

**Governor's Sub-Cabinet on Climate Change**  
**“Preparing for a Changing Climate in Alaska”**

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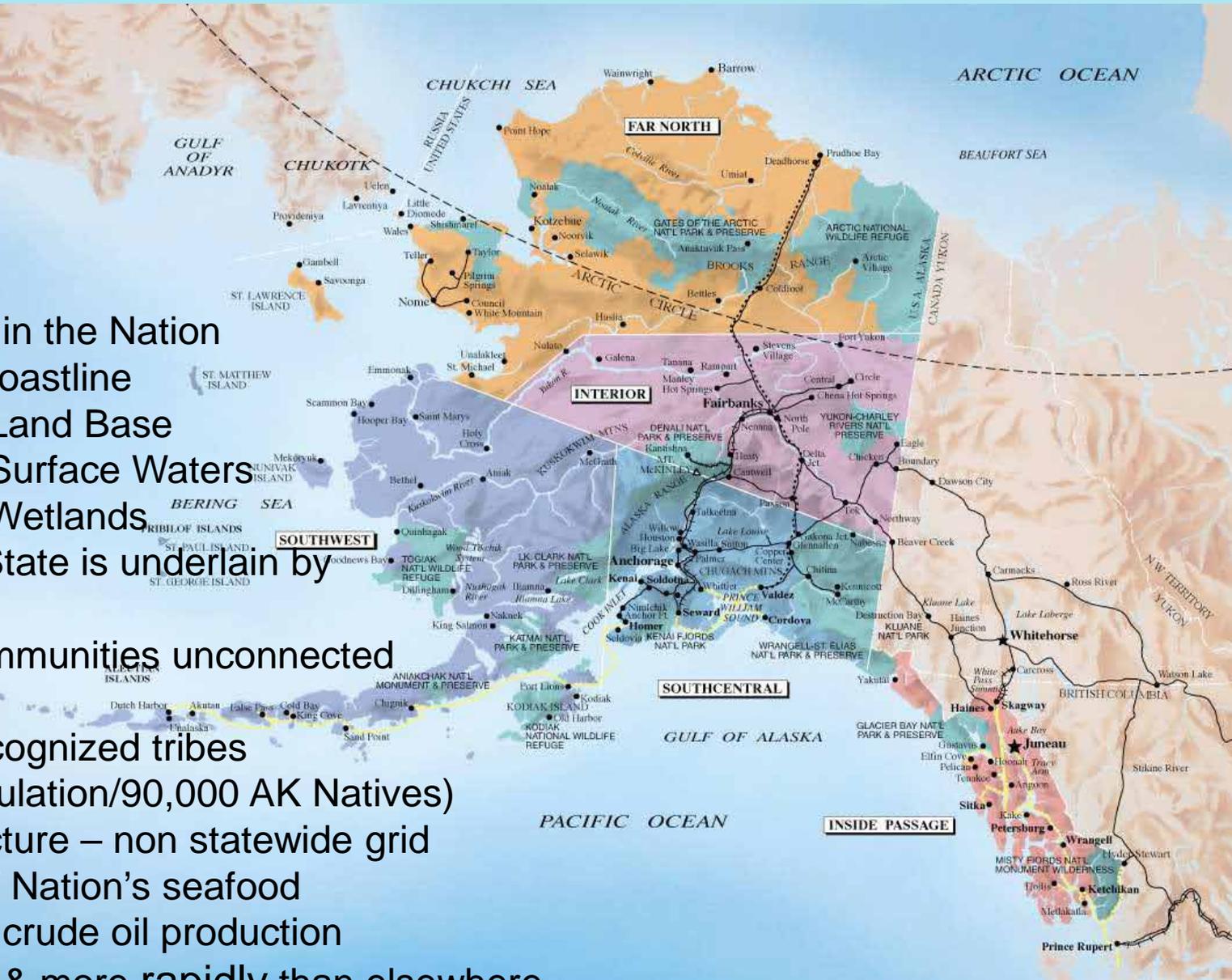
**Climate Change Impacts on Defense Assets in Alaska**  
Anchorage, Alaska  
July 7, 2009

**Larry Hartig**

**Commissioner, Alaska Department of Environmental  
Conservation**  
**Chair, Alaska Climate Change Sub-Cabinet**

# Climate Change in Alaska

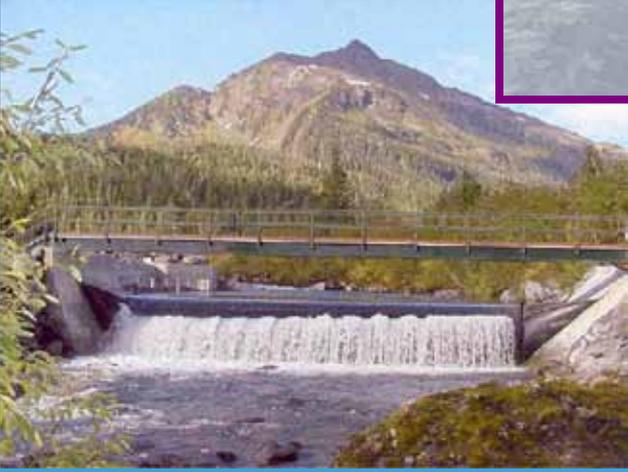
- Only Arctic State in the Nation
- 33,904 miles of coastline
- 20% of Nation's Land Base
- 40% of Nation's Surface Waters
- 50% of Nation's Wetlands
- Nearly ½ of the State is underlain by Permafrost
- Many remote communities unconnected by road system
- 229 Federally recognized tribes (13% of state population/90,000 AK Natives)
- Lack of Infrastructure – non statewide grid
- Produces 50% of Nation's seafood
- 25% of domestic crude oil production
- Warming greater & more rapidly than elsewhere



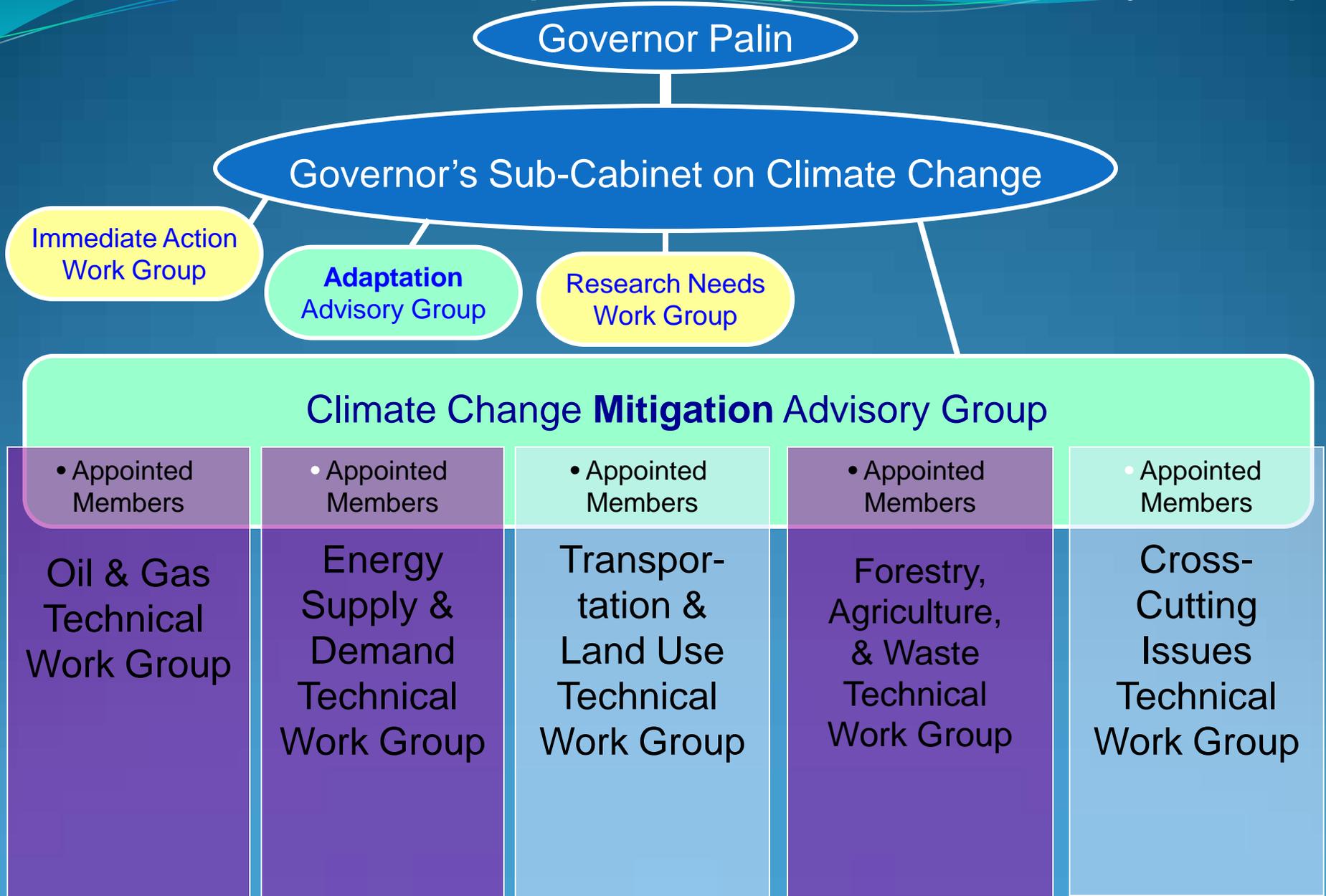
# Governor's Climate Change Sub-Cabinet

- Established by Governor through Administrative Order 238 on September 14, 2007
- Called for:
  - **IMMEDIATE ACTION** to address imminent threats to communities [**Immediate Action Work Group**]
  - Identification of **RESEARCH PRIORITIES** [**Research Needs Work Group**]
  - Proposed **CLIMATE CHANGE STRATEGY** [**Mitigation and Adaptation Advisory Groups**]

# MITIGATION



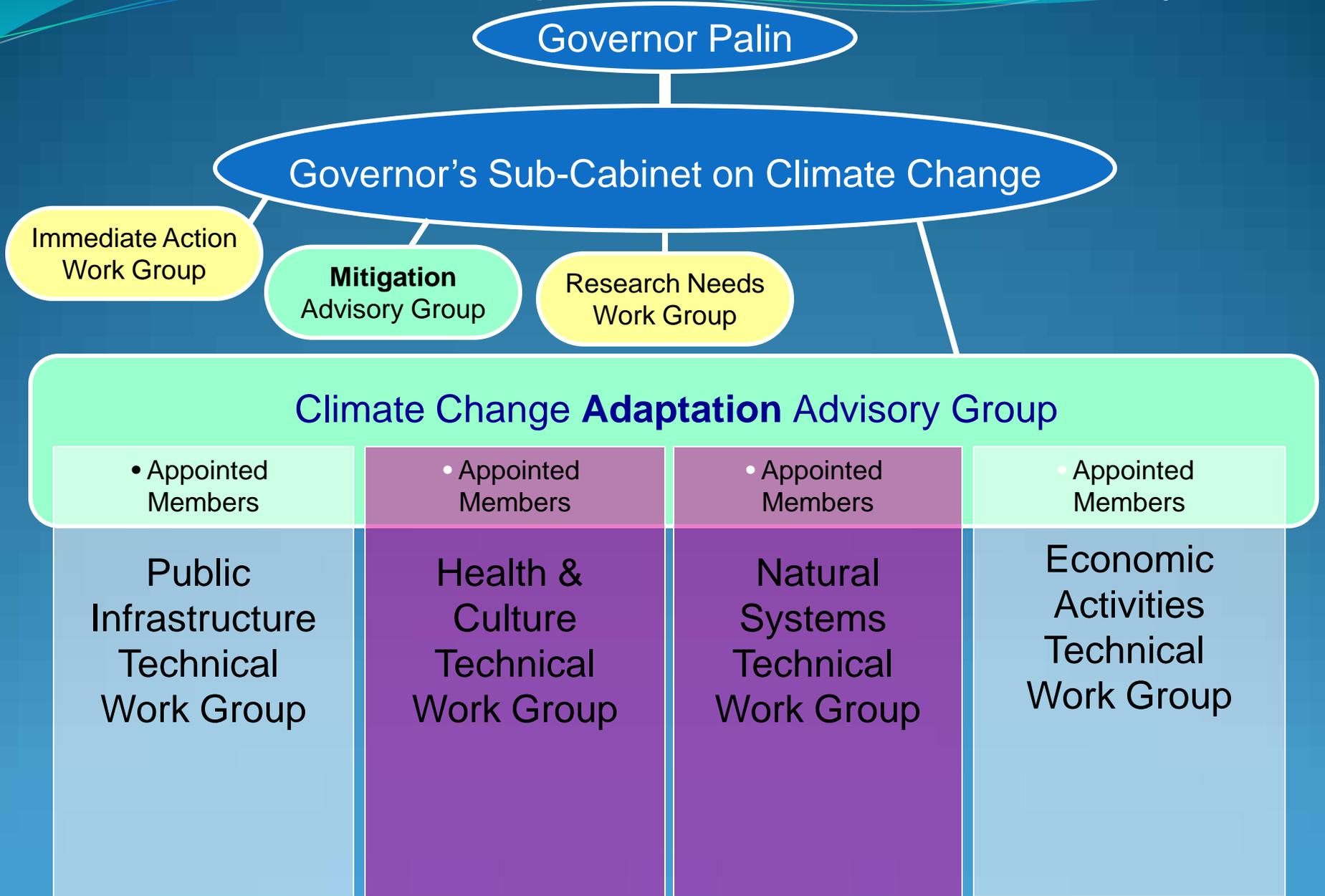
# Technical Work Groups for **Mitigation** Advisory Group



# ADAPTATION



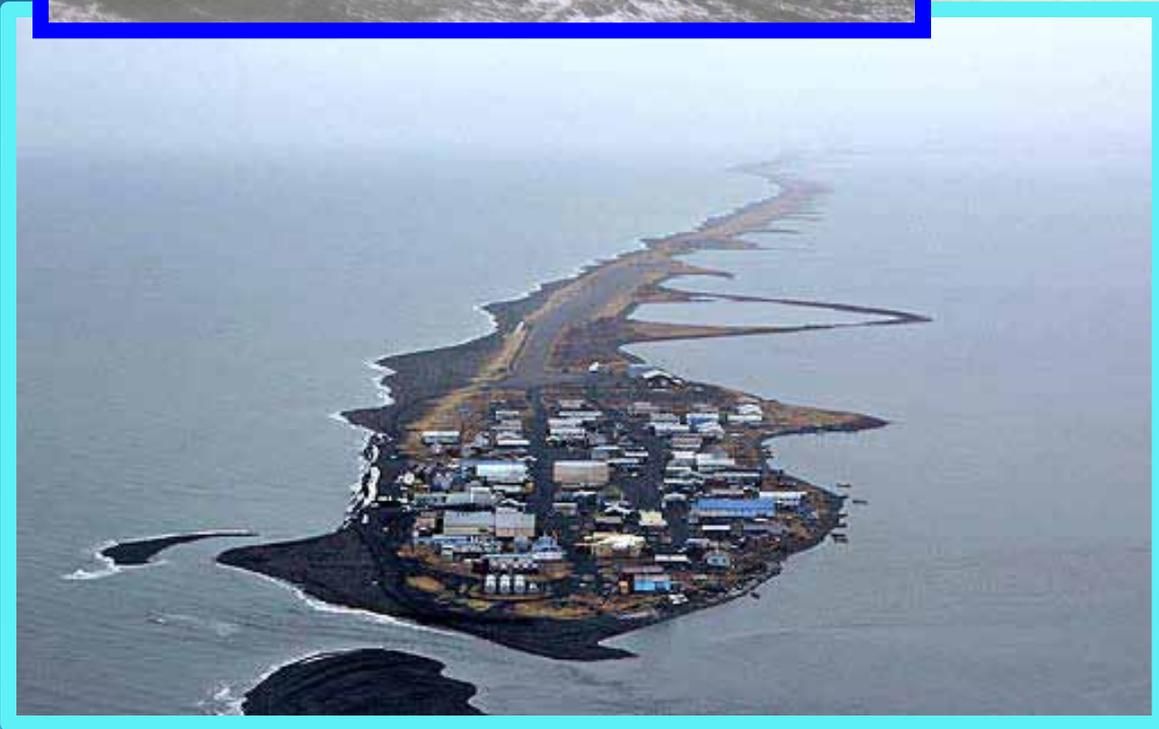
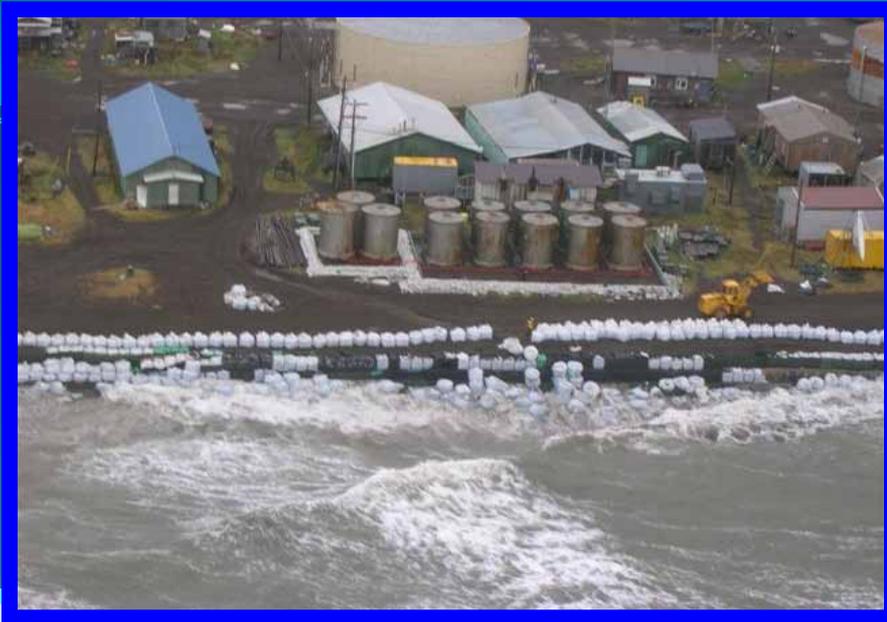
# Technical Work Groups for **Adaptation** Advisory Group



# Immediate Action Work Group



Reports April 2008 and March 2009



## **Flooding & Erosion: Kivalina**

# Flooding & Erosion: Shishmaref



# Flooding & Erosion: Newtok





# Newtok Planning Group

## Native Village of Newtok

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

## 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

# Infrastructure and Services Identifying Vulnerabilities

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**

<http://www.poa.usace.army.mil/AKE/Home.html>

**U.S. Army Corps of  
Engineers**

**2009**

14

# Decisions: What to Protect & How to do it

- Relocation efforts involve **multiple agencies**
- Consider designation of lead federal & state agencies
- Examine federal & state **funding requirements for adequacy** in light of climate change (Standard cost-benefit analysis may need modification)
- Develop **common planning criteria**
- Planning criteria **may incorporate sustainability elements**, such as energy efficiency
- Identify & address other **potential legal impediments**
- Give consideration to social factors to **preserve community's culture & social well-being**

Decision-making for at-risk communities in a changing Climate



Prepared by the Alaska Center for Climate Assessment and Policy

# Cost to Replace Public Infrastructure in Alaska (Million 2008 \$)

**TOTAL INFRASTRUCTURE: \$ 58,879**

**PUBLIC BUILDINGS: \$ 12,192**

- Schools \$ 5,953
- Government Buildings \$ 2,468
- Public Hospitals \$ 1,261
- Court Facilities \$ 1,056
- Health Buildings \$ 868
- Law Enforcement \$ 415
- Emergency Services \$ 171

**PUBLIC UTILITIES \$ 13,472**

- Energy \$ 5,598
- Sewer Systems \$ 4,327
- Water Systems \$ 1,683
- Electric Grid \$ 1,000
- Natural Gas \$ 462
- Telecommunications (portion in AK only) \$ 402

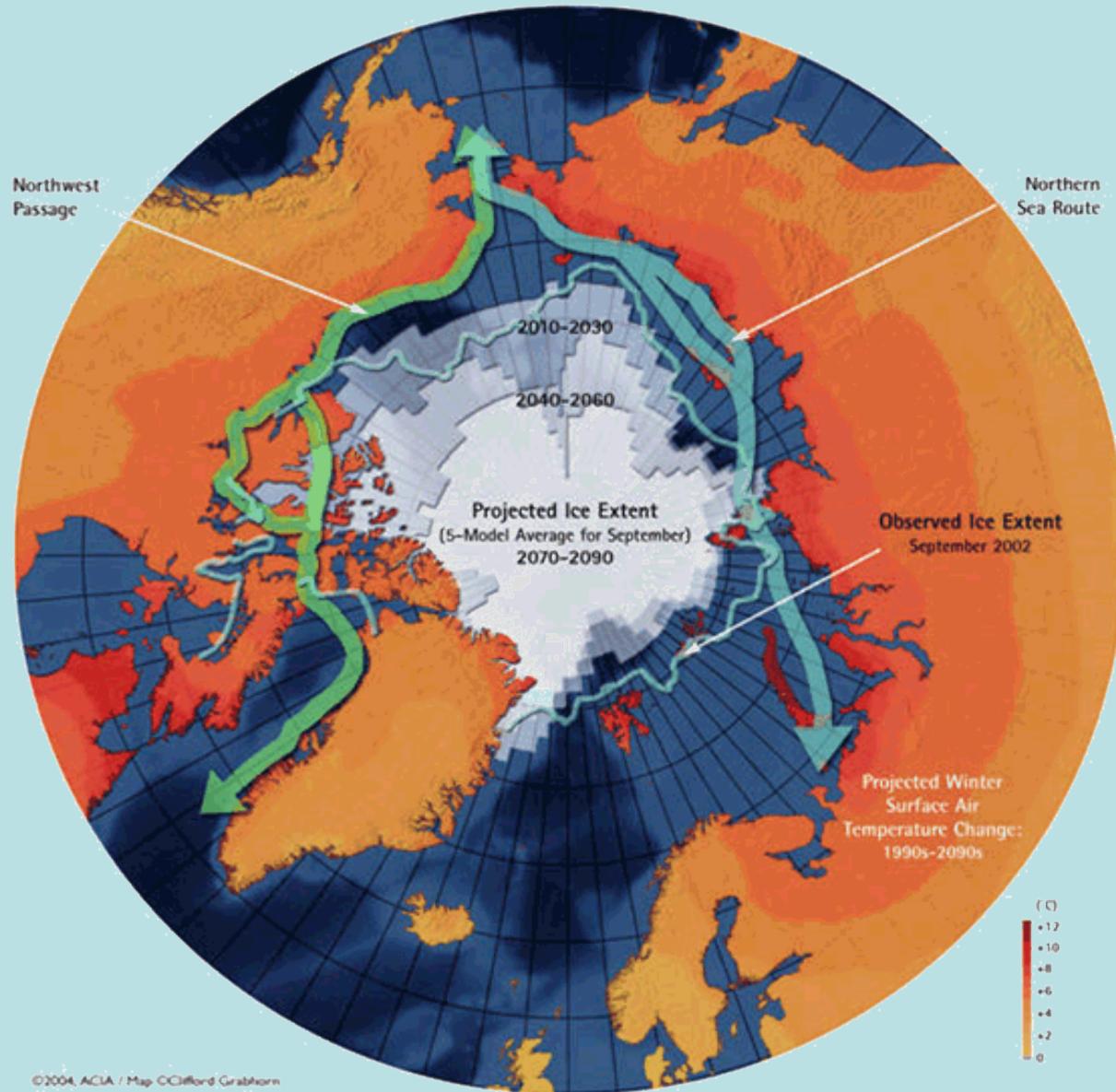
**TRANSPORTATION \$ 33,215**

- Roads \$ 21,399
- Airports \$ 5,793
- AK Railroad \$ 2,625
- Bridges \$ 1,898
- Harbors \$ 1,500

*\*Excludes Department of Defense facilities*

Source: ISER (institute of Social & Economic Research, UAA)

# Opening of the Arctic and Potential for New Shipping Routes



# 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



# Public Infrastructure Technical Work Group Recommendations to Sub-Cabinet: **A Vision supported by 3 Integrated Policies**

<b>Policy</b>	<b>Title</b>
Vision	Sustainable Infrastructure that supports Communities in an Uncertain Environment
PI - 1	Create a Statewide System for Key Data Collection, Analysis, Monitoring and Access
PI - 2	Promote “Current Best Practices” Improvements
PI - 3	Build to Last. Build Resiliency into Alaska Public infrastructure. Vision

# Potential Impacts of Climate Change on Diseases with Human Health Implications

## ∨ Foodborne Diseases

- § Anisakiasis
- § Botulism
- § Campylobacteriosis
- § *Echinococcosis*
- § *E. coli* infection
- § Paralytic Shellfish Poisoning
- § Salmonellosis
- § Shigellosis
- § Toxoplasmosis
- § Trichinellosis
- § *Vibrio parahaemolyticus* infection

## ∨ Waterborne Diseases

- § Cryptosporidiosis
- § Giardiasis
- § Hepatitis A infection
- § Legionellosis

## ∨ Vectorborne Diseases

- § Tick-borne Encephalitis
- § West Nile Virus
- § Northway Virus
- § Snowshoe hare Virus

# Enhanced Surveillance & Sharing of Information



*A Climate and Health Assessment* is currently being performed in the Northwest Arctic region of Alaska.

The purpose is to record local climate observations and data, and to identify potential health impacts.

The goal is to develop adaptive strategies that reduce negative effects to community health.

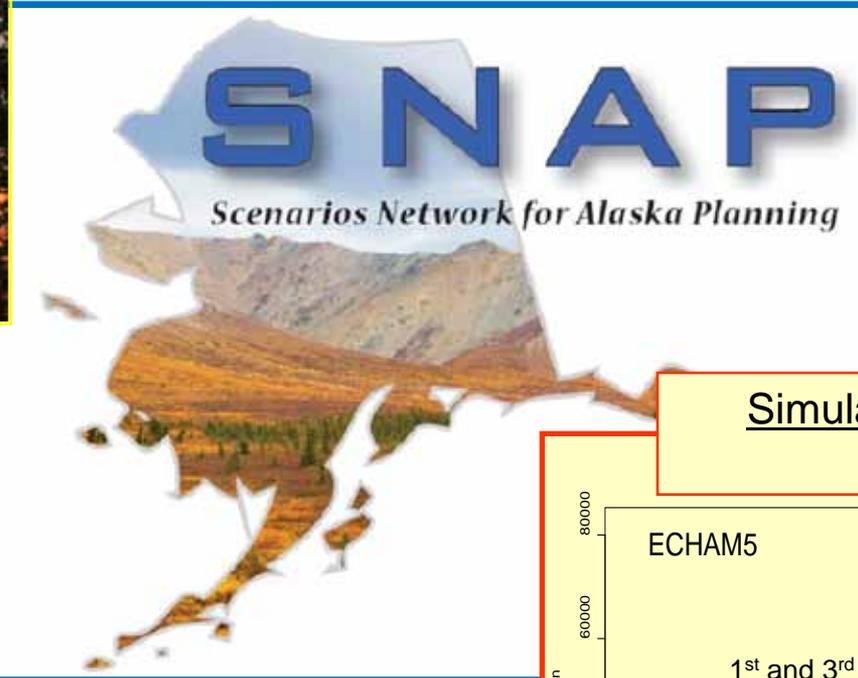
# Challenges to Managing Wildlife & Their Habitats in a Changing Climate

- Developing useful climate forecasts, scenarios & derivative products
  - Communication of such to decision-makers
- Adequate observation systems to identify & track changes
- Implementing new management strategies, such as adaptive management, to better account for unknowns
- Working across different land ownerships
- Avoiding unnecessary disruption of existing commercial, personal & subsistence harvests
- Avoiding getting paralyzed by litigation



# Ongoing State-Federal Collaborations in Alaska

## Managing Wildland Fire

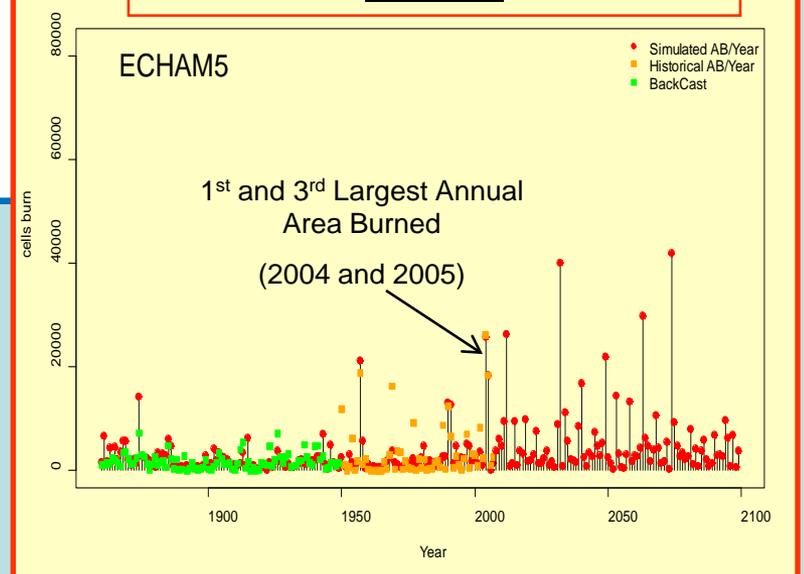


### Partners & Information sources :

- University
- AK Department of Natural Resources
- NOAA
- IPCC
- Google Earth
- Others



### Simulated Annual Area Burned



# Summary of Climate Change Adaptation Needs

## Cross-cutting:

- Down-scaled models & derivative products projecting changes & effects on natural & built environments **(National/Regional)**
- Decision tools for policy & decision-makers to help identify, assess & plan for changes **(Regional/State)**
- Collect & communicate climatic information & decision tools to state, communities & public **(National/State/Local)**
- Assess & address policy, legal & regulatory needs environments **(National/Regional/State)**
- Provide for implementation oversight **(State/Local)**
- Reward innovation & leveraging of resources

## Health & Culture:

- Perform state & local health assessments to identify vulnerabilities
- Establish surveillance & education programs addressing vulnerabilities

# Summary of Climate Change Adaptation Needs – cont'd

## Infrastructure:

- Methodologies & criteria for evaluating risks to critical infrastructure
- Appropriate criteria for prioritizing & funding projects
  - Cost-benefit & standard discount rates might not work well
  - Value of protecting existing infrastructure
- Lead Agency for:
  - Vulnerability assessments
  - Coordinating infrastructure projects
  - Assessing & reporting performance
  - Encourage resiliency, sustainability & other collateral benefits

## Natural Systems:

- Support state & local mgmt of fish & wildlife
- Avoid federal requirements which overlay other federal statutes not crafted with climate change in mind
- Reassess whether policies, legal requirements, & regulations support adaptive management

# Alaska The Last Frontier

## The End



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

*Photo of Mount Redoubt by Dennis Josefczyk*

