

## Executive Summary – Arctic Climate Change

**Purpose:** To understand existing climate-related changes in the arctic, what the most pressing needs are, current efforts and gaps that need to be filled, and what kinds of tools and data we might need for supporting resilient communities in the future.

**Perception:** Climate change and its impacts are unpredictable, needs of communities are greater than available resources, and thus little can be done that will help solve these issues.

**Promise:** Supporting greater coordination and alignment of resources from federal, state and tribal entities will help us mitigate, respond to, and prepare for climate-related impacts to the economy, resources, and communities.

**Challenges:** Again vast landscape and limited infrastructure are primary challenges to gathering needed baseline data and continued monitoring of environmental and social changes in the circumpolar arctic. The polar regions are hot spots for major changes in oceans and terrestrial areas and it can be difficult to support actions at other latitudes to help mitigate some of the key causes of these changes.

**Current Activity:** The State of Alaska's Climate Change Sub-Cabinet made recommendations in 2009 (no longer an active body) and while recommendations have been picked up by state agencies, but there is no coordinated state-level effort to track this work. University of Alaska has invested in both basic science, as well as translation of data for community access and to help inform policy makers. Federal agencies produce the National Climate Assessment; the President has a Climate Preparedness and Resilience task force working on recommendations. The Arctic Council has recent work on resilience and Canada has emphasized a study on adaptation actions in the arctic. See list of recent reports and references at end.

### Key Takeaways:

- While there are a number of ongoing research and strategic planning efforts at the local, state, national, and international levels, Alaska state agencies lack a coordinated mechanism to bring together these resources and evaluate their own efforts.
- There is a need to bring Alaska into the national climate change conversation; Mayor Joule is working on this through his appointment to the President's Climate Preparedness and Resilience Task Force.
- The Arctic region is particularly vulnerable to drastic climate-related changes such as: decreased summer sea-ice extent, increases in permafrost melt, coastal erosion, ocean acidification, and changing vegetation and wildlife patterns that will impact food security, national security and economic security.
- Climate variability is the change in climate day to day, or season-to-season best described as a distribution of data points. Climate change is the mean over a long period of time; current data shows that there is a consistent downward trend indicating a new baseline.
- There is a need to better predict storms and create tools to make this information available to communities; some communities are more at risk than others and there needs to be a way to identify most vulnerable communities.

### Recommendations for Consideration:

1. Increase support to state of Alaska agencies so that they can adequately evaluate their programs and goals against the recommendations made by the Alaska Climate Change Sub-Cabinet (2009).
2. Continue current and increase funding for long-term monitoring data for key cryosphere changes (noted above) that are important for establishing baseline measures and as inputs to climate models.

3. The State of Alaska and Federal Government should work together to develop a data depository for climate change data in the US.
4. Continue to fund science and research studies on weather prediction and work with communities to develop a vulnerability index or other measures to assist in decisions about moving communities.
5. Support ongoing work to map the history of storm surges in the Arctic region.

**Next steps:** There seems to be quite a bit of existing information and resources in the state of Alaska, as well as through Federal agencies regarding climate change. A survey of current efforts and status on recommendations would help us understand what next steps might be needed. At this point, work on coordination and bringing together existing sources could identify gaps and allow for very limited resources to be directed in a focused way. Further consideration could be given to ways that the State of Alaska could support the mitigation of climate change, e.g. via support of US actions to decrease key climate change drivers nationally and internationally. A good reference for Commissioners is the National Climate Assessment Alaska Chapter, see link below.

Climate change can also be viewed through 2 other lenses, not discussed during this work session. The first is security and how climate change will impact national and state security (see recent report GAO-14-446). The second is economics, which is increasingly part of the national dialogue, and this would include talking about mitigation of emissions in the Arctic where development is taking place.

**Reports Referenced in Discussion:**

National Climate Assessment 2014

Overview – web graphics

<http://nca2014.globalchange.gov/highlights/regions/alaska>

Alaska Chapter 22

<http://nca2014.globalchange.gov/downloads>

GAO Report "Climate Change Adaptation: DOD Can Improve Infrastructure Planning and Processes to Better Account for Potential Impacts" (GAO-14-446) [www.gao.gov/products/GAO-14-446](http://www.gao.gov/products/GAO-14-446)

Arctic in the Anthropocene: Emerging Research Questions (2014)

[www.nap.edu/catalog.php?record\\_id=18726](http://www.nap.edu/catalog.php?record_id=18726)

IPCC Climate Change 2014: Impacts, Adaptation, and Vulnerability (March 31, 2014)

Polar Regions Chapter 28

[http://ipcc-wg2.gov/AR5/images/uploads/WGIAR5-Chap28\\_FGDall.pdf](http://ipcc-wg2.gov/AR5/images/uploads/WGIAR5-Chap28_FGDall.pdf)

Alaska:

Climate Change Subcabinet Reports – specifically the Immediate Action Work Group (2009)

All reports can be downloaded here: [www.climatechange.alaska.gov/doc-links.htm](http://www.climatechange.alaska.gov/doc-links.htm)

Shishmaref Relocation Strategic Plan

[http://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Arctic-Resources/Relocation-Plans/shishmaref%20relocation\\_plan\\_final\\_200211.doc](http://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Arctic-Resources/Relocation-Plans/shishmaref%20relocation_plan_final_200211.doc)

State of Alaska Coastal Impact Assistance Program

[http://dnr.alaska.gov/commis/CIAP/ciap\\_Fall.htm](http://dnr.alaska.gov/commis/CIAP/ciap_Fall.htm)

US Army Corps of Engineers – Alaska District

[www.climatechange.alaska.gov/docs/usace-27jul07.pdf](http://www.climatechange.alaska.gov/docs/usace-27jul07.pdf)