

Health and Culture Technical Working Group
Draft Adaptation Options for AAG Consideration – April 3, 2009

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HC-1 Community Climate Impact Assistance

This Option will provide tools and assistance to help communities adapt to the changing climate and its impacts on community and individual health.

Coordination at the state level should take place to ensure state agency programs and budgets are aligned. Evaluation of existing services and identification of gaps would enable the state to operate as efficiently and effectively as possible. Likewise, inter-agency coordination among multiple state and federal agencies, local governments, NGOs, and others is considered essential in supporting vulnerable communities faced with the complex issues related to climate change. This was successfully demonstrated by the Immediate Action Work Group (IAWG).

It should be noted that this policy option is very similar to the IAWG recommendations in their March 2009 report; with this option providing another perspective on the same issue. These options should not be treated separately, but should inform one another to create the most cost effective organization to address the problems identified both here and in the IAWG recommendation. Additionally, some services outlined in these options will be implemented by entities whose mission is geared toward delivery of outreach services.

1. Option Description

The Issue: The traditional way of life in much of Alaska is at risk. Alaska Native villagers, rural Alaskans, and other vulnerable communities are undergoing a series of challenges due to climate change, deteriorating economic circumstances, and other factors. Climate change brings a multitude of physical impacts to villages, including erosion, subsidence, floods, and storm surges. In some cases, these impacts require significant emergency response efforts, massive investments in infrastructure, or full-scale community relocation. Other climatic changes include shifts and dislocations of subsistence species, which can adversely affect traditional ways of life and subsistence diet, leading to negative social, emotional and physical health impacts in some areas. As climate change progresses, these impacts are likely to affect Alaska's major urban centers in significant ways as well. In short, Alaska's citizens and infrastructure face immediate as well as future threats from climate change. These threats are most easily recognized at the community level where vulnerability and adaptive capacity can vary widely.

Overview: An array of state, federal and regional entities are responsible for delivering services to Alaskan villages, rural communities, and urban centers, but specific policies and regulatory constraints produce conflicting directives that prevent the coordinated delivery of vital services that will enable endangered villages, traditional culture, and vulnerable communities to adapt in the face of climate change. Therefore, there is a need to establish a coordinating entity with the ability to navigate these multiple bureaucracies and to leverage their resources to support vulnerable communities in emergency response, relocation, subsistence concerns, and other priorities.

Objective: The objective of this policy is to create an integrated and coherent process by which state, federal, regional, and local entities can provide rapid, coordinated, and effective relief to communities facing (and experiencing) substantial cultural, health, economic, infrastructure, and subsistence impacts from climate change. Objectives of this

proposed coordinating body are to navigate the complexities of requirements and mandates of multiple bureaucracies to address disaster planning and emergency response, community relocation, infrastructure development, health and cultural impacts, subsistence, and other issues. It should be noted that this policy option is very similar to the IAWG recommendations in their March 2009 report; with this option providing another perspective on the same issue. These options should not be treated separately, but should inform one another to create the most cost effective organization to address the problems identified both here and in the IAWG recommendation. Additionally, some services outlined in these options will be implemented by entities whose mission is geared toward delivery of outreach services.

The Need: Marine and terrestrial ecosystems are changing substantially with complex feedbacks that alter habitat and the mix of fish, marine mammals, terrestrial mammals, and vegetation. Sea ice, the prime habitat of walrus and seals and the hunting grounds for many coastal villagers, is forming later and at differing rates in the winter and breaking up earlier in the spring. This combined with the overall dramatic rate of sea ice loss is impacting the people with loss of traditional knowledge and extended periods without access to traditional foods. Subsistence hunters in these areas must now travel increasing large distances to hunt marine mammals that are experiencing sharply decreasing populations (e.g., ring seal have decreased 30% in the last three years[[need citation]]). This hunting occurs in unsafe, frigid waters in boats for which gasoline costs more than \$9/gallon[[need citation]], a high price to pay in communities whose per capita income is one third that of urban Anchorage. Rural villagers also confront population shifts, declines, and loss of quality in other subsistence species, including fish, moose, caribou, wild berries, and other native plants.

Many aspects of the traditional and subsistence way of life are now more difficult, more dangerous, and more expensive. The cost of store bought foods, heating oil, and other daily living expenses interact with climate-related challenges to create circumstances that make survival in rural villages increasingly difficult. More than one in five individuals is below the poverty threshold, three times that of their urban counterparts. Stresses to traditional practices – including a way of life tied to being on the land and providing for one’s community – is combining with rising cost of rural living to raise the potential of serious social impacts. Other outcomes can be subtler. For example, Alex Whiting from Northwest Alaska notes that the youth and elderly depend on strong ice in fall to ice fish for saffron cod and smelt. Late freeze up and a concomitant shorter ice-fishing season lessens the opportunity for elders to pass on traditional knowledge and ethical values. Beyond the social and cultural impacts of climate change, many villages are now facing erosion, flooding, engulfment, and disappearance of their community infrastructure. Shismaref, a community of 150 households on the northern Bering Sea, faces relocation at a cost of \$93 - \$179 million dollars. A recent GAO report[[need citation]] found 213 predominantly Native villages, historically situated along rivers and coasts, at risk, with potential relocation costs of \$34 billion. Several existing communities have begun the relocation process and others are seriously evaluating the risk to their communities and may follow suit in the near future.

Stanley Tom of Newtok stated that one of the biggest obstacles they face in trying to relocate is the lack of a single agency or group in charge of planning and/or response. DOT can’t build an airstrip unless there is a post office; there can’t be a post office

without a school; and the school has to have 25 students. But the structures needed to house 25 students can't be built without the airstrip. These and numerous other catch 22's impede an integrated, flexible, and timely response. In addition, obtaining funding for relocation has been difficult and frustrating.

Congressional hearings underscore the frustration that no single agency has been designated to take the lead on erosion and climate change issues. The Alaska Climate Impact Commission established by the Alaska Legislature likewise acknowledged in its 2008 final report that there is "a greater need for interagency action among state and federal agencies, almost exclusively where threatened communities are struggling with relocation issues" (ACIC, 2008). A "key finding" from the Immediate Action Workgroup's March 2009 report – *Recommendations to the Governor's Subcabinet on Climate Change* – was "Replace the IAWG, which is an ad-hoc body, with a formal, standing committee or workgroup embedded in the State's administrative operations. This will ensure continued success of leveraging the State's resources through coordination and collaboration with other State and Federal agencies, and with regional and community organizations." The Community Climate Impact Assistance initiative recognizes the same problem as the IAWG and provides the following recommendations to move toward a constructive solution.

2. Option Design

Structure: We envision the need for a permanent, high-level state coordinating body within Alaska. We do not make recommendations as to the specific form and organization of such a coordinating body, as those decisions require a pragmatic political perspective to ensure that an effective coordinating body is created with the authority, expertise, and community trust necessary to tackle the difficult issues currently threatening Alaskan communities. The three primary functions this coordinating body will need to tackle are described below.

Function 1: Develop a Process for Prioritizing and Addressing Climate Challenged Communities.

The following outlines a deliberative process for the coordinating entity to systematically and fairly address the challenges of communities that are most at risk; many of the steps are derived from recommendations of the Immediate Action Workgroup, which build upon the work of many others, including IARC, UAF, and people within federal and state agencies.

- A.** Develop scenario analysis whereby potential future climate conditions are analyzed to quantify the community impacts that might result. Using these scenarios, identify communities at risk.
- B.** Conduct meetings with leaders in at-risk communities to develop an understanding of the risks and challenges from climate change. Focus on personal safety, infrastructure, health threats and population decline. Allow the process to be driven by community leaders and landholders, with significant support from agencies.
- C.** Prioritize at risk communities and the risks within each community. Develop clear and transparent criteria for prioritization, such as: timeframe of the impact, efficacy of the solution, magnitude of the impact, financial cost, etc. Under any conceivable set of criteria, weighted or unweighted, there will inevitably be losers. The clarity of the criteria and the transparency of the prioritization process

will be critical in justifying the inevitably difficult tradeoffs that must be made with limited resources.

- D.** Make recommendations for addressing specific risks within communities (so communities can work themselves to reduce their vulnerability) and make recommendations for which communities should receive state and federal assistance. Revisit these recommendations annually, and revise them subject to new information.
- E.** Create strategies and measures that are tailored to the needs of the community and develop alternatives for comparison, particularly when strengthening existing community infrastructure, undertaking relocation, or making changes to community development.
- F.** Work with communities to obtain funding for these adaptation measures. In many instances, where communities lack staff or expertise to apply for and administer funding from grants, programs, or agencies, assistance with these functions can empower communities with the financial and technical resources necessary to address their community concerns on their own.

For the communities that have been identified by the State as those most at risk (Newtok, Kivalina, Shismaref, Shaktoolik, Koyukuk, and Unalakleet), develop and implement:

1. Emergency response plans, including conducting training and drills
2. Community evacuation plans
3. Community wildfire management plans
4. Geologic mapping, hazard analysis and risk mitigation plans
5. Protection and/or relocation plans

Function 2: Help communities adapt to flooding and erosion either by relocation or protection in-place

- A.** Create a mandate for climate impact assistance (especially migration and relocation) within State and Federal entities.

Oftentimes, federal or state agencies have narrowly defined directives that prevent them from proactively addressing the impacts of climate change, especially migration and/or relocation efforts. For example, the Federal Emergency Management Agency (FEMA) has a mandate to replace what has been destroyed in situ, but does not have an obligation or directive (or resources) to rebuild infrastructure in a different location. Ensuring that agencies at all levels of government incorporate options for migration and relocation as a vital element of their mission would accomplish the responsibilities of this task. While additional funding for these efforts would make a significant difference to vulnerable communities, even simply establishing the consideration of a changing climate may have many beneficial effects by freeing up funding streams currently inaccessible for these purposes and for increasing the flexibility of state and federal agencies.

Lack of agency flexibility with existing mandates and funding exacerbates the on-the-ground difficulties for communities facing climate impacts, especially relocation. For example, Newtok is trying to transition to Mertarvik, a new community several miles south with an elevation of 400 ft. above the existing community. However, because no central fund (nor several pots of money that can be combined) currently exists for a relocation effort, the movement of the community will have to be accomplished in several incremental steps using available resources, cooperative approaches like the

Innovative Readiness Training and clearly justified funding requests. The ‘pioneer’ community in Mertarvik is being constructed with an evolutionary and modular approach designed by the Cold Climate Housing Research Center. A community plan has been developed showing the way forward leading to a barge landing, airport design and initial road and material source work. A central hub at the site will initially house construction workers. As the community transitions, this hub will be converted to administrative offices with additional “spokes” radiating from this hub to house a clinic, post office, perhaps school, maintenance facilities, and so forth. Housing will be added in clusters during this transition. Unfortunately a serious drawback to this multi-staged approach is that while agencies at various levels may have mandates to provide services and help to existing communities few, if any, incorporate mandates to aid communities in migration from disaster prone areas or full relocation efforts. The inclusion of “relocation” mandates is an integral requirement to accomplish such an approach.

B. Designate lead agencies at the federal and state levels and outline an overall strategy for the relocation process.

Currently there is no designated lead agency at the state or federal level to coordinate the resources (personnel, technical and funding) between agencies that have independent responsibility for community infrastructure, e.g., housing, education, health, energy, and similar needs. In addition, because different components (e.g., housing, schools, health and energy) are the responsibility of different agencies with different funding cycles, priorities, and fiscal resources, any single component of the process may be side tracked or delayed leading to significant costs overruns in other components, i.e., the communities’ energy infrastructure must be in place before schools can be opened. Thirdly, a lack of a coherent and secure upfront planning/funding effort requires an enormously complicated project management approach. In fact the Division of Community and Regional Affairs using Coastal Impact Assistance monies has two grant programs offered through Department of Commerce, Community and Economic Development for two planning initiatives. One of these a Waterfront Management and All Hazards Plan (\$150k) that will result in a strategic management planning document that will provide criteria and guidelines for relocation and community/waterfront development at Mertarvik. The potential benefits of this planning process may be considered a model for future relocation of Alaskan villages affected by flooding and coastal erosion.

A coherent relocation planning strategy should include:

- Alternatives to a preferred relocation site.
- Evaluation of the advantages and disadvantages of each alternative.
- Local input on community values related to alternatives.
- Evaluation of the environmental effects of each relocation plan.
- Estimate of costs for implementing each alternative.
- Life-cycle costs of not relocating the community. As part of this analysis, calculate the costs associated with various scenarios, such as relocating in ten years vs. relocating in 20 years.
- Incorporate environmental, social, and economic sustainability into community relocation plans and designs.
- An evaluation of cross agency budgeting and regulatory challenges.

- Selection of the plan that provides the best overall balance to meet local needs and is cost effective, sustainable, sound from an engineering standpoint, and environmentally acceptable.

C. Create a dedicated funding source for community climate impact assistance.

While the agencies involved in the coordinating entity will provide direct assistance to communities in applying and administering agency specific grant and other funding, the coordinating entity should ultimately work to identify or initiate a dedicated funding source for adaptation efforts. Because cost-effectiveness will be so important, the coordinating body should:

- a) explore opportunities for greater federal funding through state co-sponsorship of projects to attract federal match dollars;
- b) cost share with local governments and communities, including, but not limited to in-kind services such as community planning and engineering design through native corporations;
- c) encourage the identification and development of local rock and other material sources; and
- d) coordinate construction projects with others to reduce mobilization costs.

Nevertheless, the existing “patchwork” funding approach needs to be rationalized on an inter-agency, multiple entity, and multi-year basis. The current funding process is time-consuming and almost impossible to coordinate.

D. Create a liquid funding source to provide immediate assistance.

In addition to the dedicated funding source for relocation efforts, there needs to be a readily accessible account that provides immediate cash flow and liquidity for private households, small businesses, and other entities (e.g., local IRA). This account will pay for immediate expenses as relocation efforts unfold. DCRA stated in an October 2007 memorandum:

Communities such as Newtok are in need of “fast-tracked” funding to address critical infrastructure needs at the current village site, as well as emergency needs...at the new village site. There are few, if any, funding sources that provide for an expedited funding process. Communities experiencing erosion are not always eligible for imminent threat funding because erosion is not considered a single event disaster.

E. Provide assistance in compliance with the NEPA process.

Streamline the NEPA process as it applies to relocation and other climate adaptation projects by identifying a lead agency tasked with assisting community relocation efforts in compliance with the NEPA process by preparing programmatic NEPA documentation. Communities like Newtok lack the capacity, expertise, and resources to fully carry out the NEPA process, especially when they are dealing with myriad other demands, including planning for relocation, writing grants for various aspects of the relocation process, responding to inquires from numerous agencies requiring justification for their needs and at the same time trying to sustain themselves as individuals and families. Ideally, the U.S. Council on Environmental Quality would develop special procedures that tailor the NEPA process for relocation projects and to the scale of these communities. A permanent, high-level Alaskan government coordinating body would have the authority to bring this urgent need to CEQ’s attention.

Streamlining can include appropriation of boilerplate information from existing EIS documents or a template broadly fitting the general circumstances of these riverine

and coastal communities. The lead agency will require federally acknowledged leadership role in collaborating with and representing other federal agencies in the programmatic efforts in ultimately complying with the approved NEPA documentation.

Function 3: Develop a flexible and responsive process to regulate subsistence access under changing climatic conditions.

Climate change is clearly a factor that impacts subsistence activities. Habitat, resource availability, and species composition are all changing. Many subsistence activities are more difficult, more dangerous, and/or more expensive. Factors that may restrict or impede the ability of an individual to harvest or access subsistence resources will have profound implications for the cultural fabric of rural Alaskan communities.

Typically in rural Alaska, subsistence resources provide much more than half of the local diet and in a number of places their replacement cost (at the inflated costs of local stores) often reaches two thirds of a household's disposable income [[need citation]]. However, subsistence resources and the activities associated with the harvest of these resources provide more than food and nutrition. Participation in family and community subsistence activities, whether clamming, processing fish at a fish camp, or seal hunting with a father or brother, define and establish the sense of family and community. These activities teach how a resource can be identified, methods of harvest, efficient and non-wasteful processing of the resource, and preparation of the resource as a variety of food items. They also promote most basic ethical values in Native and rural culture – generosity, respect for the knowledge and guidance of elders, self-esteem for the successful harvest of a resource, and family and public appreciation in the distribution of the harvest. No other set of activities provides a similar moral foundation for continuity between generations.

One of the impacts of climate change is that animal species that migrate into the region have been arriving up to three weeks earlier and in some cases also leaving three weeks later. These changes extend and expand the breeding season of migratory species. When coupled with other environmental factors, such as lack of snow cover, these changes affect traditional and seasonal harvest patterns. Even under conditions of profound uncertainty, there are pressing social reasons to sustain traditional subsistence practices. To improve flexibility and dialogue, the coordinating entity should work to facilitate interactions between subsistence users and regulatory bodies (such as the Federal Subsistence Board, the Marine Mammal Commission, and the Alaska Department of Fish and Game), particularly where local observations may provide important data to managers on the health and quality of subsistence species. The aim of this policy is to support the ability of these bodies to adaptively and sustainably manage species from year to year in a changing climate/environment so that healthy populations are maintained in companionship with subsistence use.

In this regard and based on input from rural communities, the Community Climate Impact Assistance Program should seek to create a citizen-based reporting system to document, potentially on-line, changes observed in rivers/lakes/aquifers, fish, bird, and animal numbers, locations, and conditions as well as berry and other gathered food conditions. Likewise, in partnership with appropriate regional and local entities, the program may seek to have surveillance programs developed to identify changing range, densities, and health of subsistence food species, and to increase existing monitoring of

fish and animal health for emerging pathogens and introduction of new species to ensure food safety and sustainability.

Function 4: Develop principles to guide community climate impact assistance activities. These principles should include, but are not limited to:

A. Provide resources to ensure cross-cultural communication and understanding within traditional languages.

Agencies and other entities should work closely with Regional Corporations, the UAF Native Language Center, federal Tribal Liaisons, and others to increase the effectiveness of their communications. For example, for many members of Newtok, but especially those who are middle aged and older, Central Yupik is their first language. Technical terms that arise during discussions about relocation, or public input during the EIS process, might be rendered literally in Yupik but do not convey the conceptual intent. For example, one of the intents of the relocation process is to design new houses for the relocation community of Mertarvik that are highly energy efficient and lower the community's carbon footprint. These new designs, which require community collaboration in their development, are running into some resistance, as households prefer the more solid model of their existing housing structure rather than the "semi-subterranean" features suggested by the Alaska Cold Climate Research Center. Perhaps concepts such as "carbon footprint" will need considerable work in translation.

Communication from the native people emphasizes the need to translate their language and traditional ways of life into terms that the technical experts and policy makers of the agencies understand. For example, the social implications of traditional knowledge and the role of subsistence in traditional culture are not easily appreciated through the simple word 'subsistence.' Through this cross-cultural communication, strong budget justifications can be developed to insure the resources to meet the trust responsibility.

B. Reduce community burden during sensitive times.

The community climate impact assistance activities should seek ways to streamline communication, interaction, and burden on the community, perhaps using the Newtok experience to increase efficiency on various issues. At the least, meetings and communication can be scheduled to minimize the involvement community members during high subsistence harvest seasons.

C. Provide for local input and community involvement.

Providing mechanisms to ensure meaningful involvement of affected parties in all phases including planning, implementation, coordination, and communication.

Targets:

- Create high-level, permanent government entity to coordinate community climate impact assistance.
- Other targets can be realistically identified only by the coordinating entity itself, but may include relocating communities, creating funding streams, integrating climate into agency mandates, etc.

Timing:

2010:

- Create high-level, permanent government entity to coordinate community climate impact assistance.

Participants/Parties Involved: The partial list below represents parties that do or will play some role in adapting their culture to the impacts of climate change, including relocation efforts, emergency response, and traditional foods and traditional knowledge networks.

Protection, Migration or Relocation

Native Organizations:

- Native Village Traditional Councils
- ANCSA Regional and Village Native Corporations
- Other formal and informal village or Native networks

State of Alaska:

- Alaska Department of Commerce, Community, and Economic Development (DCCED), Division of Community & Regional Affairs (DCRA) – *group coordinator*
- Alaska Department of Environmental Conservation (DEC)/Village Safe Water Program (VSW)
- Alaska Department of Transportation and Public Facilities (DOT/PF)
- Alaska Department of Military and Veterans Affairs (DMV)/Division of Homeland Security and
- Emergency Management (DHS&EM)
- Alaska Department of Natural resources (DNR), Division of Coastal and Ocean Resources (DCOM)
- Alaska Department of Education and Early Development (DEED)
- Alaska Department of Health and Social Services (DHSS)
- Alaska Industrial Development and Export Authority (AIDEA)/Alaska Energy Authority (AEA)
- Alaska State Emergency Response Commission
- Alaska Municipal League
- Alaska Governor’s Office

Federal:

- U.S. Army Corps of Engineers (USACE), Alaska District
- U.S. Department of Commerce, Economic Development Administration (EDA)
- U.S. Department of Agriculture, Rural Development (USDA-RD)
- U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS)
- U.S. Department of Housing and Urban Development (HUD)
- U.S. Department of the Interior, Bureau of Indian Affairs (BIA) Indian Reservations Road Program
- U.S. Department of Transportation, Federal Aviation Administration (FAA).
- U.S. Environmental Protection Agency (EPA)
- Denali Commission
- Offices of Senators Lisa Murkowski and Mark Begich and Congressman Don Young

Regional Organizations:

- Association of Village Council Presidents Regional Housing Authority (AVCP)

- Coastal Villages Region Fund (CVRF) & Norton Sound Economic Development Corporation, Bristol Bay Economic Development Corporation, & Yukon Delta Fisheries Development Association
- Lower Kuskokwim School District (LKSD)
- Rural Alaska Community Action Program (RurAL CAP)
- Yukon-Kuskokwim Health Corporation (YKHC)
- Alaska Native Tribal Health Consortium

Emergency response

- Department of Military and Veterans Affairs, Division of Emergency Services
- DHS-FEMA
- DHS- U.S. Coast Guard Search and Rescue
- Local Emergency Planning Committees

Traditional foods and traditional knowledge networks

- U.S. Fish and Wildlife Federal Subsistence Management Program
- Federal Subsistence Board and Regional Advisory Councils
- Marine Mammal Commission
- International Whaling Commission?
- ADF&G Boards of Fish, Game, and the Division of Subsistence
- Alaska Native Science Commission
- Alaska Native Knowledge Network
- Alaska Native Tribal Health Consortium
- Eskimo Whaling Commission
- Aleut Marine Mammal Commission
- Alaska Native Harbor Seal Commission
- Yukon River Drainage Fisheries Association

Evaluation: Under Development

Research and Data Needs:

- Declines, increases or migratory shifts of major subsistence species and vegetation can significantly affect a wide range of cultural, community, and economic conditions. The effects of events must be assessed after an assessment is made of existing climate related socio-economic studies. Assess socio-economic impacts of existing and emergent climate change events on culture, community wellness, subsistence, and overall economics.
- Standardized ADF&G Harvest Surveys (which include considerable social, demographic, and economic information in addition to household harvest per species) need to be accomplished in each of the areas designated with emergency status.
- Standardized social network research needs to be accomplished in select communities to understand potential impacts of relocation on social, sharing, economic, and subsistence networks.
- Regional economic models to quantify climate change impacts on communities and provide input to the NEPA process.
- Regional assessments of existing social service infrastructure, staffing, budgets, and delivery need to be accomplished at regional levels as baseline to plan for increased demand.

- Social impact assessments need to be conducted at regional and community level to provide information for the NEPA process.
- Detailed interviews and oral histories need to be conducted to provide narrative information needed to assess the impacts of climate change and the potential impacts of different forms of relocation.

3. Implementation Mechanisms

Approval by the AAG and analysis by the Subcabinet with respect to funding, possible legislation, and communication and coordination with federal entities.

4. Related Policies/Programs and Resources

Related Policies and Programs: *Under Development*

Available Resources: *Under Development*

5. Feasibility

Feasibility: *Under Development*

Constraints: *Under Development*

6. Adaptation Benefits and Costs

The coordinated delivery of services to rural communities supports literally every one of the TWG objectives. Currently an array of state, federal, and regional entities are responsible for delivering services to rural Alaskan villages, but specific program policies and regulatory constraints cause conflicting directives, resulting in bottlenecks in the ability to achieve a coordinated delivery of vital services and outcomes that will enable villages and traditional culture to adapt to climate change. The advent of a state coordination office will help mitigate a number of health and cultural threats caused by climate change that are now being experienced by rural communities. For example, an integrated and coherent relocation process will:

- Decrease health risks from poor sanitation.
- Preserve community integrity and provide a basis for ongoing subsistence practices and traditional ways of knowing.
- By preserving existing cultural networks, help communities adapt to substantial changes in wildlife and habitat.
- Lessen potentially adverse impacts on youth, by preserving opportunities to participate in traditional subsistence pursuits.
- Decrease the negative social, psychological and physical impacts associated with community dissolution.

Success in this policy option will be easily measured when a fully functioning Office of Climate Change Coordination is up and running. Numerous benefits will accrue to each agency at the federal and state levels as they reduce their transaction costs (e.g., agency meetings) in attempting to deliver services and relief to impacted communities. A rationalized funding process will reduce cost overruns, minimize waste and duplication, and provide the community with a blue print of reasonable expectations. Processes of collaborative learning and adaptive management will allow for easy quantification of benefits over a period of decades.

Costs:

The costs of this proposal may be cut in many ways. Including community relocation costs will make the figure run into a millions of dollars. However, getting started with an

interagency coordinating entity could use existing personnel and existing budgets to make incremental changes with little to no additional funding. A more realistic scenario factors in some new personnel costs of several regional coordinators, dedicated support staff, travel, office space, equipment, and so forth. Savings may accrue depending upon the specific administrative and organizational form the coordinating entity takes (e.g., housed within an existent department, e.g., Division of Community & Regional Affairs, in a newly established division, or a new responsibility added to several high level agency officials).

Taking a broader view, the successful implementation of this office is expected to result in significant avoided costs in the millions of dollars over the next 40-50 years, by facilitating cost-efficient community relocation, as opposed to resorting to repeated short-term and temporary measures to shore up communities against erosion, and by coordinating annual response efforts to floods and other climate-related impacts [[need citation Peter Larsen]].

Ancillary Benefits and Costs:

Considerable ancillary benefits accrue across all functions of government as improved communication and coordination reduce transaction costs, improve reaction time, and streamline government response to issues and problems that may not be related to climate change. In addition, the same administrative structure put forth in this option can be utilized across a broad range of government mitigation initiatives including coordinating the many options for renewable energy, options that contain numerous costs and benefits, and options that require considerable coordination in the generation, storage, and transmission of this power.

7. TWG Approval and Deliberations

The concept of climate change impact assistance grew out of discussions among TWG members that emphasized the clear need for a centralized agency to support rural communities in navigating the bureaucratic requirements of multiple state and federal agencies in addressing community-wide crises linked to climate change. The need was borne out of recent and ongoing experiences of several villages that are currently in peril. There was nearly unanimous support among TWG members for a central agency to serve as an advocate for communities and to spearhead infrastructure reinforcement, emergency response, and relocation efforts.

Beyond these immediate challenges, the TWG saw an opportunity for climate change impact assistance to embrace a broader range of objectives to support rural communities, including assessing the adaptive capacity of communities; increasing the level of communication between communities and state and federal agencies by holding community forums with elders; utilizing traditional knowledge to provide feedback to regulatory agencies and scientists (via a citizen-based reporting system) on changes to subsistence resources and on-the-ground climate observations; and increasing the communication of information in native languages and in that are specific and useful to the needs of rural communities. These particular issues are viewed as central to the TWG's mission of developing adaptation measures that address the broad range impacts of climate change on Alaskan residents and indigenous people.