Addressing Climate Change in Alaska -
Overview and Status of State’s Efforts
- With Emphasis on Adaptation Issues -

United States Arctic Research Commission
Kotzebue, Alaska
September 14, 2009

Jackie Poston
Alaska Department of Environmental Conservation
Governor’s Sub-Cabinet on Climate Change
Stakeholder Process
Governor’s Climate Change Sub-Cabinet

- Established by Governor through Administrative Order 238 on September 14, 2007
  - IMMEDIATE ACTION WORK GROUP - Created to address threats to most vulnerable communities
  - MITIGATION WORK GROUP - Tasked with identifying options to reduce GHG emissions
  - ADAPTATION WORK GROUP - Tasked with identifying options to help adapt to and plan for a warming environment
  - RESEARCH NEEDS WORK GROUP
ADAPTATION
Hundreds of remote communities are accessible only by air or water, have few jobs, and depend heavily on subsistence hunting and fishing. (ISER 2008)
31 Villages Imminently Threatened [GAO 2009]
Alaska Communities in Peril

RECOMMENDATIONS REPORT TO THE GOVERNOR'S SUBCABINET ON CHANGE CLIMATE

FINAL REPORT FROM THE IMMEDIATE ACTION WORKGROUP APRIL 17, 2008

IMMEDIATE ACTION WORKGROUP RECOMMENDATIONS TO THE GOVERNOR'S SUBCABINET ON CLIMATE CHANGE MARCH 2009

Requesters
United States Government Accountability Office

GAO
June 2009
ALASKA NATIVE VILLAGES
Limited Progress Has Been Made on Relocating Villages Threatened by Flooding and Erosion
GAO-09-551

Alaska Baseline Erosion Assessments

U.S. Army Corps of Engineers 2009

GAO Reports (‘03 ‘09)
IAWG Reports (‘08 & ‘09)
Public Infrastructure TWG (‘09)
USACE Assessment (‘09)
Coastal Communities in Peril from Flooding & Erosion

- Newtok -
Newtok Planning Group

Native Village of Newtok

• Newtok Traditional Council (NTC)
• Newtok Native Corporation (NNC)

Regional Organizations

• Association of Village Council Presidents (AVCP),
• Housing Improvement Program (HIP)
• Coastal Villages Region Fund (CVRF)
• Lower Kuskokwim School District (LKSD)
• Rural Alaska Community Action Program (RurAL CAP)
• Yukon-Kuskokwim Health Corporation

State

• Alaska Department of Commerce, Community, and Economic Development (DCCED), Div of Community & Regional Affairs
• Alaska Department of Environmental Conservation/Village Safe Water Program (VSW)
• Alaska Department of Transportation and Public Facilities (DOT/PF)
• Alaska Department of Military and Veterans Affairs/Division of Homeland Security and Emergency Management (DHS&EM)
• 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 Governor's Office
• Cold Climate Housing Research Center

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
• U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS)
• U.S. Department of Defense (DOD)
• U.S. Fish & Wildlife Service (FWS)
• U.S. Department of Housing and Urban Development (HUD)
• U.S. Department of the Interior, Bureau of Indian Affairs (BIA)
• U.S. Department of Transportation, Federal Aviation Administration (FAA)
• U.S. Environmental Protection Agency (EPA)
• Denali Commission
• Senator Lisa Murkowski's Office

Regional Organizations

• Association of Village Council Presidents (AVCP),
• Housing Improvement Program (HIP)
• Coastal Villages Region Fund (CVRF)
• Lower Kuskokwim School District (LKSD)
• Rural Alaska Community Action Program (RurAL CAP)
• Yukon-Kuskokwim Health Corporation
Newtok Planning & Construction of Adaptation Measures
Coastal Communities in Peril from Flooding & Erosion - Kivalina -
Coastal Communities in Peril from Flooding & Erosion - Shismaref -

Photos by Tony A. Weyiouanna Sr-Kawerak, Inc.
Decision-makers at all levels need information to address needs and answer questions

SOME EXAMPLES:

**Short-Term (Emergency Preparedness):**
- Heightened need for more accurate & timely inundation hazard warnings

**Long-Term (Planning for the Future):**
- How long will community survive in current location? (SLC, permafrost degradation, isostatic rebound, storm characteristics, energy, jobs/economic outlook, etc.)
- What factors should be considered in developing Community Plans for:
  - **Relocation or Migration** – Is a move imperative?
  - **Protection in-place** – Can community increase resiliency and longevity at current location in-lieu of, or in conjunction with, relocation or migration?
  - **If relocating or migrating, is new location suitable?**
    - Are geologic conditions favorable?
    - Are subsistence resources sufficient?
    - Is there an abundant supply of drinking water?
    - Is there adequate access to transportation, medical facilities, & other needs?
Partial List of Recommended Needs & Approach
Heavily Reliant on Data & Observations

1. DATA & OBSERVATION NEEDS (RETRIEVAL, COLLECTION, INTEGRATION, INTERPRETATION, MANAGEMENT)
   a. Climate & geophysical information – Temp, Precip, Wind, Ice, Bathymetry...
   b. Community-specific information – Demographics, Infrastructure, Cultural, Economic, Energy, etc.

2. CRITICAL PRODUCTS AND APPLICATIONS
   a. Down-scaled modeling
   b. Update of Environmental Atlas for Alaska
   c. Revision of Construction & Design Standards for anticipated conditions

3. DEVELOPMENT, ADOPTION OF POLICIES, & IMPLEMENTATION OF ADAPTATION MEASURES
   a. Interagency coordination imperative (IAWG model) - Collaborate, Streamline, Plan & Leverage Knowledge and Resources
   b. Effectively involve community & local knowledge in decisions & process
Fisheries are Important to Alaska...

Domestic groundfish industry off Alaska (in Bering Sea & Aleutian Islands) is largest fishery by volume in U.S.

(Hiatt, NPFMC Economic SAFE 2008)

- 49% of all domestic landings in U.S. in 2007 by weight
- 1.9 million metric tons retained catch

The seafood industry supports ~38,000 jobs in AK

(ISER 2008)

Ocean Research is Important to Alaskan Fisheries
Timely & High Quality Research - Critical to Address New & Increasing Threats to Ocean Resources & National Security while Supporting Development Opportunities

Temperature, Salinity, Circulation, & other physical & chemical changes such as **Ocean Acidification**

Expansion of Exploration & Development of Mineral Resources

Transboundary Contaminants

Maritime Incidents, e.g. spills

Fisheries Impacts

Invasive Species

German ships poised to complete Arctic shortcut
(AP Photo released 9/11/09. Beluga Shipping)
Preparing to Meet New Challenges

- Lack of deep water ports and “harbors of refuge”
- Need for increased emergency response capability
- Federal &/or state oil-spill contingency needs for foreign vessels
- Lack of monitoring of ships
- Relatively less knowledge and capacity to respond to spills in broken ice conditions
- Invasive Species & other natural resource concerns
Defining Anticipated Needs and New Roles in the Arctic

NATIONAL SECURITY PRESIDENTIAL DIRECTIVE/NSPD -- 66
HOMELAND SECURITY PRESIDENTIAL DIRECTIVE/HSPD – 25

SUBJECT: Arctic Region Policy

I. PURPOSE
A. This directive establishes the policy of the United States with respect to the Arctic region and directs related implementation actions. This directive supersedes Presidential Decision Directive/NSC-26 (PDD-26; issued 1994) with respect to Arctic policy but not Antarctic policy; PDD-26 remains in effect for Antarctic policy only.
B. This directive shall be implemented in a manner consistent with the Constitution and laws of the United States, with the obligations of the United States under the treaties and other international agreements to which the United States is a party, and with customary international law as recognized by the United States, including with respect to the law of the sea.
Alaska and US 2005 Greenhouse Gas Emissions by Sector

**Alaska**
- Transport: 35%
- Industrial Fuel Use/Fossil Fuel Industry: 49%
- Industrial Process: 0.7%
- Waste: 1%
- Agriculture: 0.1%
- Electricity: 6%
- Res/Com Fuel Use: 8%

**US**
- Transport: 27%
- Industrial Fuel Use/Fossil Fuel Industry: 17%
- Industrial Process: 4%
- Agriculture and Forest Fires: 7%
- Waste: 3%
- Electricity: 34%
- Res/Com Fuel Use: 8%
The Role of Research in the Arctic

**INFORM:**
FOR IMMEDIATE ACTION

- Inundation Hazard Warnings
- Navigational Needs
- Security – Surveillance, Enforcement

**PROJECT:**
TO PLAN FOR FUTURE SCENARIOS

- Human Systems, e.g. Communities, Marine Transport, Infrastructure, Tourism
- Health
- Ecosystems
- Resource Mgmt & Development
- Mitigation/GHG Reduction Technologies

**ASSESS:**
TO UNDERSTAND & REFINE ACTIONS
<table>
<thead>
<tr>
<th>Entities operating in the Arctic with various missions including:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Planning</td>
</tr>
<tr>
<td>• Research</td>
</tr>
<tr>
<td>• Enforcement</td>
</tr>
<tr>
<td>• Management &amp;/or Protection of resources &amp; communities</td>
</tr>
<tr>
<td>• National Security</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In no particular order:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Arctic Council</td>
</tr>
<tr>
<td>• State of AK Agencies</td>
</tr>
<tr>
<td>• Executive Climate Change Roundtable</td>
</tr>
<tr>
<td>• AK Walrus Commission</td>
</tr>
<tr>
<td>• AK SeaLife Center</td>
</tr>
<tr>
<td>• NGOs</td>
</tr>
<tr>
<td>• DOD</td>
</tr>
<tr>
<td>• Industry</td>
</tr>
<tr>
<td>• ArcticNet</td>
</tr>
<tr>
<td>• Other</td>
</tr>
</tbody>
</table>
Overarching Needs in the Arctic

How?  Who?  What?

- NEED FOR A COORDINATING BODY FOR:
  - Identification & Prioritization of Data & Obs Needs
  - Comprehensive Research Planning & Coordination
  - Encourage Uniformity & Interoperability in Data Collection, Cataloging, & Management, where applicable
  - Leveraging Resources

- SUPPORT FOR EFFECTIVE STATE & LOCAL GOV’T PARTICIPATION

- PROCESS INCLUSIVE AND RESPECTFUL OF AK NATIVES

- INVOLVEMENT OF OTHER STAKEHOLDERS: Industry, Academia, NGOs, etc.

- SPECIFIC SECTOR NEEDS (TEMP, PRECIP, WIND, WILDLIFE POPS, BATHYMETRY, etc.)

- DERIVATIVE PRODUCTS (ENV ATLAS, PERMAFROST MAPS, PROJECTED FIRE REGIMES, ETC.)

- COMMUNICATION & APPLICATION OF PRODUCTS TO END-USERS
Ongoing State-Federal Collaborations in Alaska
Managing Wildland Fire

Partners & Information sources:
• University
• AK Department of Natural Resources
• NOAA
• IPCC
• Google Earth
• Others

Simulated Annual Area Burned

ECHAM5

1st and 3rd Largest Annual Area Burned
(2004 and 2005)
Other Collaborative Efforts

- On the horizon: NOAA Alaska Climate Center
- On the horizon: USGS Alaska Climate Change & Wildlife Science Center
- Strengthening & Expanding Partnerships with University
- ANTHC Center for Climate & Health
- Executive State-Federal Climate Change Roundtable
## Prospective Timetable – AK Climate Change Strategy

<table>
<thead>
<tr>
<th>DATE</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 2008 - August 2009</td>
<td>Stakeholders developed recommendations</td>
</tr>
<tr>
<td>September 2009</td>
<td>Reports from Stakeholders to Sub-Cabinet</td>
</tr>
<tr>
<td>Winter 2009</td>
<td>Public Workshops</td>
</tr>
<tr>
<td>Examples of Ongoing Activities</td>
<td>IAWG continues to meet</td>
</tr>
<tr>
<td></td>
<td>State Agencies review Recommended Options in light of complementary effort and potential legislation</td>
</tr>
<tr>
<td></td>
<td>Track and evaluate possible impacts of potential legislation and/or regulations to state, industries, communities</td>
</tr>
<tr>
<td></td>
<td>Continue dialogue with Locals, State, Feds, Tribes, University, Industry, NGOs, etc. (ATCEM, AFE, AML, etc.)</td>
</tr>
<tr>
<td></td>
<td>Increase capacity by leveraging resources (UAF &amp; UAA)</td>
</tr>
<tr>
<td>Fall/Winter 2009</td>
<td>Sub-Cabinet develop Draft Strategy</td>
</tr>
<tr>
<td>April 2010</td>
<td>Finalize Draft for Governor’s consideration</td>
</tr>
<tr>
<td></td>
<td>Governor issues Alaska Climate Change Strategy</td>
</tr>
</tbody>
</table>

All Reports to the Climate Change Sub-Cabinet posted online at: [http://www.climatechange.alaska.gov/](http://www.climatechange.alaska.gov/)
Thank you!

Jackie Poston
jackie.poston@alaska.gov

http://www.climatechange.alaska.gov/

Photo courtesy of Pete Snyder / ADN reader submission

Location: Kotzebue, AK, Oct 2008, Fishing for tom-cods on the lagoon...