within the subject that has been acknowledged in the Alaska Arctic Policy, from the IAWG and ACCAP, and in throughout the literature ((Fagers & Stripple, 2003; Petz, 2015; Shearer, 2012; Sundkvist, Milestad, & Jansson, 2005).

Another spoke and hub model noticed in this network, this time with an adjacent subnetwork, only connected through the Alaska Department of Fish and Game (ADFG). This subgroup represents the City of Homer, Alaska (10), and the subsequent connections to the hub show the agencies involved in climate governance. Knowing that Homer is also a coastal town in Alaska, the network makes sense to show us the agencies most often mentioned specifically address aquatic matters. This hub and spoke system also shows that the town of Homer may be removed from the specific subject of planned relocation, as it is located in southern Alaska, and it is not considered an Alaska Native village. This is important to recognize because while climate governance does not only pertain to Alaska Native communities, scenarios where planned relocation is warranted have, thus far, been exclusively relevant only to Alaska villages in western and northern Alaska.

Findings

My naive understanding of federal government is that the federal agencies are set up really well to respond to after your house falls into the ocean, but tend to be quite handtied in being able to proactively keep your house from falling into the ocean. I think that provides coordination challenges.

Scott Rupp, SNAP Director

Interviews, agency reports, policy, mission statements and networks begin to piece together the fragmented picture of climate governance in Alaska. Environmental climatic changes are forcing the hand of government to be proactive in planning and mitigating scenarios when possible to avoid catastrophic loss of culture, life and property. Who is responsible for adapting government to climate changes? The State of Alaska has dedicated the DCCED to be a coordinating agency for erosion management, but is this enough? As actors within the network have said, a lack of coordination continues to thwart an already lethargic bureaucratic process that isn't well defined, if defined at all. Complicating matters further, the State of Alaska is in a fiscal crisis and have reduced spending on many programs and agency scope directly related to the most vulnerable populations in the state – populations who also happen to be the most impacted by climate change. Hopes of both coastal communities and government officials alike were already low that the federal government was serious about Alaska's future during the Obama Administration, and with the new Trump administration, a full-on international assault against both marginalized populations and the environment is underway. Some, are hopeful that the Trump administration will be helpful in building infrastructure as part of his presidential legacy, while others are working to save and protect environmental work that has already been done. A failing infrastructure may be the federal ticket for some funding, and as permafrost thaws and storms become more severe, building standards need to be updated to withstand a new environment.

Science can bring the data that engineers need to design new infrastructure in a way that will be resilient to further change. That is the big challenge in the engineering community is the standards in which they are still forced to uphold and the data that is utilized in the process is old and very much in need of updating.

Scott Rupp, SNAP Director

New building standards are critical components needed to build resilient communities in the face of a changing climate and are just the beginning of policy updates needed to include such phrasing as “slow-onset natural hazards” and initiate processes to begin the complicated matter of planned relocation (Robin Bronen, 2013). Specifically, programs for disaster funding should be extended to include relocation. These policies will help direct agencies and coordinate efforts that will streamline operations and put systems in place that, with time and practice, will continue to be refined for both communities and organizations working on making planned relocation a functioning initiative of government.

As each planned relocation is estimated to cost between \$80-200 million, direct funding will not be sustainable by the state alone, regardless of the fiscal outlook. The state and federal government must face the implications of colonialism and the impacts history has had on indigenous people, their land where communities have been forced to stay. While the projects seem expensive, what are the costs of doing nothing? Accommodations are needed to allow community-led direction to be seamless and welcome by government agencies, and communities must be empowered to lead with tools that are accessible to them, and serve their needs.

No doubt in my mind that funding is available. You can't look at traditional funding sources. You are not going to find the federal government providing funding. In fact, the politicization of this whole issue in [Washington] DC has gotten us in a straitjacket as far as dedicated funding, but the foundations alone are more than willing to fund something worthwhile. But you got to have an idea of how in the hell you are going to use it. What would you do with funding?

Mike Black, ANTHC, former Deputy Commissioner, DCCED

Climate governance, and a need to act on relocation plans, is best addressed proactively and with foresight from science. The oil and gas industry has a role to play here, and industry representatives – many Alaska citizens - must also recognize their responsibility to the people most affected by a warming globe and the real bi-products of the industry's wealth. Science can help these industries continue to advance technological systems that reduce their proven impacts to the earth, and a better relationship between governmental leaders and scientists is needed to understand as best we can the impacts our changing climate will have on our society in the future. As technology improves and consistent baseline data becomes available, the ability to predict or otherwise forward plan and budget for large infrastructure needs will advance. That is, if some tweaks in policy language will allow for more flexibility within government agencies to adapt to changes that could fall under their purview.

A key finding was that it was unclear who communities should call when they experience a climate-related problem, regardless of the subject matter. It is unlikely that the first call would be to an elected governmental official without a previously established relationship, and without a dedicated agency or established point of contact, there is no clear way for a community to get into the system for assistance, or just to report an unusual natural occurrence, change in environmental patterns, foliage or animal migration patterns, if they desire to establish that relationship. Even if a community does contact a government official or agency with success, there is not a way to track and manage these calls, although word of mouth and referrals are common¹⁵. While there are a few online programs such as Risk MAP (Risk Mapping, Assessment, and Planning) and the LEO Network, they are not well advertised, and access to the internet may not be reliable or dependable. Further, trust issues could prevent communities from participation, for fear of consequences or exploitation by government agencies, or loss of cultural and traditional ways (Meek, 2013).

In 2006, a report commissioned by Tanana Chiefs Conference (TCC) and the U.S. Institute for Environmental Conflict Resolution acknowledged a bureaucratic/tribal partnership gap between Interior

¹⁵ Sally Cox, personal communication, August 3, 2017

Alaska Tribes and the United States Department of Defense (DOD). The report suggests that a more cohesive forward-outlook in developing strategies that are understood and agreed upon by both agencies could be improved by developing and requiring joint training, standard operating procedures, and educational material that increase tribal interest in governmental missions (Hunt & King, 2006).

Leadership is needed to state clearly that Alaska prioritizes all its people and networks of organizations, local municipalities, non-profits, corporations and foundations need to be ignited to communicate our changing environment to the Alaskan mass audience. As the only arctic state in the United States, Alaska must lead on this issue, through bold political dedication on every level of government. Efforts from the state to lobby the federal government for comparable funding is needed for climate change impacts as other parts of the United States, as well as direct coordination with the Alaska Congressional Delegation where common ground can be found between all offices, despite political party, to advocate for Alaska's people.

Recommendations

“There is a feeling on the ground that money is being put into the wrong thing by constantly focusing on the institutional structure of who is going to relocate these communities instead of actually relocating them. Another fear to start a center, or hire someone at the state, or to do a plan - those are definitely necessary - and those cost about a couple million dollars, which is easier to get through a state budget than a hundred million dollars for relocation.”

Anonymous Interviewee

Policy and funding appear to be areas most in need of coordination and authority. As an outcome of this research, I propose a planned relocation policy for state agency adoption and a marketing and outreach strategy to build public will and understanding of a changing arctic climate and engage community, corporate and foundation partnerships for funding, as well as some intergovernmental restructuring.

A Permanent State Climate Change Agency

- Reorganize DCCED, make DCRA an agency.
- Establish a mechanism to document previous climate related community efforts, reports, progress, challenges, etc. to assist new state employees.
- Establish a Climate Hotline.

Hawkins and Thomas (1989) contend that new problems can be difficult to respond to without precedent for agencies that rely on standardized processes and established protocols (as cited by Shearer, 2012, p. 176). The expectation that the solution to an already complex problem will be resolved with no less than 20 federal agencies (Clement, Bentson, & Kelly, 2013) alone is shortsighted and irresponsible. The complexity of relocating recognized tribes within the largest and most rural state of the United States, who are facing a unique environmental crisis warrants the need for a dedicated agency to manage the sheer amount of bureaucracy of at least three major governance systems in a short amount of time. The DCRA is designated as this agency through Administrative Order 175 for erosion coordination only, and lacks the appropriate authority and funding mechanisms to adequately address all slow-moving natural hazards and the potential community risks of climate change. Since there is no one responsible government body, there is no agency responsible for failed systems (Shearer, 2012). Further, there is no one else for Alaskan residents to turn to when their environments are no longer habitable (Bronen, 2013a).

“The state should not create a permanent climate change agency. The components are simple - problem is complex. A new agency is not necessary, political will needs to agree that the issue needs to be addressed in the state and the federal government. Climate, weather issues do not apply to Lower 48 states yet. Should the federal government create a climate change agency or branch? No, it needs to be an intentional will across the family of federal agencies that look at the place-based issue to craft a solution for. We don't necessarily need one agency in charge, but need all agencies working together.”

Joel Neimeyer, Federal Co-Chair, Denali Commission

Interviews revealed a perception that there is a lack of coordination between actors on planned relocation matters, a claim reinforced by all three networks. Not one interviewee believed a state agency would be reasonable, citing Alaska's FY 2018 fiscal shortfall and a lack of political will, although subjects who worked outside of state government stated their belief that funding was accessible, particularly for relocation, from foundations and non-traditional sources. All participants stated that structure exists within state government, but that the Governor needed to authorize one coordinating agency within the state to facilitate the flow of action between governing structures, while working closely with the Congressional Delegation on federal policy and funding. The Planned Relocation Policy (Appendix) addresses planned relocation from the state government level. The Policy operates from the standpoint that the DCRA is a department and puts into state code the structure, policy and positions required to operate.

“It [climate change] has been given to DEC because people think climate and environmental protection – but we're talking about communities - and that's not DEC's bit. I think you could carve out a division of climate within DCCED – 'cause you've got access to all local government.”

Nils Andreassen, Executive Director, Institute of the North

Alaska must rethink the structure of agencies and their missions. Particularly under review should be the DCCED, DCRA and the DEC. The Division of Community and Regional Affairs used to be an agency, and there is strong evidence that their scope is expanded through their mission in the face of climate impacts. Further, the Department of Community, Commerce and Economic Development should be renamed and focused on commerce and economic opportunities. It is reasonable to group Community, Commerce and Economic Development together, but I argue this structure places a lower priority on the constitutional requirement to a local agency for the advantage of Alaskan communities (Alaska Statute Title IV, Section 14). While commerce and economic development and growth are certainly components of healthy communities, communities in context of indigenous perspectives teaches us that the health of

the community lies within the culture, the animals, the land and the people. DCRA can better fulfill their mission statement, driven by the Alaska Constitution with authority to work with communities and agencies to coordinate state and federal services, including planned relocation. Authority would also give the agency a hierarchical structure with real authority to act on a Commissioner level and in coordination with other tribal, local, state and federal agencies. The ADEC is a curious agency within state government that continues to be central to climate governance, but their involvement is off-base. Returning to our mission analysis, ADEC's mission statement and scope is very broad and encompassing. However, through interviews the only mention of ADEC is through the Village Safe Waters Program. The Interview network, and an interview from the Commissioner, support the role of ADEC as being periphery, rather than core, although ADEC has, and continues to be the default agency relied upon by the Administration. The authority of ADEC is not appropriate for their level of involvement in the issue – in mission and in practice. I surmise ADEC's involvement has more to do with the longevity of the Commissioner, than the actions or mission of the agency. In addition, the DCCED is a mega-agency with many missions and divisions, and was considered a “catch-all” agency by some participants that was too big and nebulous to be effective given its current state and fractured purpose.

A key finding was that it was unclear who communities should call when they experience a climate-related problem, regardless of the subject matter. A climate hotline where individuals can leave a message on their observation or issue can be easily established and managed through the Senior Climate Advisor's office to track issues and direct calls to the appropriate agency, housed within DCRA as the leading climate organization. This begins the cycle for local involvement at the center of the initiative and with the Planned Relocation Policy, sets in motion the direction for which agencies can respond.

Internal Organization and Communication

- Identify key agencies of climate governance and require climate funding and policy positions within agencies.
- Require Boards and Commissions to review potential climate impacts to their mission and provide commitment statements.
- Require state agencies consider climate impacts to their missions and include in budget projections (particularly Alaska Department of Transportation and Public Facilities, ADOT&PF).
- Request congressional staff liaisons within Congressional Delegation offices to coordinate implementation, policy and funding.
- Marketing and Outreach Campaign.

The Governor in particular, and department commissioners, the Alaska Legislature and Alaska Native Leadership are in positions to make actions toward a more holistic approach to climate governance that represents Alaskans' needs. Incorporating climate change strategies and policies into departmental missions and state policy sheds light on the depth and breadth of the issue, and the far-reaching impacts that could potentially affect Alaskans' health and welfare, land, resources, and overall economy. The Governor must direct the intensity of his commitment and require a commitment from every department within the state, to make climate change a state priority. Climate Change commitment statements should be required from applicable Board and Commissions. Key identifiers that include specific, measurable, and attainable goals to address climate change impacts within their agency mission are needed for clear directives and procedures for implementation to connect levels of government to the state.

Key departments are identified in *Table 3*, and it is recommended two existing personnel are reassigned to manage policy and funding within the department, particularly in relation to climate impacts to their department. Consideration should be given for capacity within the department to include both policy analysts or advisors and Funding Managers. These positions would then, work under the leadership of the DCRA Executive Director (or appointed designee). Consideration should also be given to regional

location, pursuing office locations within regions to act as coordinating hubs for rural communities. The DCRA appointee will act as liaison, along with the federal counterpart, the Denali Commission, to the Senior Climate Advisor, housed in the executive branch. A statewide Climate Policy Director, statewide Climate Funding Director and a statewide Climate Communications Director will serve as staff to the Senior Climate Advisor to coordinate policy development and implementation between agencies and with the Denali Commission for federal policy development and implementation; develop funding strategies within departments, and oversee all grants submitted within the departments that meet the criteria for grant submission, accuracy, consistency; and coordinate and implement outreach and engagement of communities and act as the community liaison for crisis management, respectively. The Congressional Delegation shall be lobbied by the Governor to make climate change impacts in Alaska a priority to share with the nation, and request at least one dedicated person from each Congressional office to work with the Senior Advisor and Directors.

These monumental issues are complex and rooted in deep controversial American history in the middle of an unpredictable weather pattern. The IAWG advanced their work through four groups: Adaptation, Mitigation, Research, and Response, fine subjects to direct dialogue in 2007. Now, the information exists to further define these groups into subcategories that are subject-specific, and dedicate an agency to coordinate implementation efforts with a focus on policy and funding mechanisms. *Table IV* depicts subject matters and correlating responsibilities.

Outreach and Engagement. A public marketing and outreach campaign targeting town, villages, cities, tribal communities, and private industry is recommended with the goal to build awareness of the real impacts climate change is having on Alaska. Messages are developed to 1) increase awareness; 2) build community coalitions that can act as climate stewards for their communities; 3) encourage behaviors that could help reduce impact and prepare for natural disasters. These messages are created in tandem with agencies who specialize in problems that directly affect individuals' daily lives, such as ADFG on fishing and hunting, and DMVA on disaster preparedness and response training. This campaign would be similar to the "Get out and Play" and Tobacco Quit Line campaigns, where governmental

services are advertised to raise awareness of where communities can seek help and assistance when met with environmental hazards.

Programs. Federal, state and non-profit entities that provide programs and funding are an important part of this picture. Programs and program offices are important to understanding the amount of funding available through non-traditional (i.e. foundations) streams, though were not included in the network analysis, as the network was intended to be policy driven.

As erosion, permafrost thaw, flooding, etc. reduce livable land, in order to relocate, communities will need to find new land to move to. Likely, this will involve land trades with the federal government, as Newtok did to begin settlement in Mertarvik (DCCED, n.d.). As with the Newtok land trade, ANCSA will serve as an important document to facilitate land exchanges, which took years to finalize. A process to understand and expedite land trade with the state and federal government that abides by the wishes and needs of indigenous communities to live off the land needs prompt attention, that will likely be mired in litigation.

Policy

- Incorporate the term “slow-onset natural hazard” language into the Alaska Disaster Act, the Stafford Act and other disaster response policies to reflect the nature of climate change as a slow-moving, yet disastrous phenomena.
- Define the term “community” in state and federal climate-specific policy.
- Recognize tribal governments in unorganized boroughs as local governments to be eligible for grant funding.
- Establish an Alaska Planned Relocation Policy (Appendix).
- Increase the presence of the USDA, Tribal Affairs Office and the Department of Defense for planned relocation purposes.
- Update engineering codes for resilient building structures.

Several policies provide access to funding for disaster relief, however, none of them include the definition, or a definition to include “slow-onset natural hazards,” or a similar term. The Alaska Disaster

Act and the Stafford Act were reviewed specifically for this research, though there are other policies, such as the GPRA Modernization Act of 2010, NEPA, HUD Community Block Grants, and Section 117 of the 2005 Energy and Water Development Appropriations Act, that need review for agency performance, transparency and coordination reflecting planned relocation needs. Not only is the funding not accessible because the disaster has yet to happen, based on definition, many of the response funding requires infrastructure to be built in the same location with the same materials as when it existed. As with coastal communities affected by erosion and thawing permafrost, this requirement is counterproductive to the health and safety of the community, as well as the preservation of their culture and livelihoods, as those lands simply will no longer exist. Federal policy, particularly the Stafford Act, needs to be changed so that communities are able to build sustainable homes in rural Alaska, sufficient to their cultural, economic and subsistence needs. As such, it is recommended that the Stafford Act be reviewed and changed to reflect “slow-onset natural hazards” and changes be made in the language to allow federal agencies to assist communities in rebuilding their failing infrastructure due to natural causes. These policy changes are the gates to open in order to allow for incremental changes within the American government framework to truly act for the betterment of affected communities rather than ease of government processes and profit.

Further, definitions of what “communities” are in terms of relocation authority need to be examined. It is unclear in the existing policy if “communities” mean the structures, people, cultures of bounded areas, neighborhoods, towns, villages, or individual families, households, businesses, etc. These are certainly different and can vary greatly in the magnitude of economic resources needed to address the issue at hand. These policies must be made with leadership from Alaska Native communities with consideration for geographic traditional practices, land and food.

Futuristic Predictions

Alaska as a state should prepare for climate migration from “refugees” from the Lower 48 and around the world. As the arctic becomes less extreme in weather and temperatures, as more land becomes

available, as jobs increase due to northern commerce, and as coastal communities around the world become displaced, Alaska may look even more attractive. The FNSB, a middle-sized community of 100,000 is expecting a population growth of 23,400 more residents by 2045 just due to the F35 installations, many who will stay as Alaska becomes more habitable to Lower 48 standards. As Alaska offers low citizen tax obligations, the Permanent Fund Dividend (PFD), hearty land, minimal regulations, and increasing convenience of shipping and goods, it is reasonable to believe Alaska's population will increase from people relocating due to extremely high temperatures, coastal erosion, and an increase of weather events in frequency and severity. State departments will be faced with budgets for expansion in urban areas for development, and possibly even rural areas, and coastal areas for tourism. Alaska only has two state highways and it is reasonable to suggest reinforced infrastructure will be needed. All the while, permafrost will continue to thaw, compromising private homes, businesses and public roads, schools and buildings. Alaska needs to prioritize investing in new and renewable energy technology as energy consumption and needs will wane from oil and natural gas options. As Alaska's current fiscal situation before us is a testament, oil is still not a reliable, nor sustainable way to fund a state budget. With climate change, this will become even more so.

As the Arctic ice pack melts, transportation for shipping and tourism will develop at an undeniable speed securing the potential for commerce, increasing national security risks and creating an urgency for international treaties. The Arctic is the new Last Frontier, where previously ice-locked sea is melting, revealing economic opportunities for Arctic communities and land development. The space between the bottom of the ocean and land presents a governance dialogue never had. Land rights, security and taxes will be of global interest. The Arctic Council has recognized global security as a high priority in relation to increased access, and Alaska should be leading these discussions to protect itself and the United States.

Future Research

The networks developed through this research were meant to visualize state operations and functionality with existing policy and structure based on the researcher's experience and interpretation. The result was essentially the colonial network of climate governance. This network is relevant to understand the strengths and weaknesses of an existing westernized bureaucratic branch of government. However, this is only one perspective. Development and holistic understanding of a network continues by piecing together other functioning systems within a broader scope, in this case, indigenous networks, private-industry relationships, and global connectivity are germane. As mentioned in throughout this project, ties and relationships of trust are needed to access this information, though extremely critical and timely.

Network analysis can be applied to any system to better understand relationships, influence, connectivity, structural holes, and so much more. Assessing policy documents at any government level or within agencies, such as the *Climate Resilience in Alaskan Communities Catalog of Federal Programs* (2015), currently being updated by the Denali Commission, can be beneficial as visual support to the need for serious consideration and review that could lead to strengthening policy.

Conclusion

Is there an urgency for the state of Alaska to create a climate change agency? The question appears to be wildly out of reach considering an oil-deficit induced recession, the cumbersome maneuvering of bureaucracy to establish another level of state government, and the dynamic and seemingly unfavorable political landscape of the issue. However, the need for a dedicated effort to coordinate federal, state, tribal and local networks when addressing impacts to communities affected by climate change is hard to ignore. Government agency work is guided by policy, funding (Osborne, 1993), and the administration. Administrations and local communities have power to set an agenda and funding sources to address climate change impacts within governmental structures (tribal, state, federal). While the impacts of a changing climate are far-reaching and affect nearly every department in their mission,

neither state nor federal government leadership appear to have fully embraced the severity of these impacts on their own missions and budgets, but further on the state and nation's community well-being.

The fatigue is palatable within state and federal workers, communities and researchers on how to move quickly within the confines of a governmental structure that is disconnected between levels and slow to change. With three congressional members, and only 741,000 residents, Alaska's disaster response per person appear largely disproportionate to the rest of the country, especially as places and for cultures not completely understood by an overwhelming majority of westernized bureaucrats. Changing federal policy is needed to include slow-onset natural hazards, as well as community access to resources. More understanding of the impacts of the Arctic and the responsibility of the federal and state governments to preemptively act, is needed. As changing policy takes time based on legislative schedules, government employees must be familiar and savvy with existing policies and methods to qualify for funding under existing structures while policy reform is underway.

The State of Alaska has invested time and money into research and outreach about climate change impacts around the state, but it is not enough, especially considering the exponential amount of climate change Alaska has undergone in just 10 years. Alaska must operate from a higher set of standards than states in the Lower 48 because changes are happening faster, as more communities face relocation decisions. The state is currently faced with a massive budget deficit inflicted by too much oil investment, leaving state programs dismantled, government jobs vacant, and capital projects unfunded. What does this mean for Kivalina, Shishmaref, and Newtok if state agency coffers are empty and state and political will on climate change is lukewarm? Who then will be accountable for the human impact after a catastrophic event? It is the duty of the Governor to initiate climate governance as a state-wide priority and it is the responsibility of state leaders from tribal, public and private sectors to collaborate and implement a plan to address and prevent as much as possible the significant human and fiscal consequences of climate change.

The state's role will direct the response and commitment from Congress to take this issue in Alaska seriously. The state administration has been lackluster in their approach to take a stand and

advocate for specific policy changes and funding from the state legislature and from Congress. Although considerations of Alaska's largest industry, the oil and gas industry, may suggest caution for potential election consequences, there is room for industry to be positively involved to advance technology or practice that would reduce carbon emissions, despite their past focus to stop further environmental regulations (van den Hove, Le Menestrel, & de Bettignies, 2002a, 2002b). A commitment to the people of Alaska must be first, profits must come second. While the legislature, agencies and the Governor fret about the next decision they have to make to balance the state budget without taxes, another family loses their home, or another pipe break contaminates clean drinking water, or an even stronger storm begins to churn off the shore of a small coastal village. The Governor is responsible for elevating this issue as one that can be understood with science and technology and tackled head-on.

There is not an easy answer, but there are some glaring efficiencies that can be implemented without funding to begin a coordinated effort toward planned relocation in Alaska. If there is true consensus that a state agency is not feasible, needed or desired, then considerable effort in restructuring the DCCED must be thoroughly reviewed, even if it will take time. Changing existing Alaska state policy and federal policy to allow agencies to better work within their budgets and missions will allow better access to funding streams. I argue tribal leadership is needed to lead the process of integrating traditional knowledge, values and processes into Alaska governance. The indigenous communities eligible for planned relocation need to be supported through the existing departments and staff who have access to prior activity and information, and local traditions, cultures, food and land needs from state and federal governments must be included and implemented into practice so that communities truly are able to direct and work together with agencies, in a way that is most efficient for *them*. Funding streams need to be coordinated and explored from non-traditional sources to find the resources required for such monumental work. The spirit of adventure lies within the core of Alaska and Alaskans, and if there is one issue to prove it, I argue climate governance is it. The ability to coordinate and respond to climate change now sets the state apart from the nation in preservation of not only our environment, but our people.

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Tables

Table I. Public Investment Based on Information from DCCED/DCRA RAPIDS Database

Community	Years	Public Infrastructure
Kivalina	1992-2009	\$25,606,507
Koyukuk	1987-2009	\$27,213,704
Newtok	1985-2009	\$21,733,479
Shaktoolik	1988-2012	\$16,616,589
Shishmaref	1988-2011	\$56,096,483
Unalakleet	1989-2011	\$145,721,705
		\$292,988,467

Source: IAWG, 2009.

Table II. Estimated Protection and Relocation Costs for Three Alaska Communities

Community	Costs of Future Erosion Protection	Costs to Relocate	How Long Until Relocation Needed?
Kivalina	\$15M	\$95-125M	10-15 years
Newtok	\$90M	\$80-130M	10-15 years
Shishmaref	\$16M	\$100-200M	10-15 years
Totals	\$121M	\$275-455M	10-15 years

Source: U.S. Army Corps of Engineers, 2006, as adopted from (P. Larsen et al., 2007).

Table III. SOA Climate Governance Network Mission Themes & Descriptors

Theme	Descriptors
Alaska Native (AKN)	Indigenous, Indian, tradition, traditional, tribal
Community	Wellbeing, diversity, education, welfare, quality of life, culture, people, life
Economic	Money, economy, development, prosperous, workforce development, opportunity
Energy	Nuclear, power, renewables, wind, solar, tide
Environment	Natural events, climate change events, natural world, disaster, air, water, public land
Health	Medicine, social services, mental, social, spiritual, services
Infrastructure	Manmade, structures, housing, sewer, waste, roads, public buildings
International	Global, world (in an international context)
Natural Resources 1 (NR1)	Fish, wildlife, land (for protection)
Natural Resources 2 (NR 2)	Oil, gas, mining, land (for development)
Research/Education (RE)	Education, research, training
Science	Data, information, technology
Security	Personal and national safety, protection, risk, hazard, military

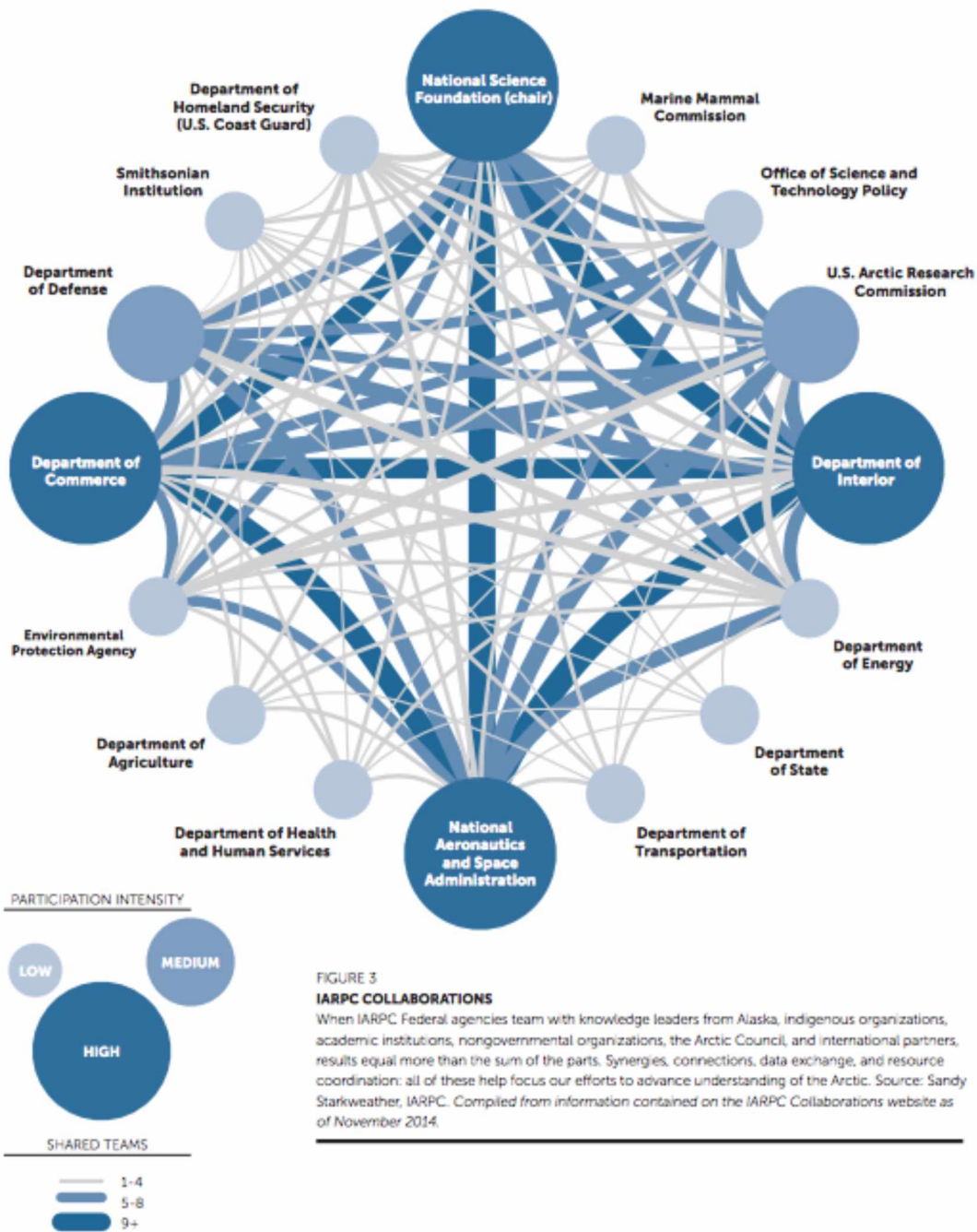
Table IV. State Agencies and Responsibilities for Planned Relocation

SOA State Coordinating Agencies	Responsibility	Including (but not limited to)
Alaska Center for Climate Assessment and Policy (ACCAP)	Policy	Local, state and federal
Alaska Energy Authority (AEA)	Energy	Nuclear, power, renewables, wind, solar, tide, oil/gas, electric
Alaska Fish and Game (AKF&G)	Subsistence, Wildlife Conservation	
Alaska Housing and Finance Corporation (AHFC)	Housing, development	Grants, loans
Denali Commission	Federal liaison	rural development and infrastructure, workforce development
Department of Community, Commerce & Economic Development (DCCED): Division of Community & Regional Affairs	Coordinating Agency, Regional office oversight, Climate Hotline, Community-tracking mechanism	Community programs, funding, historical documentation, grant assistance
Department of Education and Early Childhood Development (DEED)	Education, Number of Students to establish a school	Charter, home-school, facilities, after-school programs
Department of Environmental Conservation (DEC): Division of Safe Water	Village of Safe Water Program/Municipal Grants & Loans	Water, wastewater, grey water
Department of Health and Human Services (DHHS)	Health, Well-being	Medicine, social services, mental, family planning programs
Department of Natural Resources: Division of Forestry	Wildfire	Education, evacuation, containment
Department of Transportation and Public Facilities (DOT&PF)	Infrastructure	Manmade, structures, roads, bridge, dock, air access, waste
DMVA: Division of Homeland Security & Emergency Management (DHS&EM)	Emergency Planning, Response & Training	Security, Emergency Planning and Response Training
Scenario Network Adaptation Planning (SNAP – UAF)	Science	Data Collection, Scenario Planning, information, technology

Source: Modified from IAWG, 2009

Figures

Figure 1. A Visualization of Federal Arctic Research Coordination



Source: IARPC, 2015 Biennial Report, p. 5

Figure II. Stakeholder Base Network

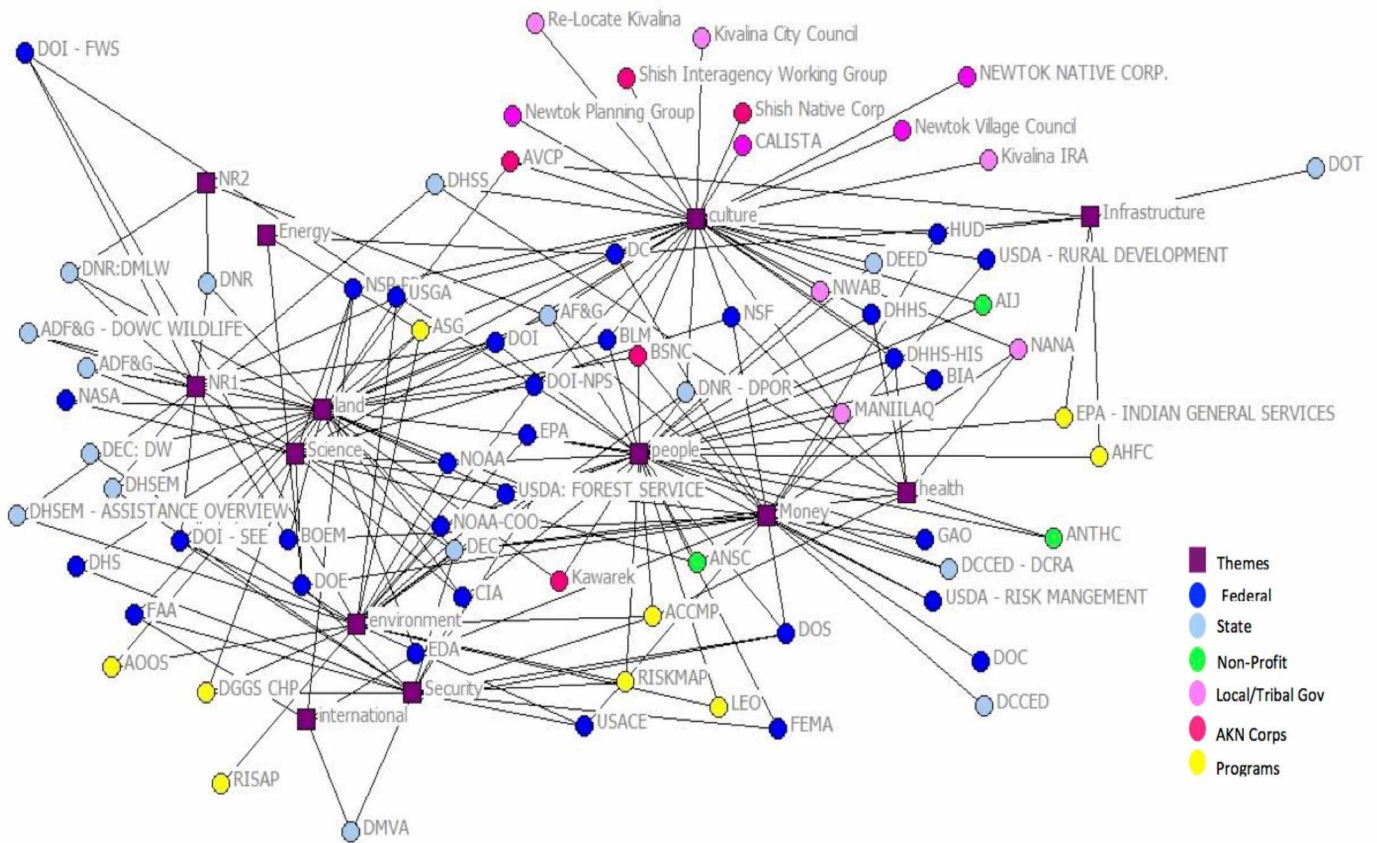


Figure II was constructed using mission statements from a wide variety of search terms related to Alaska climate governance and Alaska village relocation due to climate change, based on stakeholder entry into the system via the internet.

Figure III. SOA Climate Governance Network

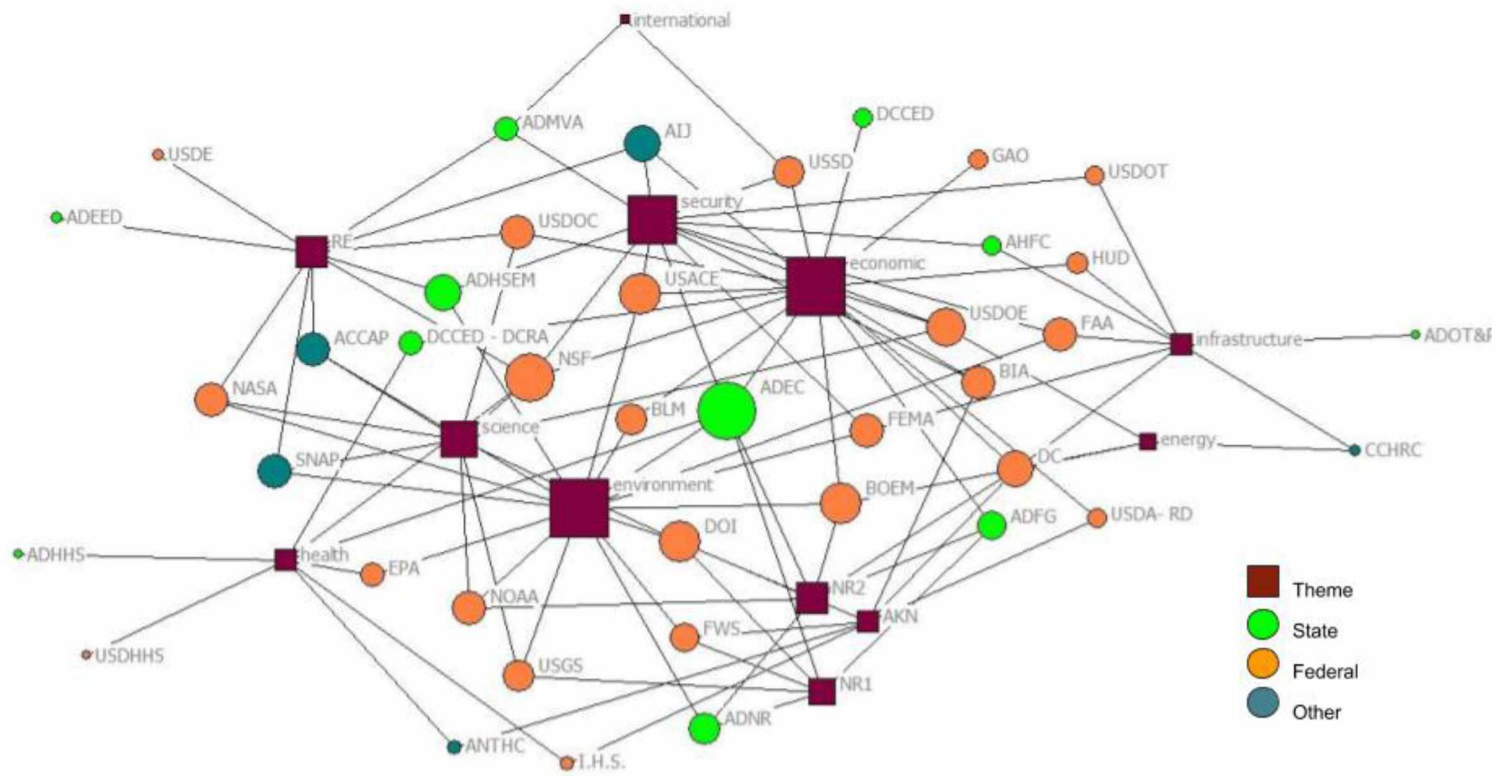
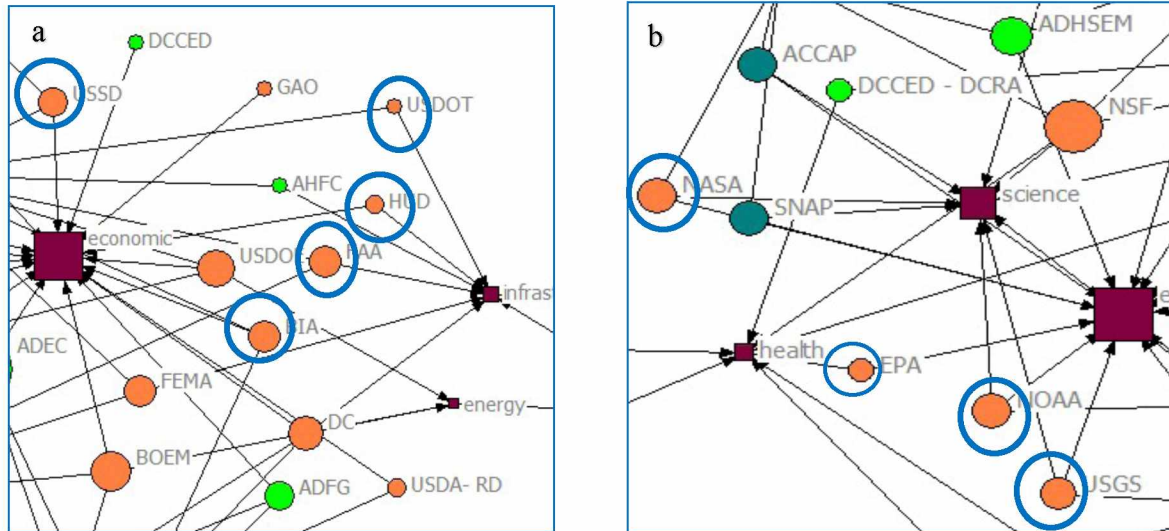


Figure III focused on agencies and organizations considered “core” to climate governance and planned relocation in Alaska.

Figure IV. Federal agencies as structural nodes



Federal agencies as foundational nodes of a climate governance network based on mission statements.

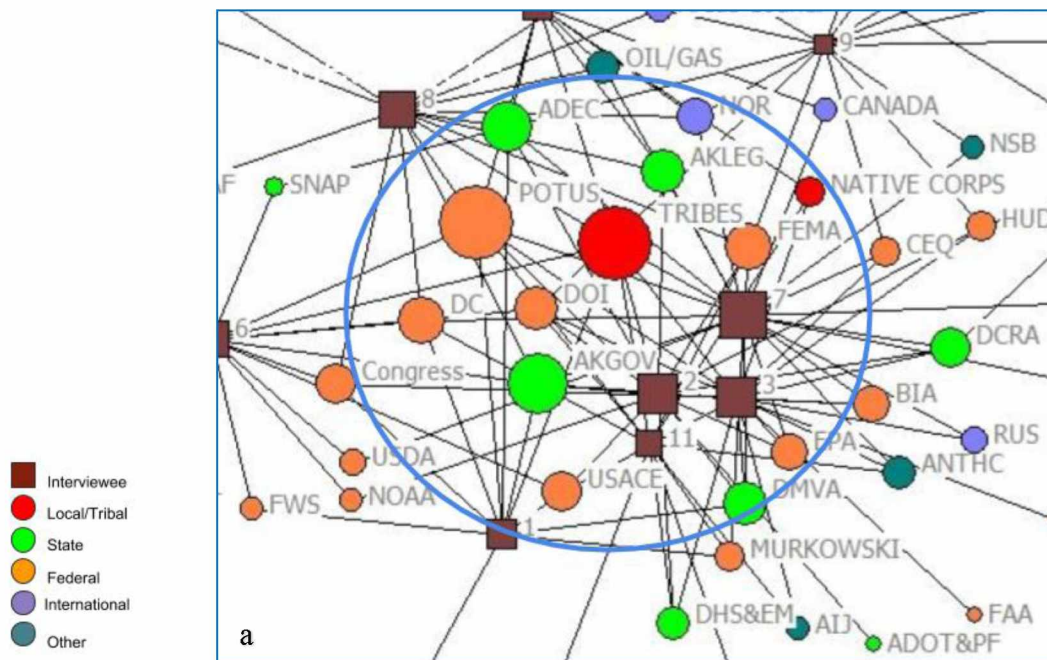
Figure VI. Interview Network Inner Circle

Figure VI(a). identifies an area of Figure V. that illustrates close connectivity and proximity within the network, indicating coordination. Nodes (circles and squares) that appear larger are considered to have more influence in the system based on eigenvector centrality measures.

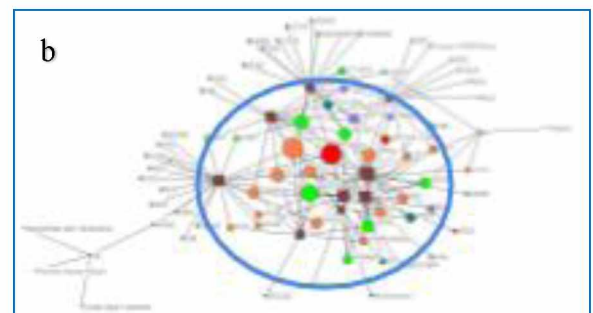


Figure VI(b). shows the area enlarged in Figure VI(a).

Figure VII. Interview Network Outer Circle

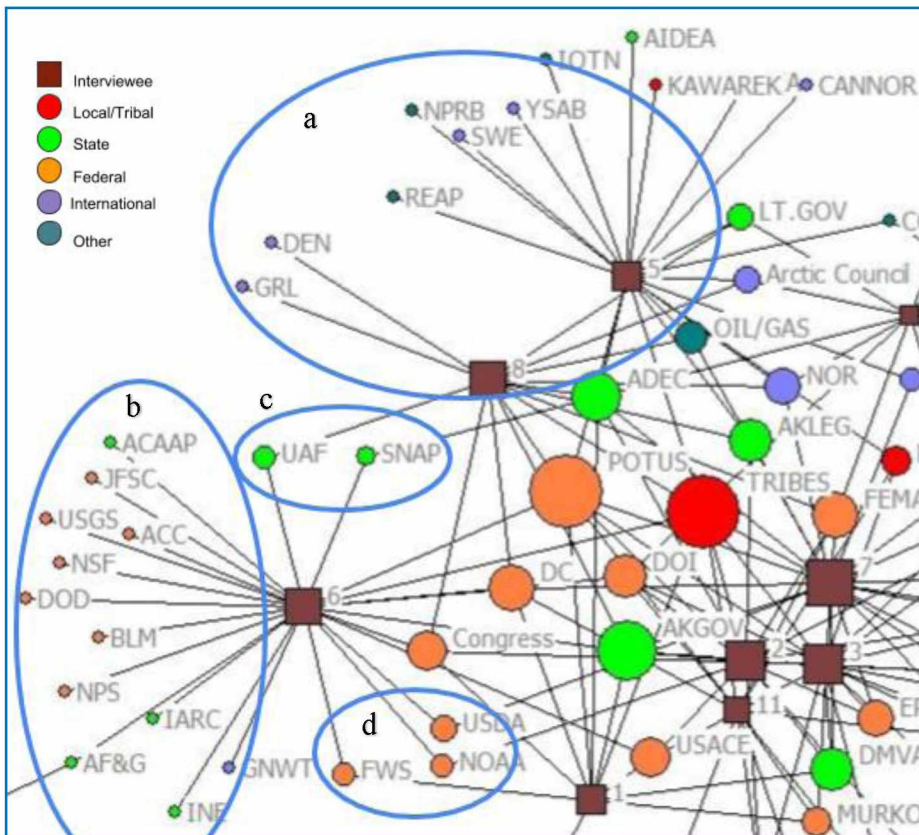
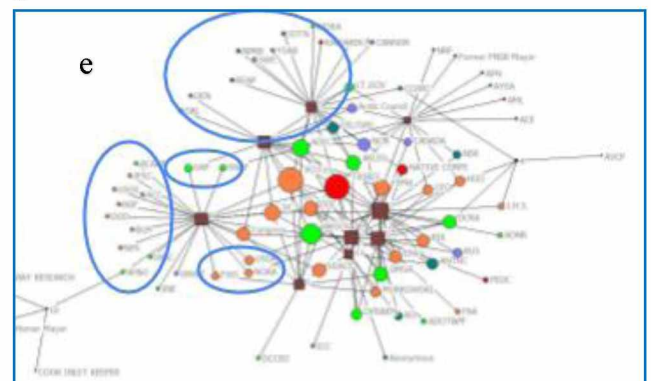


Figure VII(a, b). identifies spokes and hubs on the periphery of the network, indicating possible disconnection to the inner circle. These areas may also be rich for further network exploration, as they could represent relationships with other actors not represented in this network.

Figure VII(c). illustrates UAF and SNAP as strong actors in which the network depends upon for scientific information.

Figure VII(d). represent federal agencies that act as structural or foundational nodes within the Interview Network, affirming their position from Figure IV within the system.

Figure VII(e) shows the outer circle within the larger network.



Appendices

Appendix A

Alaska Planned Relocation Policy**1 PURPOSE**

The purpose of this policy is to

- Protect vulnerable persons' basic human rights, culture, land and dignity;
- Respect, protect, and fulfill the human rights of people within their territory or subject to their jurisdiction;
- Provide a clear process communities can expect when initiating planned relocation;
- Authorize and provide for the coordination of planned relocation, including assessment, planning and relocation from the impacts of disasters and environmental change, including the effects of climate change.
- Establish the responsibilities of state government in planned relocation from the impacts of disasters and environmental change, including the effects of climate change and slow-moving natural hazards that may result real-time in catastrophic hazards (now referred to as "natural disaster and environmental change");
- Ensure sufficient and sustainable funds for planned relocation;
- Clarify and strengthen the roles of state agencies involved in planned relocation;
- Contribute to the requirement of Administrative Order 286, which establishes the Alaska Climate Change Strategy and Climate Action for Alaska Leadership Team;
- Clarify relationships with municipalities, tribal and federal partners.

2 SCOPE

This policy addresses the needs of Alaskan communities at risk, threatened, and/or impacted by natural disaster and environmental change.

3 POLICY STATEMENT

Planned relocation from potential disasters and environmental change is recognized a need for Alaskan communities. The people of Alaska hold in high regard the right to self-determination, preservation of identity and culture, and control of land and resources, particularly for indigenous communities. The State of Alaska is committed to managing planned relocation in this context as a preventative measure and as a last resort.

3.1 This policy outlines the approach the State of Alaska will adopt to manage, assess, plan and implement planned relocation initiatives for communities threatened by natural disaster and environmental change.

3.2 Key topics identified in this policy relate to:

- duties and responsibilities of state agencies;
- coordination efforts between tribal, local, state and federal agencies;
- overall direction for and oversight of the planning and implementation of the Planned Relocation;

- timely and sufficient financial, human, and other necessary resources to undertake a Planned Relocation;
- a requirement of a quarterly in-person report to Climate Action for Alaska Leadership Team, and a requirement that meetings are to be held in a community identified as threatened.
- structures and mechanisms for:
 - planning and implementing Planned Relocation, beginning at the local level;
 - conducting on-going internal (state actors) and independent (non-state actors) monitoring and evaluation of Planned Relocation within the DCRA, its outcomes and impacts over time;
 - providing technical assistance to persons or groups of persons, where such actors initiate a Planned Relocation;
 - lodging, assessing, and reviewing grievances and providing conflict resolution and redress;
 - ensuring public participation, including of Relocated Persons and Other Affected Persons, throughout a Planned Relocation;
 - systematically conducting mapping, assessments, and monitoring of areas that may pose risks to persons and groups of persons on account of disasters and environmental changes, to enable an appraisal of potential responses, including Planned Relocation; and
 - ensuring that lessons from past and ongoing Planned Relocations, including from monitoring and evaluation, are identified, documented, implemented and made publically available, so that they inform new Planned Relocations and inform and drive necessary changes to legal, policy and institutional frameworks.

3.3 This policy may refer to Alaska Statute Article 01. ALASKA DISASTER ACT Chapter 26.23 Disasters, the Immediate Action Working Group Recommendations to the Governor's Sub-Cabinet on Climate Change (2009), Alaska Center for Climate Assessment and Policy Decision-making for at-risk communities in a changing climate; Guidance on Protecting People from Disasters and Environmental Change Through Planned Relocation (Guide), Administrative Order 286.

4 RESPONSIBILITIES

Compliance, monitoring and review

4.1 The Department of Community and Regional Affairs (formally a division under the Department of Commerce, Community, and Economic Development) will act as the lead coordinating agency for planned relocation on behalf of the State of Alaska. This department is recognized within the Alaska State Constitution Article X – Section 14 – Local Government Agency.

DCRA will work with SNAP to provide strategic and ongoing environmental assessments of weather, erosion, loss of sea ice, permafrost thaw, forest wildfires, ocean acidification and temperature and make publically available the information within the established “Climate Change Portal” within the DCRA website.

DCRA will work with ACCAP to revise and refine the Climate Risk Assessment Guide, managing and incorporating the tool into decision-making and providing access and training to agency leadership, legislators and community members.

DCRA will develop and provide for integrated report/documentation that serves the purpose of all funding agencies so as to reduce the amount of redundant paperwork.

4.2 The **Denali Commission** will be the federal counterpart to the DCRA. Denali Commission will conduct the required analysis to comply with the National Environmental Protection Act (NEPA), Consolidated Appropriations Act of 2005 (Section 117), the Stafford Act, and any and all federal legislation that does or could apply to Planned Relocation. The Denali Commission will continue to provide economic development and infrastructure coordination for rural Alaska. Consideration should be made for a specific office to within the agency to act as a local coordinator.

4.3 The **Governor’s Office** will work as the lead agency which oversees Climate Policy and Funding and will provide at least two staff to:

1) coordinate policy development and implementation between agencies and with the Denali Commission for federal policy development and implementation;

2) develop funding within subsequent departments, and oversee all grants submitted within the departments that meet the criteria for grant submission, accuracy, consistency.

The Governor’s Office will serve as the mediator between federal and state agencies, and will work directly with the President of the United States, and the Alaska Congressional Delegation to secure policy and funding adequate to support this legislation.

4.4 Other agencies as described below will work under the leadership of the DCRA Executive Director (or designated appointee). Each named agency will provide a dedicated employee(s) to develop funding streams and policy recommendations within 30 days of the passage of this bill specific to their department mission and scope.

State Agencies and Responsibilities for Planned Relocation

SOA State Coordinating Agencies	Responsibility	Including (but not limited to)
Alaska Center for Climate Assessment and Policy (ACCAP)	Policy	Local, state and federal
Alaska Energy Authority (AEA)	Energy	Nuclear, power, renewables, wind, solar, tide, oil/gas, electric
Alaska Fish and Game (AKF&G)	Subsistence, Wildlife Conservation	
Alaska Housing and Finance Corporation (AHFC)	Housing, development	Grants, loans
Denali Commission	Federal liaison	rural development and infrastructure, workforce development
Department of Community, Commerce & Economic Development (DCCED): Division of Community & Regional Affairs	Coordinating Agency, Regional office oversight, Climate Hotline, Community-tracking mechanism	Community programs, funding, historical documentation, grant assistance
Department of Education and Early Childhood Development (DEED)	Education, Number of Students to establish a school	Charter, home-school, facilities, after-school programs
Department of Environmental Conservation (DEC): Division of Safe Water	Village of Safe Water Program/Municipal Grants & Loans	Water, wastewater, grey water
Department of Health and Human Services (DHHS)	Health, Well-being	Medicine, social services, mental, family planning programs
Department of Natural Resources: Division of Forestry	Wildfire	Education, evacuation, containment
Department of Transportation and Public Facilities (DOT&PF)	Infrastructure	Manmade, structures, roads, bridge, dock, air access, waste
DMVA: Division of Homeland Security & Emergency Management (DHS&EM)	Emergency Planning, Response & Training	Security, Emergency Planning and Response Training
Scenario Network Adaptation Planning (SNAP – UAF)	Science	Data Collection, Scenario Planning, information, technology

5 REPORTING

5.1 The Climate Advisor, supported by the DCRA and Denali Commission, will provide an in-person report to the Alaska Legislature every year on the following touchpoints:

- Number of identified threatened or imminently threatened communities;
- Updates from each agency above in specified areas of responsibility, accompanied by policy recommendations and implementation and funding needs;
- Policy;
- Funding;
- Evaluation of Service and Timeline for Planned Relocations underway or in progress

DCRA and the Denali Commission will meet in-person quarterly with the Climate Action for Alaska Leadership Team to provide an update on progress, challenges, planning, implementation, policy and funding.

6 RECORDS MANAGEMENT

6.1 DCRA must maintain all records relevant to administering this policy in the recognized state documentation system.

7 DEFINITIONS

7.1 Terms not defined in this document may be in the Alaska State Code.

- a. “Planned Relocation” is defined as: a planned process in which persons or groups of persons move or are assisted to move away from their homes or places of temporary residence, are settled in a new location, and provided with the conditions for rebuilding their lives. Planned Relocation is undertaken to protect people from risks and impacts related to disasters and environmental change, including the effects of climate change. Such Planned Relocation could be carried out at the individual, household, and/or community levels.
- b. “Relocated Persons” means persons or groups of persons who take part in a Planned Relocation, or who have agreed to take part in a Planned Relocation, or both, as relevant.

- c. “other affected persons” encompasses Host Populations, Persons Who Choose Not to Take Part in Planned Relocation, and Persons Who Live in Close Proximity.
 - a. “natural disaster and environmental change” is defined as a “slow onset hazards that can result in real-time catastrophic hazards, including environmental change and the impacts of climate change”
 - b. Planned Relocation may be appropriate in at least three types of situations at the request of a community:
 - 1) In anticipation of disasters and environmental change; and/or
 - 2) In response to disasters and environmental change; and/or
 - 3) Where disaster risk reduction or climate change adaptation measures predict imminent threat.

7.2 “Climate Action for Alaska Leadership Team” refers to [Administrative Order 289](#) and all definitions therein.

8 RELATED LEGISLATION AND DOCUMENTS

[ACCAP Decision-Making for At-Risk Communities in a Changing Climate](#)

[Alaska Administrative Order 289](#)

[Article 01. Alaska Disaster Act Chapter 26.23 Disasters](#)

[Guidance on Protecting People from Disasters and Environmental Change Through Planned Relocation](#)

[Immediate Action Working Group Recommendations to the Governor’s Sub-Cabinet on Climate Change \(2009\)](#)

9 FEEDBACK

- a. Anyone may provide feedback regarding this policy to climatepolicy@alaska.gov¹⁶.

¹⁶ fictional email address

10 APPROVAL AND REVIEW DETAILS

Approval and Review	Details
Approval Authority	Governor (submits to Legislature)
Advisory Committee to Approval Authority	Alaska Climate Action Leadership Team
Administrator	DCRA – Sally Cox
Next Review Date	

Approval and Amendment History	Details
Original Approval Authority and Date	
Amendment Authority and Date	
Notes	

Appendix B

List of Acronyms

Name	Acronym
Administrative Order	AO
Alaska Arctic Policy Commission	AAPC
Alaska Center for Climate Assessment and Policy	ACCAP
Alaska Climate Change Impact Mitigation Program	ACCIMP
Alaska Climate Impact Assessment Commission	ACIAC
Alaska Department of Environmental Conservation	ADEC
Alaska Department of Fish and Game	ADFG
Alaska Department of Military and Veterans Affairs	DMVA
Alaska Department of Natural Resources	DNR
Alaska Department of Transportation and Public Facilities	ADOT&PF
Alaska Disaster Relief Fund	DRF
Alaska Institute for Justice	AIJ
Alaska Native Claims Settlement Act	ANCSA
Alaska Native Science Commission	ANSC
Alaska Native Tribal Health Consortium	ANTHC
Cold Climate Housing and Research Center	CCHRC
Denali Commission	DC
Department of Community and Regional Affairs	DCCED
Division of Community and Regional Affairs	DCRA
Fairbanks North Star Borough	FNSB
Governmental Accountability Office	GAO
Immediate Action Working Group	IAWG
Intergovernmental Panel on Climate Change	IPCC
National Environmental Policy Act	NEPA
National Parks Service	NPS
Non-governmental organization	NGO
Office of Tribal Relations	OTR
Permanent Fund Dividend	PFD
Risk Mapping, Assessment, and Planning	Risk Map
Scenarios Network for Alaska and Arctic Planning	SNAP
social ecological system	SES
Sub-Cabinet on Climate Change	SCCC
Tanana Chiefs Conference	TCC
U.S. Department of Agriculture	USDA
U.S. Department of Defense	DOD
U.S. Department of the Interior	DOI
U.S. Fish and Wildlife Service	USFWS
U.S. Housing and Urban Development	HUD
United States Army Corps of Engineers	USACE
University of Alaska Fairbanks	UAF