



## CLIMATE CHANGE IN ALASKA: WHY SHOULD OTHER STATES CARE?

- Alaska includes over 100 million acres of federal lands, including more than half of the country's National Park and Refuge system. *Federal lands and National Parks are a resource shared by all Americans alike, but climate change is already affecting visitor aesthetic values, recreation values, and ecological values, as glaciers and sea ice recede, permafrost thaws, vegetation changes, and wildlife relocate or become threatened.*
- With warming, arctic wetlands are likely to diminish via gradual drying or rapid draining due to permafrost thaw. *Climate change will seriously impact breeding habitat for many of the continent's migratory birds, including species which are hunted in other places.* Alaska is home to more than 445 species of birds, most of which are migratory. Birds from Alaska pass through virtually every other state in the Union (even Hawaii) on the way to their wintering grounds. About 20% of America's waterfowl nest in Alaska, including more than half of North America's pintail ducks; 100% of the world's breeding Tule and Pacific White-Fronted geese, Aleutian, cackling, and dusky Canada geese; more than 90,000 tundra swans; over 13,000 trumpeter swans; and five species of loons.
- In northern regions, vast stores of organic carbon are currently sequestered in frozen soils. However, current warming trends are causing this permafrost to thaw, releasing into the atmosphere the greenhouse gases methane (CH<sub>4</sub>) and carbon dioxide (CO<sub>2</sub>) via decay of organic matter. This release of greenhouse gases is creating a positive feedback loop and exacerbating global warming. *With future investments, Alaska could play an important international role in developing demonstration technologies to capture, use, and sequester these gases.*
- Climate-related changes such as permafrost thaw, accelerated erosion, a shorter winter season during which heavy equipment can operate on arctic ice and snow, and less water available to build ice roads may require expensive retrofits to the state's infrastructure system that is responsible for delivering critical goods and services to outside markets. Such changes could impact market prices and the overall competitiveness of resources that are traded on national and international markets. *Our state is in a unique position today to demonstrate innovative building techniques that could be applied to other places, but financial resources are limited to research and develop these technologies.*
- Ocean temperatures are already changing along with the location of commercial fish species. Consequently, fishermen are forced to travel further and further for their catch. *Increased travel costs to access these altered fisheries will impact national and global market prices in a negative way.* Ocean acidification associated with increased uptake of CO<sub>2</sub> could also significantly impact shellfish market prices.
- As temperatures rise in Interior Alaska, the size, frequency, and intensity of forest fires are increasing. Larger and more frequent fires release carbon back to the atmosphere more rapidly than normal, and more intense fires release a larger proportion of soil carbon than normal, thus creating another feedback loop that exacerbates global warming. *Coastal forests in Alaska, including the Tongass National Forest, could play a dual role by providing both refugia for climate-stressed species as well as sequestration of carbon dioxide.*



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