

The background features abstract, overlapping geometric shapes in various shades of blue, ranging from light sky blue to deep navy blue. These shapes are primarily located on the left and right sides of the frame, creating a modern, dynamic backdrop for the central text.

HR 12 Establishing a House Special Committee on Climate Change

Rep. Andy Josephson
31st Legislature

Climate change and Alaska

- ▶ Temperatures in Alaska have trended upward for decades, and 2019 was the hottest year in state history.
- ▶ Drought conditions have become more common and more severe.
- ▶ Higher temperatures with less precipitation lead to greater fire danger.
- ▶ When possible, the natural ranges for plants and animals change as flora and fauna attempt to adapt to changing conditions. When this is not possible, massive die offs may occur.
- ▶ Much of northern Alaska is underlain by permafrost; as temperatures rise, permafrost thaws, causing structural foundations to weaken.
- ▶ Sea ice naturally acts as a buffer for high seas and storms; reduced sea ice accelerates coastal erosion.
- ▶ Reduced sea ice opens new pathways for ships.
- ▶ Alaskans are world leaders in Arctic research and innovation.

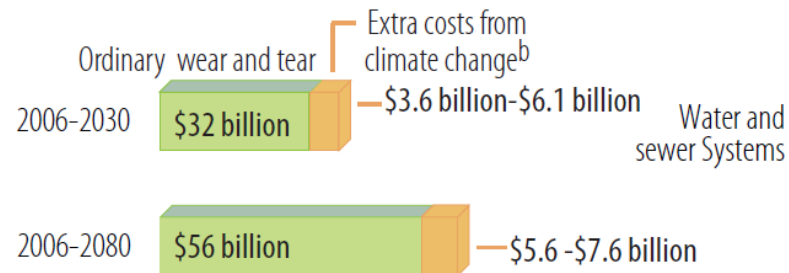
Climate change costs

Figure 1. How Much Might Climate Change Add to Future Costs for Public Infrastructure in Alaska?

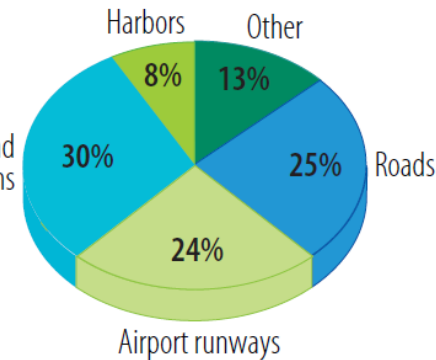
Examples of Public Infrastructure (Federal, State, and Local)

- Roads: 9,564 miles
- Airports: 253
- Bridges and harbors: 954
- Schools: 520
- Water and sewer systems: 366
- Railroad tracks: 819 miles
- Law enforcement, defense, emergency services, and health-care facilities: 841

Estimated Cost of Replacing Infrastructure as It Wears Out^a



Likely Share of Extra Costs (By 2030)^c



^aThese estimates are in *net present value*, which is a standard way of summarizing potential costs over long periods. Think of it as the amount that would need to be deposited in a bank today, earning interest, to cover all the costs for a project (or some other purpose) over a specified future period. ^bDepends on the level of climate warming and takes likely design adaptations into account. ^cAssumes moderate climate warming

Source: Larsen, P.H., et al., Estimating Future Costs for Alaska Public Infrastructure at Risk From Climate Change, ISER (2007)

Shipping in the Arctic

- ▶ Reduced sea ice opens newly navigable routes for ships (cargo and tourist)



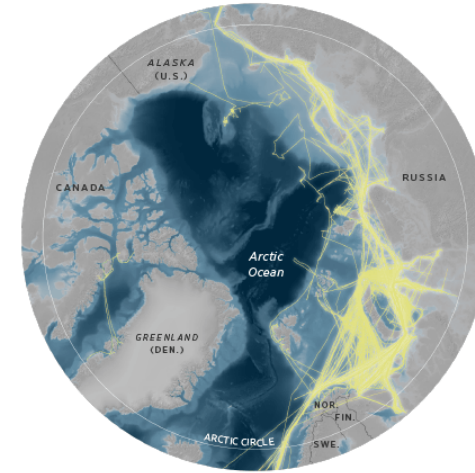
The Nordic Orion cargo ship carries a shipment of coal through the Arctic. NORDIC BULK CARRIERS

FULL SPEED AHEAD

Shipping Plans Grow as Arctic Ice Fades

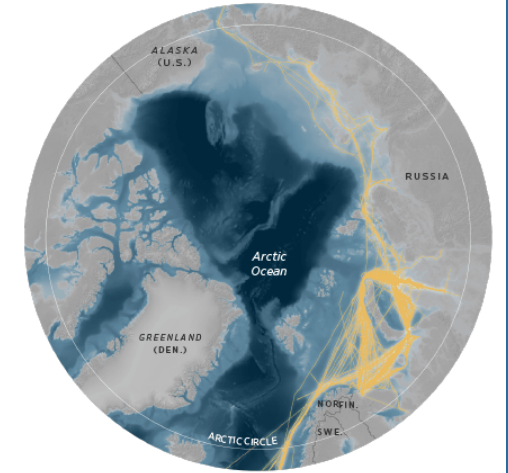
Russia, China, and other nations are stepping up preparations for the day when large numbers of cargo ships will be traversing a once-icebound Arctic Ocean. But with vessels already plying these waters, experts say the time is now to prepare for the inevitable environmental fallout.

https://e360.yale.edu/features/cargo_shipping_in_the_arctic_declining_sea_ice



All traffic in the Northern Sea Route in 2018 (through Sept. 30)

<https://www.wsj.com/graphics/the-future-of-arctic-shipping/>



Traffic related to the oil and gas industry

This luxury cruise ship will soon sail through the Arctic. Here's what that means for Alaska.

Author: Annie Zak Updated: June 12, 2016 Published June 12, 2016



The Crystal Serenity is planning a 32-day voyage through the Northwest Passage this summer. (Courtesy Crystal Cruises)

<https://www.adn.com/arctic/2016/06/12/this-luxury-cruise-ship-will-soon-sail-through-the-arctic-heres-what-that-means-for-alaska/>

Fires

- ▶ Persistent high temperatures coupled with low precipitation sets the stage for costly, sustained fire seasons.

Fighting Alaska's wildfires cost over \$300 million this year

✂ Author: James Brooks • Updated: December 7, 2019 • Published December 7, 2019



Members of the Yukon Flats crew reinforce the fire line on the McKinley fire, Aug 23, 2019. (Loren Holmes / ADN) [Buy This Photo](#)

<https://www.adn.com/alaska-news/2019/12/07/fighting-alaskas-wildfires-cost-over-300-million-this-year/>

TIME

About 2.5 Million Acres in Alaska Have Burned.
The State's Wildfire Seasons Are Getting Worse,
Experts Say

<https://time.com/5657188/alaska-fires-long-climate-change/>



51 homes burned from McKinley fire,
3 businesses, 80 outbuildings

<https://www.alaskapublic.org/2019/08/23/51-homes-burned-from-mckinley-fire-3-businesses-80-outbuildings/>

ANCHORAGE DAILY NEWS

An Alaska wildfire is the nation's most
expensive so far this season

<https://www.adn.com/alaska-news/2019/09/19/an-alaskan-wildfire-is-the-nations-most-expensive-so-far-this-season/>

ALASKA Journal of Commerce

Feds declare economic disasters for Swan
Lake, McKinley fires

<https://www.alaskajournal.com/2019-11-20/feds-declare-economic-disasters-swan-lake-mckinley-fires>

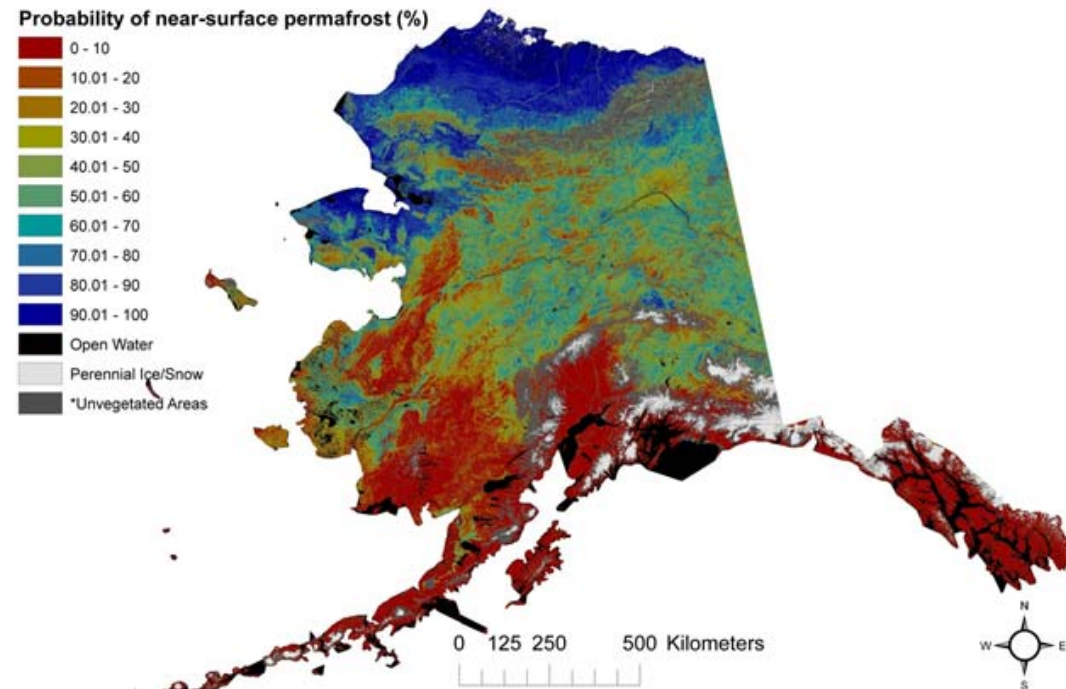
Erosion, permafrost thaw, and relocation

- ▶ Governor Palin's climate change subcabinet received recommendations from an Immediate Action Work Group. Among them, 6 communities (Kivalina, Koyukuk, Newtok, Shaktoolik, Shishmaref, and Unalakleet) were identified as most in need of immediate action.
- ▶ Some state funding was allocated to these 6 communities, and Newtok is now in the process of moving to a new site (Mertarvik).



A home destroyed by beach erosion tips over in the Alaskan village of Shishmaref. Temperatures that have risen 15F (4.4C) over the last 30 years are causing a reduction in sea ice, thawing of permafrost along the coast, making the shoreline vulnerable to erosion. Credit: Gabriel Bouys Getty Images

<https://www.scientificamerican.com/article/alaskas-coast-is-vanishing-1-storm-at-a-time/>



<https://www.usgs.gov/media/images/modeled-probabilistic-map-near-surface-permafrost-within-alaska>

Alaskans adapt, innovate, and lead

- ▶ Alaskan communities increasingly use non-carbon energy sources to augment or replace their existing power needs.
- ▶ Most of Alaska is far from a large-scale power grid or transmission line; small grids and microgrids provide power for much of the state.
- ▶ Alaska is a world leader in integrating renewable energy sources into remote diesel grids.
- ▶ Wind, solar, hydrokinetic, and geothermal energy sources provide energy in Alaskan communities, with substantial untapped potential.

Through a combination of hydroelectricity and wind power, Kodiak's electricity is nearly 100% renewable.

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What can Kodiak teach the world about renewable energy? A lot.

September 15, 2017 by Rachel Waldholz, Alaska's Energy Desk



Kodiak generates about 20 percent of its electricity from wind. The Kodiak Electric Association has installed six turbines on Pillar Mountain since 2009. (Photo by Eric Keto/Alaska's Energy Desk)

Since 2007, Kodiak has transformed its grid so that it now generates almost 100 percent of its power with renewable energy.

The local electric co-op has managed to do that while keeping rates stable. In fact, the price of electricity in Kodiak has dropped slightly since 2000.

<https://www.ktoo.org/2017/09/15/can-kodiak-teach-world-renewable-energy-lot/>

Igiugig has installed a new technology to generate power from the free-flowing Kvichak River without hurting local salmon runs.

Alaska village will install new river power generator

A tiny Alaska Native village is adopting an emerging technology to transform the power of a local river into a renewable energy source

By RACHEL D'ORO Associated Press

July 17, 2019, 2:25 PM • 4 min read



📷 In this Tuesday, July 16, 2019, drone photo released by the University of Alaska Fairbanks and Alaska Center for Energy and Power, Gov. Mike Dunleavy, center rear, poses for photos in front of a Riv-Gen Power System turbine on the bank of the Kvichak River in Igiugig, Alaska. A tiny Alaska Native village is adopting an emerging technology to transform the power of a local river into a renewable energy source. (Amanda Byrd/University Alaska Fairbanks and Alaska Center for Energy and Power via AP)

The Associated Press

<https://abcnews.go.com/Technology/wireStory/alaska-village-install-river-power-generator-64401244>

Renewable projects financed through the Renewable Energy Grant Fund, as of December 2016.

Alaska's Renewable Energy Grant Fund was created by the Alaska Legislature in 2008 with the intent to appropriate \$50 million a year for five years to develop renewable energy projects across the state, particularly in areas with the highest energy costs. In 2012 the Legislature extended the program for another 10 years, until 2023.

The REF is administered by the Alaska Energy Authority (AEA) and has been a major stimulus for renewable energy projects across Alaska. Since 2008, the Legislature has appropriated \$259 million for 287 qualifying projects. Grants have been awarded for reconnaissance and feasibility studies, as well as design and construction projects covering a wide range of technologies and geographic areas – from wind turbines in Quinhagak to a hydroelectric project in Gustavus to a ground source heat pump system at the Juneau airport to a heat recovery system in North Pole.

In 2016, the Alaska Energy Authority is estimating that renewable projects constructed with funding from the Renewable Energy Grant Fund will displace 30 million gallons of diesel fuel.

The program is helping communities stabilize energy prices by reducing their dependence on costly diesel fuel for power generation and space heating. In the 2015, 54 projects displaced an estimated 22 million gallons of diesel fuel worth nearly \$61 million. These numbers are expected to increase again in 2016 as many more projects become operational. Newer projects include the construction of biomass boilers in the Lake and Peninsula Borough, the Blue

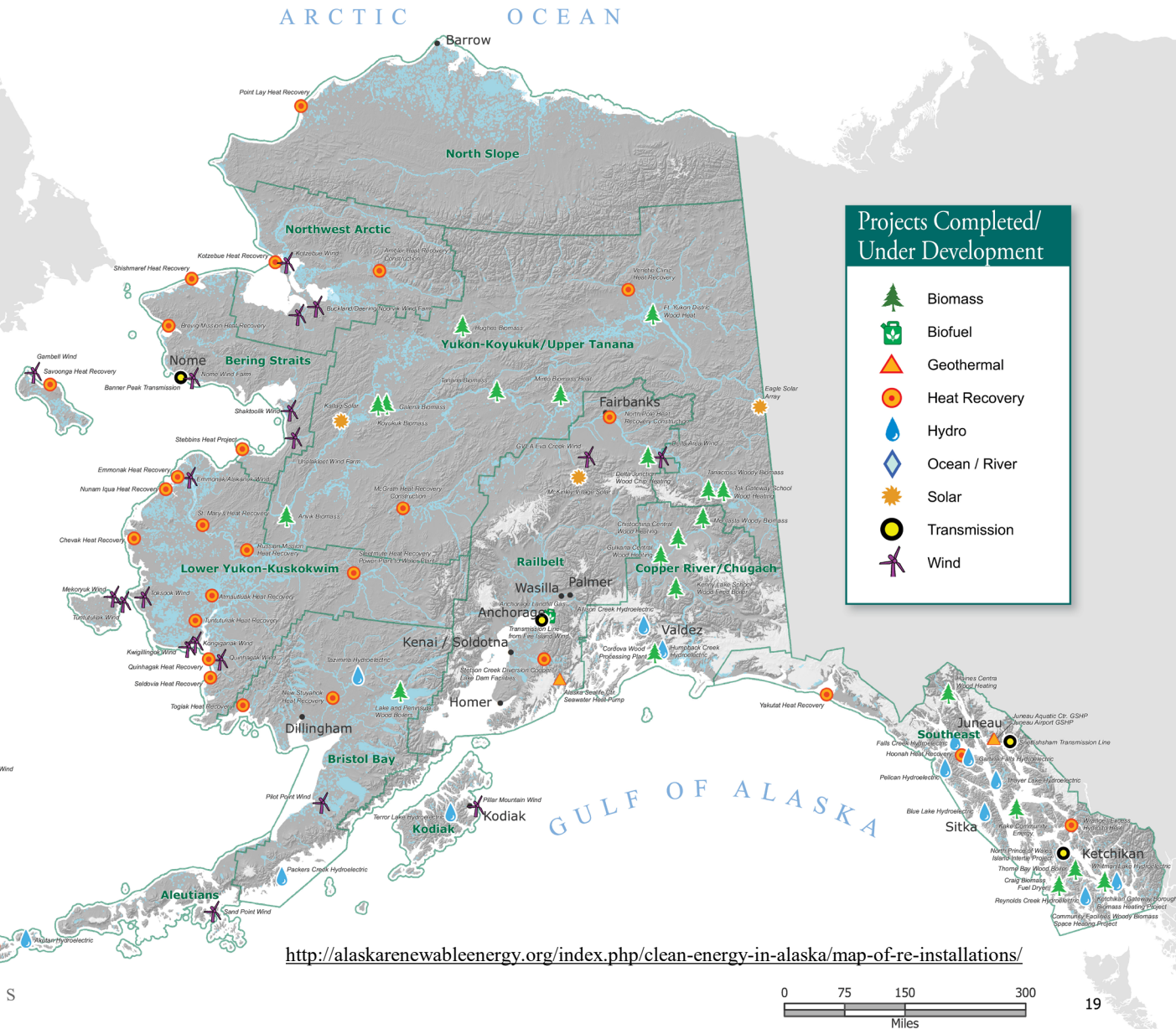
Lake hydroelectric expansion in Sitka, the Saint Paul heat recovery upgrade, and the wind-to-heat project in Gambell.

The present value of the capital expenditures used to build the first 54 generating projects is \$494 million and the present value of benefits is \$1.237 billion. Based on the present value of capital costs and future benefits, these projects have an overall benefit-cost ratio of 2.5. The Renewable Energy Grant Fund invested \$128.3 million of total project cost to these 54 projects in order to generate the \$1.237 billion of lifecycle benefits.

One completed project is Hoonah's Gartina Falls in Hoonah that displaces about one-third of the community's diesel used for electricity generations. Other projects completed are Chevak and Gambell surplus wind-to-heat water, wood boilers in Kokhanok, and Packers Creek Hydroelectric in Chignik Lagoon.

With low state revenues in recent years, AEA has been working with the Renewable Energy Fund Advisory Committee (REFAC) to adapt the program to changing times. Recent years have seen additional emphasis placed on funding early-stages of development that cannot easily be financed and providing assistance to applicants to find financing options to construct feasible projects.

To qualify for funding, project developers must submit applications to AEA, which ranks them based on economic and technical feasibility, local support, matching funding and the community's cost of energy. These rankings are submitted to the Alaska Legislature, which approves the projects and appropriates funding.



Previous Legislative Efforts

- ▶ 1990 - HCR 56: Relating to climate change.
 - ▶ Resolved to ask the governor to investigate state policies and procedures to determine best practices to combat climate change. Failed on House floor 17-10.
- ▶ 1995 - HJR 39: Relating to the Northern Sea Route.
 - ▶ Resolved to push for research and planning to examine shipping routes in the Arctic. Passed House 35-0, Passed Senate 19-0.
- ▶ 1999 - HJR 33: Urging the US Senate to decline to ratify the UN Framework Convention on Climate Change adopted in December 1997 at Kyoto, Japan.
 - ▶ Passed House 29-7, died in Senate committee.
- ▶ 2006 - HCR 30: Creating an Alaska Climate Impact Assessment Commission.
 - ▶ Created commission tasked with studying and evaluating impacts of climate change around the state, suggesting policies, examine alternative measures, etc. Passed House 28-0, Passed Senate 17-0. Final commission report produced March 17, 2008.
- ▶ 2015 - HB 1: Declaring the Arctic policy of the state.
 - ▶ Outlines policies of the state with respect to the Arctic, stating that is the policy of the state to 'sustain current, and develop new, approaches for responding to a changing climate, and adapt to the challenges of coastal erosion, permafrost melt, and ocean acidification.' Passed the House 32-2, Passed the Senate 19-1.
- ▶ 2016 - HB 233: Establishing the Climate Change Commission and 2017 - HB 173: Establishing the Alaska Climate Change Response Commission.
 - ▶ Would have created commission to advise the governor, consult with experts, liaise with non-State entities, recommend actions, provide annual report. Died in committee.

Previous Administrative Efforts

- ▶ 2007 - Administrative Order 238: Governor Palin “establish[ed] a Climate Change Sub-cabinet to advise the Office of the Governor on the preparation and implementation of an Alaska climate change strategy.”
 - ▶ Sub-cabinet was dissolved by Gov. Parnell, and AO 238 was rescinded and replaced by Gov. Walker’s AO-289.
- ▶ 2017 - Administrative Order 289: Governor Walker created a 20-person Climate Action for Alaska Leadership Team and an Alaska Climate Change Strategy to advise on ‘critical and timely actions to address climate change challenges that will safeguard Alaska now and for future generations.’
 - ▶ AO 289 Rescinded by Gov. Dunleavy in 2019.

Vision for the committee

- ▶ Engage in fact-finding
- ▶ Provide forum to educate legislature on opportunities and impacts
- ▶ Create recommendations for legislative action
- ▶ Hear bills as assigned
- ▶ Act as a public-facing body dedicated to the issues of climate change and climate policy in Alaska
- ▶ Anticipate substantial public engagement in determining direction of committee
- ▶ Hope to lay the groundwork for a similar committee in 32nd Legislature
- ▶ May introduce legislation

Nuts and bolts

- ▶ Committee will exist until the start of the 32nd Legislature (January, 2021)
- ▶ Anticipate approximately one hearing per month through the end of the current session and 1-2 hearings during the interim