

CHAPTER 1. INTRODUCTION AND OVERVIEW

“Scientific evidence shows many areas of Alaska are experiencing a warming trend. Many experts predict that Alaska, along with our northern latitude neighbors, will continue to warm at a faster pace than any other state, and the warming will continue for decades. Climate change is not just an environmental issue. It is also a social, cultural, and economic issue important to all Alaskans. As a result of this warming, coastal erosion, thawing permafrost, retreating sea ice, record forest fires, and other changes are affecting, and will continue to affect, the lifestyles and livelihoods of Alaskans.” (Administrative Order 238).

To address the impacts of climate change on Alaska, on September 14, 2007, Governor Palin signed Administrative Order 238 (AO 238 (2007)), which established and charged the Alaska Climate Change Sub-Cabinet to advise the office of the Governor on the preparation and implementation of a comprehensive Alaska Climate Change Strategy. To accomplish its goals, the Sub-Cabinet formed a Mitigation Advisory Group (MAG) to recommend measures that could be undertaken in Alaska to reduce emissions of greenhouse gases, and an Adaptation Advisory Group (AAG) to evaluate and address impacts of climate change. The Sub-Cabinet also created two work groups: (1) an Immediate Action Work Group to address the early assessment and development of an action plan to address impacts on coastal and other vulnerable communities in Alaska and (2) a Research Needs Work Group to identify important areas for research, assessment, and mapping, in order to support the goals of the advisory groups, as well as other research that might be needed.¹ In addition, Technical Work Groups (TWGs) were developed to support the AAG’s development of recommended policy options and actions in four impact categories, or sectors.

This report details the process, analyses, and recommendations of the Adaptation Advisory Group. Following this introduction, which provides background on the process and structure of the Sub-Cabinet, the report is divided as follows:

- Chapter 2 provides an overview of climate change projections and impacts for Alaska
- Chapter 3 presents a brief overview of Alaska’s strategy to adapt to climate change
- Chapters 4 through 8 present the AAG’s recommendations clustered into the impact categories represented by the four TWGs (Public Infrastructure, Natural Systems, Other Economic Activities, Health and Culture) and a fifth set of recommendations, representing Common Themes that cross-cut the sectors
- Appendices A through D contain references, acronyms, the Administrative Order forming the Sub-Cabinet, and lists of members of the AAG and TWGs
- Appendices E through I contain additional, more detailed information on the recommended options in each impact category, as well as the recommendations representing Common Themes across the sectors.

¹Additional Information on the activities of these advisory and work groups can be found at <http://www.climatechange.alaska.gov/rn.htm>

The remainder of this introduction provides information on the process and goals of Alaska's Climate Strategy, and indicates how the process of developing the adaptation recommendations fits into Alaska's overall climate strategy.

Early Actions: Alaska Climate Impact Assessment Commission

The Alaska State Legislature established the Alaska Climate Impact Assessment Commission (ACIAC) by Legislative Resolve 49 in 2006 (HCR 30). The Commission was charged with assessing the effects of climate change that could impact the citizens, resources, economy, and assets of the State of Alaska. The Commission was composed of two state House members, two state Senators, and seven public members appointed to specifically-defined seats. After holding a series of public hearings throughout the state, the Commission concluded that climate change presents "unavoidable challenges to the citizens of Alaska." A set of recommendations is outlined in their March 17, 2008 report to the Alaska State Legislature (ACIAC 2008).

The Commission found that climate change presents unavoidable challenges to the citizens of Alaska. They noted that the most striking impacts are those associated with village relocation in Western Alaska, with the convergence of immediate threats, substantial human need, and prohibitive costs presenting challenges to decision-makers at all levels of government. The Commission also identified potential positive eventualities, such as commercial shipping expansion in the high Arctic and a longer and warmer summer tourism season. They indicated that climate change will generate new responsibilities for the State of Alaska and public entities, and for private interests and individuals. The Commission concluded that continued identification of potential challenges, threats, and planned responses was needed within the Administration.

Administrative Order 238 and Alaska Climate Change Sub-Cabinet

The Climate Change Sub-Cabinet was established by Administrative Order 238 in 2007 (AO 238 2007). The Sub-Cabinet was tasked with conducting an early assessment and action plan to address the most urgent needs of coastal and other vulnerable communities in Alaska, and to develop a proposed Climate Change Strategy (The Strategy). The Strategy focuses on Mitigation options and recommendations to reduce greenhouse gas (GHG) emissions within the state, and Adaptation recommendations to help Alaskans prepare for a warming climate. Figure 1-1 displays the organization of the Sub-Cabinet and supporting Advisory and Work Groups.

Alaska Climate Change Sub-Cabinet

Sub-Cabinet members were appointed by the Governor and comprised Commissioners of the Department of Environmental Conservation (DEC), the Department of Natural Resources (DNR), the Department of Commerce, Community, and Economic Development (DCCED), the Alaska Department of Fish and Game (ADF&G), and the Department of Transportation and Public Facilities (DOT&PF). Representatives from the Governor's Office and the University of Alaska serve as official liaisons. The Sub-Cabinet has held a number of organizational and informational meetings beginning in early 2007.

Sub-Cabinet Work Groups

The Sub-Cabinet established Advisory and Technical Work Groups to bring a wide spectrum of expertise to bear in the primary focus areas. These consisted of the following groups:

- **Immediate Action Work Group (IAWG)**—This group represented a Federal and State-led interagency effort to address near term needs of the most vulnerable communities. Risks, primarily from flooding and erosion, which are heightened due to warming conditions, in many cases necessitate relocation, migration, or protection-in-place.
- **Adaptation Advisory Group (AAG)**—Selected by the Sub-Cabinet, this group consisted of individuals with a wide spectrum of expertise from multiple state and federal agencies, local governments, the Alaska Native community, the University of Alaska, industry, and non-governmental organizations (NGOs). They were tasked with recommending adaptation options in the following areas:
 - Public Infrastructure (**PI**)
 - Health and Culture (**H&C**)
 - Natural Systems (**NS**)
 - Other Economic Activities (**EA**)
- **Mitigation Advisory Group (MAG)**—Selected by the Sub-Cabinet, this group consisted of individuals with a wide spectrum of expertise from multiple state and federal agencies, local governments, Alaska Native community, the University of Alaska, industry, and NGOs. They were tasked with developing or recommending mitigation options in the following areas
 - Oil and Gas (**O&G**)
 - Energy Supply and Demand (**ESD**)
 - Transportation and Land Use (**TLU**)
 - Forestry, Agriculture and Waste (**FAW**)
 - Cross-Cutting (**CC**)
- **Research Needs Work Group (RNWG)**—Also selected by the Sub-Cabinet, the Research Needs Work Group was tasked with identifying research needs associated with climate change. The group looked at gaps in monitoring and observation, research, availability and accessibility of data and information, technology development, engineering standards, support tools, and other derivative products.

The Process of Developing Recommendations from the MAG and AAG

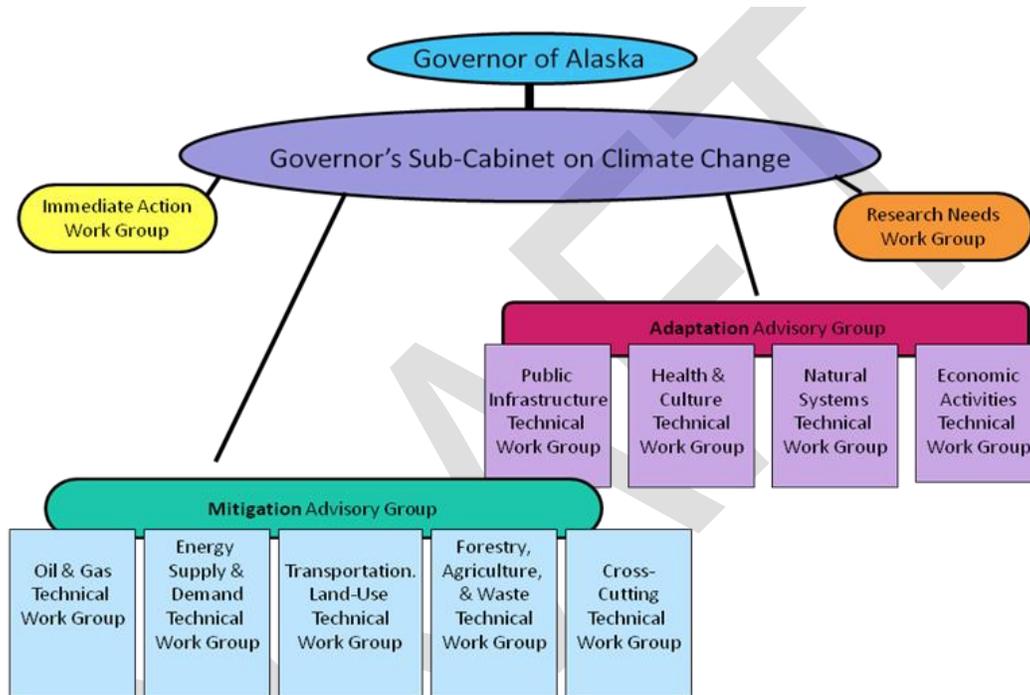
Developing recommended options and the reports to the Sub-Cabinet has been an open, consensus-building process. This process has combined the expertise, knowledge, and concerns of a broad spectrum of Alaskans in a series of public meetings and publicly available interim products. A series of meetings of the TWGs supporting both mitigation and adaptation commenced May 2008. The advisory groups each met in seven formal meetings (supplemented as needed by teleconferences) to direct, review, and approve the work of the TWGs and to provide strategic and technical guidance in the selection and development of the policy recommendations and options. TWG members and facilitators attended the advisory group meetings and presented material, as needed, on the progress of the TWGs and the recommendations being developed.

The process sought, but did not require, achieving consensus to bring a recommendation forward. Where unanimous support could not be achieved, barriers to full support were identified. Where those barriers

could not be eliminated through further discussion and modification, dissenting opinions and the context of the dissent are noted in the appendices to the Final Report from each Advisory Group. For each of the advisory groups, nearly all of the recommended options received unanimous support.

The AAG and MAG held final meetings in person (and by teleconference) late in the summer of 2009, to finalize reports for submittal to the Sub-Cabinet from each of the respective advisory groups.

Figure 1-1. Organization of the Advisory and Work Groups Supporting the Climate Sub-Cabinet



Reports to the Climate Change Sub-Cabinet and Next Steps

The IAWG released its first report on April 17, 2008 (IAWG 2008) and a second, more in-depth, analysis in March 2009 (IAWG 2009). This interagency group has proven effective in prioritizing needs and in harnessing and leveraging a variety of resources. The Sub-Cabinet is in the process of taking steps to draft a Memorandum of Understanding to enable this effort to move forward and build on its early success.

The Mitigation and Adaptation Reports will be finalized and submitted to the Sub-Cabinet in 2009. The Research Needs Draft Report is also being submitted for the Sub-Cabinet's review. Its recommendations track the Technical Work Groups and their identified needs.

Following the submission of these final reports, the Sub-Cabinet will solicit additional input as needed, review the recommendations, and subsequently distill the recommendations of all the Advisory and Work Groups into a Climate Change Strategy for the Governor's consideration. In developing an integrated Strategy, the Sub-Cabinet will consider alignment with other state plans and initiatives, existing programs, federal legislation, and other complementary efforts.