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**POLICY WORKTABLE:
Priority Adaptation Policy
Options**
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Policy Numbers Covered	Name of Policy Proposal	State what is to be done	Reasoning for this being a priority	Examples (optional input)	Comments
NS 1.8-1.9	Agricultural Production	Invest in the production of food and the expansion of markets for those products that can be produced economically in Alaska under conditions of longer warmer growing seasons.	This is crucial to provide food security for Alaskans and to explore markets for new Alaskan agricultural products.	<p>This might include grants or start-up funding for garden tractors/rototillers or greenhouses in rural communities that were formerly too cold for gardening; fencing or improved processing facilities for red meat production or game ranching on grasslands, tundra, or recently burned forests; improved food storage facilities; or production of weed-free seed sources for export to organic farmers in the lower 48.</p> <p>Create agricultural protection zones (e.g., land trusts), where tax incentives support long-term agricultural use of private lands near communities.</p> <p>Request alteration of USDA definitions of food production systems so that Alaskan agriculture (e.g., vegetables) are considered food rather than horticulture and would therefore be eligible for USDA agricultural subsidies</p>	

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NS 2.5, 3.6	Use of Insect- or Fire-Damaged Timber	Invest in economic development and infrastructure to attract and build industrial capacity at appropriate scales to use insect- or fire-damaged timber.	To help make a variety of wood fuels available that are more economical, less polluting, and a more sustainable alternative to fuel oil for space heating in private and public buildings.	Develop the capacity to produce wood pellets, wood chips, or fuel wood from damaged timber near urban and rural communities. Provide incentives to support installation of wood heat/power systems for public buildings such as the Garn boilers installed in villages of Tanana and Ionia in 2007.	Electrical generation could be considered by stand-alone wood systems or co-firing with coal at utilities, but this is more complex than relatively simple space heating wood systems. This will require Alaska-based training to develop technologies that are appropriate for Alaska, for example the capacity to efficiently harvest small-diameter woody biomass.

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NS 2.6-2.8; 2.15-2.17; NS3.5; NS4.7	Wildfire Fire Management	Establish a task force of agency, rural, and urban community stakeholders to assess wildland fire management issues. To assess: (1) how to fund and implement changes in wildland fire management that will be required in a warmer climate, and (2) engage the public in more effective fire prevention and protection.	Increased risk associated with wildland fire due to cc and urban and rural communities. Air quality and associated health and economic impacts due to smoke events.	Scope: Statewide, Alaska Interagency Wildfire Management Plan and corresponding map atlas. Scope: Individual communities, local government, Community Wildfire Protection Plans (CWPPs). Scope: Individual homeowners, Firewise Program. <i>Readers may benefit from a footnote that explains in detail each of these plans and/or programs.</i> One potential policy solution would be more strategic application of wildland fire use to break up extensive areas of fire-prone black spruce forest by creating fuel breaks of less flammable early successional post-fire vegetation that connects to other natural fuel breaks such as wetlands. Another potential policy solution would be more active involvement of rural communities in deciding and implementing fire management and mechanical harvest near their communities. An annual payment to villages to harvest flammable fuels for heating public buildings (and reduced fire risk) and to provide on-site capacity to suppress wildfires that occur near the communities could substantially reduce fire risk in these communities and provide wages that enhance the economic viability of communities that are facing rising costs of diesel fuels.	Alaska Wildland Fire Coordinating Group (AWFCG) may be an appropriate group to organize a task force. Stakeholders: Local governments, structure and volunteer fire departments, insurance carriers, Native organizations, various State and Federal agencies, others.... Spinoff benefits: habitat improvement for moose and other wildlife, food security via hunting, reduced CO2 emissions from wildland fire should the treated area burn, biomass fuels from treated acres.

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NS 2.25-2.27, 5.21, 5.23, 8.14	Management of Invasive Species	Establish a task force to evaluate actions to prevent the spread of invasive species.	There is a need to prioritize actions that will prevent or slow the spread of invasive plants and aquatic species in Alaska.	<p>A high-priority action would be to monitor and remove invasive species from stream-banks near road crossings of glacial rivers and streams. These are the locations where invasive species are most likely to cause extensive ecological change.</p> <p>Another potential policy might be a restriction on nursery sale of plant species with high potential for naturalization and invasion.</p>	<p>There is an Alaska group called Committee for Noxious and Invasive Plant Management (CNIPM) that is or could fulfill this role.</p> <p>See http://www.uaf.edu/ces/cnipm/</p>

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NS 4.3-4, 4.11-15, 5.33-5.35, 5.38, 5.43, 5.45-5.48, 6.11, 6.14, 6.17, 6.20-22, 6.43, 7.4, 8.14, 9.1, 10.1, 10.3, 12.4	Habitat and Species Protection	Establish a task force of agency, NGO, and community representatives to identify habitats and species at risk to climate warming and to develop strategies for protection of these habitats and/or migration of these species.	Minimize further loss of habitat and risks to species that could arise due to climate change.	<p>The state could request that the U.S. Fish and Wildlife Service (which has a federal responsibility for fish and wildlife conservation) develop a plan to conserve species and habitats that are at risk as a result of climate change. This is best done in collaboration with other state and federal agencies, NGOs, and community representatives. Boundaries should be evaluated at approximately 5-year intervals to account for climate-induced habitat changes.</p> <p>The state could fund (through agencies or incentive programs to communities, businesses, or NGOs) management experiments in habitats that are likely to become more common with climate warming (e.g., interior grasslands, arctic shrublands). The goals of these experiments might be to enhance suitability for subsistence resources or for species conservation. This effort might be undertaken collaboratively with groups like The Nature Conservancy and the Alaska Federation of Natives.</p>	The specific policies and actions required will vary regionally and between terrestrial, marine, and freshwater systems. This will probably require that this issue be subdivided before policy-relevant recommendations can be made.

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NS 5.9, 5.11, 5.18, 5.31, 5.36, 5.44	River- and wetland-responsive management for water conservation	Establish a task force and establish priorities and actions that will reserve river water.	Find ways to meet multiple needs, including transportation and spawning/rearing habitat.	<p>Establish policies regarding water rights that guarantee acceptable minimal river flows needed to maintain water temperatures suitable for fish and provide spawning habitat for fish and water supply to river-associated wetlands. These policies should be established before there is pressure for irrigated agriculture or river diversion to meet urban or industrial water needs.</p> <p>Identify and protect watersheds of streams, lakes, or groundwaters needed to meet estimated future water needs of Alaskan communities.</p> <p>Request that Alaska Dept. of Transportation develop the capacity to forecast times when river flow is likely to be insufficient for barge delivery of fuel and other supplies to specific villages.</p>	

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NS 5.41, 5.52, 6.13, 6.27, 7.8, 8.13, 9.1, 11.16-17	Fish- and wildlife-responsive management	Establish a task force that represents the Boards of Fish and Game, agency representatives, subsistence hunters/fishermen and sport hunters/fishermen.	To develop criteria for adjusting hunting and fishing regulations to accommodate the effects of climate warming on abundance and timing of fish and wildlife populations; to protect endangered species; and to harvest new species.	<p>Establish policies that adjust the timing of fishing and hunting seasons to accommodate effects of climate change. This might require longer hunting seasons for local residents who have less facility for storage of meat and fish than for non-local hunters.</p> <p>Establish a more effective mechanism by which local observations of ecological change can be incorporated into fish and wildlife management regulations.</p> <p>Modify state subsistence laws so that a consistent subsistence policy can be developed on lands under state and federal jurisdiction. This will facilitate an integrated approach to managing fish and wildlife responses to climate change.</p>	
NS 6.1-2, 6.16, 6.18, 6.24, 8.4	Sea- and River-Ice Forecasts	Develop a funding mechanism through which existing agencies can develop more accurate forecasts of the safety of sea ice and river ice.	Thin river and sea ice is a major hazard for rural residents, who need better real-time access to information about ice conditions and forecasts of how these conditions will change.	Request that NOAA (or perhaps the Alaska Dept. of Transportation) develop more accurate forecasts of the safety of sea ice and river ice for winter travel in roadless areas.	

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NS 6.25-6, 6.34-35, 6.40-41, 8.1-2, 8.5, 8.10-11	Commercial Fisheries Opportunities	Establish a joint state-federal commission to assess and allocate stocks of any fish species that has commercial potential in a fashion that is consistent with (1) international treaty obligations (e.g., salmon escapement to Canadian portions of the Yukon River), (2) in-river subsistence needs, and (3) commercial demands for fish both within rivers and in the oceans.	To protect endangered stocks or to accommodate new species and opportunities To achieve a better-informed allocation of fish stocks among international users, Alaskan subsistence users, and commercial fisheries	<p>Establish a joint state-federal commission to allocate stocks of any fish species that has commercial potential in a fashion that is consistent with (1) international treaty obligations (e.g., salmon escapement to Canadian portions of the Yukon River), (2) in-river subsistence needs, and (3) commercial demands for fish both within rivers and in the oceans.</p> <p>Establish permanent no-take reserves for commercial species that are threatened by climate change or which have potential to develop into commercial fisheries as climate warms. These might be located adjacent to terrestrial conservation areas, due to the tight linkage between terrestrial and marine ecosystems in the Arctic.</p> <p>Establish allocation policies that strengthen incentives to conserve viable fish stocks and promote fishing at times when weather is safe and market prices are high. Provide permits to communities that are likely to require a new subsistence resource as they lose opportunities to hunt marine mammals due to declining sea ice.</p> <p>Initiate an experimental fish-trap program for salmon that could lead to a carefully regulated harvest of high-quality wild fish near river mouths that could compete with farmed fish in terms of quality and price.</p>	Many of the fisheries management decisions (e.g., salmon) are made by federal agencies for open-ocean fisheries and by state agencies for in-river management of the same stocks.

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NS 8.7-8	Foreign Fishing Strategies [Incorporate into policy on commercial fishing opportunities	Establish a task force to develop strategies for assessing impacts of and resolving boundary disputes with foreign fishing fleets.	As the Arctic Ocean becomes ice free, there is likely to be intense fishing in international waters by foreign fleets that are seeking new fishing grounds to replace depleted Antarctic stocks	Increased presence of U.S. Coast Guard might be requested. Urge U.S. leadership in the establishment of an Arctic Treaty that conserves international waters of the central Arctic Ocean Basin for Peace and Conservation (analogous to the Antarctic Treaty). Establish a task force that designs a multi-level governance strategy to regulate fishing of the Arctic Ocean by (1) empowering local indigenous communities who may lose opportunities to hunt marine mammals; (2) fostering state and national efforts to regulate fisheries harvest and no-take reserves within state and national waters, respectively; and (3) establishing international agreements that regulate access and use of international waters in the Arctic Ocean.	The Arctic Ocean is likely to experience intense development, as sea ice continues to decline. It is important to establish ground rules about how this should be governed BEFORE there are entrenched vested interests.

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NS 8.17, 9.5, 10.5, 11.19	Public Education	Include information on climate change effects on wildlife, fisheries, and subsistence resources in materials provided to the public by state agencies, university extension, and K-12 curriculum.	Both the general public and students should be well-informed about climate change, so they can make wise decisions about actions that are sensitive to climate change.	<p>Incorporate information about climate change into science and social studies curricula of K-12 and introductory university courses to ensure that the Alaskan public is well-informed about climate change.</p> <p>Require public agencies to provide useful information and advice about climate-sensitive issues in their areas of responsibility (e.g., information about permafrost stability, road maintenance or climate effects on fish and wildlife).</p> <p>[See also “Reporting Changes”]</p>	
NS9.4, 10.4, 11.18	Reporting Changes	Provide a forum for subsistence users, commercial and sport hunters and fishermen, and recreational wildlife watchers to report changes in species numbers, composition, and condition.	Increase the amount of data available for monitoring and management.	Provide a public hotline or website that provides information to the public about climate change and records observations by the public about actions that are needed to address climate-related problems. New York City has used a system like this to improve the efficiency of information exchange between residents and agencies about public service needs.	[See also climate-change action planning]

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NS 9.6	Disease Testing	Establish a mechanism through which subsistence users and commercial and sport hunters and fishermen can test fish and wildlife for disease incidence.	Climate change may bring new disease risks to Alaska; commercial, subsistence, and sport harvesters could provide an effective and inexpensive system to monitor for diseases.	Request federal (state?) funding for routine monitoring of fish and wildlife diseases that threaten public, wildlife, and fisheries health.	

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NS 11.2-3, 11.5-9, 11.11-14, 11.16	Tourism Outreach	Fund information outreach to potential tourists about longer summers and milder winter recreational opportunities and provide supplemental funding to communities to assess consequences of altered tourism and provide necessary changes in services.		Fund information outreach to potential tourists about longer summers and milder winter recreational opportunities and provide supplemental funding to communities to provide necessary services.	An important goal is to build local capacity to engage in decision-making about how to manage tourism

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NS 12.2	Climate Change Adaptation Training	Provide training for state, community, or volunteer teams that can provide advice and assistance in climate-change adaptive management.	There is currently no mechanism to share efficiently the expertise in addressing climate-change-related issues between groups that have this expertise and business and agencies that need this expertise.	<p>Establish an Alaska Climate-Change Action Center at the University of Alaska that serves to share information about climate-change-related expertise and user needs for this information. [This could build on current activities of SNAP and ACCAP.]</p> <p>Provide limited funding to establish teams with expertise in specific climate-change-related issues (e.g., effects of thawing permafrost on water supply systems; fuel-reduction approaches to reducing wildfire risk, etc.) that could work with communities that are confronting these problems. Some of these teams may already exist within state or federal agencies or be developed as centers of expertise in communities, the university, or NGOs.</p>	<p>The general goal is to build local capacity to engage in decision-making about how to adapt to climate change</p> <p>[See also climate-change action planning]</p>
NS 12.5	Review CZMA	Review the Coastal Zone Management Act and other laws to determine the need for new tools and responses for climate change impacts.			

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NS12.6	Conserve Wildlife	Apply revenues from auctioning emission allowances to conserving wildlife and natural resources threatened by climate change.			
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	Community Climate-change Action Plans	Provide information and support that enable communities to identify climate-change risks and opportunities and develop appropriate climate-change adaptation plans	All Alaskan communities face climate change but differ in the risks and opportunities that are of greatest local concern. Community action plans that propose integrated solutions are most likely to meet these needs.	Provide community-specific forecasts of expected changes in climate, physical environment (e.g., ice and permafrost), and fish and wildlife populations. Produce flood, erosion, and wildfire hazard maps for communities. Provide internet websites and travel opportunities for communities to share information and solutions to common problems. Provide mechanisms to finance those potential options with highest benefit:cost ratio.	The general goal is to build local capacity to engage in decision-making about how to adapt to climate change [See also Reporting change and climate-change adaptation training

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NS 3.7 Maybe NS 2.9	Replace or reduce use of fossil fuels with wood biomass fuels	Invest in economic development and infrastructure to attract and build industrial capacity at appropriate scales to use under-utilized and new sources of wood biomass	To help make a variety of wood fuels available that are more economical, less-polluting and are a sustainable alternative to fossil fuels for space heating, electrical generation and liquid fuel. (ie: bio-diesel, ethanol)	<p>Utilize biomass generated from hazard fuel treatment projects to reduce fire risk to communities</p> <p>Utilize small and low quality trees from current commercial harvest operations for sawtimber logs</p> <p>Utilize hardwood species, birch, aspen, willow that have a large under-utilized allowable cut or no current commercial use for biomass fuels</p> <p>Explore alternative harvest strategies such as bringing firewood to access points that are easily accessed by the public</p>	<p>The first example is a result of the need to practice more aggressive fuels management in the rural and urban interface as a result of climate change and increased risk</p> <p>The later two examples are not directly related to cc, but are required components to ensure sufficient wood supply</p> <p>Also an element of mitigation via use of carbon neutral wood fuels from CO2 perspective.</p> <p>Other beneficial spin offs, addresses high cost of energy and economic opportunities.</p>

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NS 2.17 or new item?	Change in Federal policy regarding human caused wildland fire ignition with regard to fire use	Treat natural ignition events and anthropogenic ignition events the same in regard to fire management decisions on Department of Interior Lands	<p>Simple change that will enable more flexibility in response to wildland fire in areas that can allow fires to burn.</p> <p>Will empower local managers to make decisions consistent with the Alaska Interagency Fire Management Plan and achieve fuel reduction, habitat improvement and other management objectives regardless of how the fire was ignited.</p>		Currently in areas where wildland fire can be allowed to burn, Federal policy is to suppress all human caused fires and only allow “natural” caused fires to burn.

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NS 3.8	Equipment demonstration and purchase for biomass harvest	<p>Research available types of harvesting equipment for small diameter timber and biomass to facilitate acceptance and use by local commercial contractors.</p> <p>Demonstrate appropriate equipment and establish lease program for specialized equipment</p>	<p>Will directly support several adaptation objectives for increased use of dead or damaged timber and underutilized species in the development of biomass projects.</p> <p>In rural villages, smaller scale equipment that can be utilized with 4-wheelers</p>		Fort Yukon is beginning a project to develop a wood harvesting system to support a local biomass project.

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