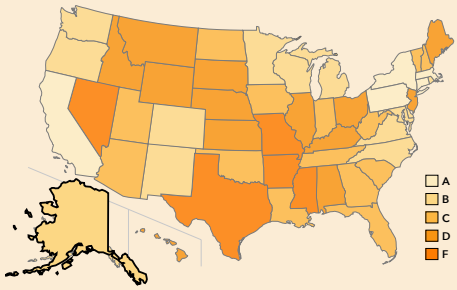
OVERALL GRADE: B+

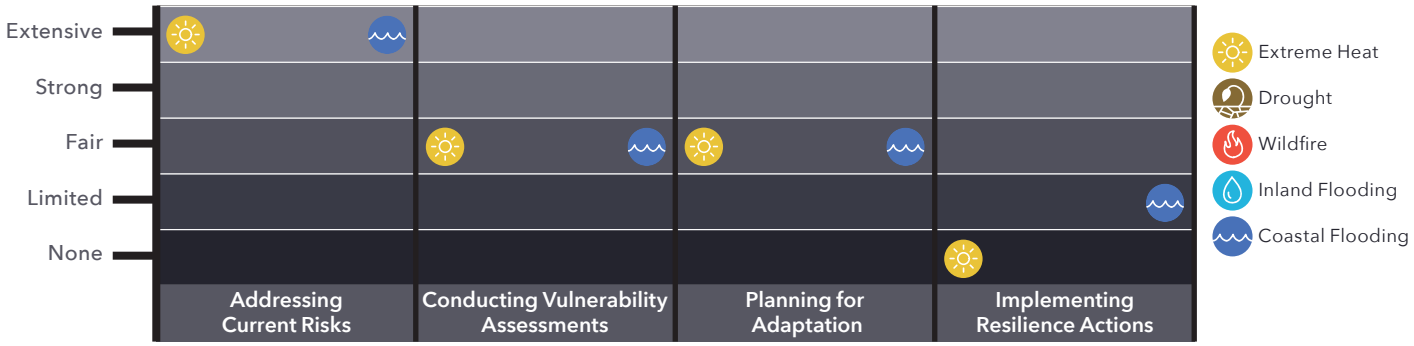


OVERALL: B+	
EXTREME HEAT:	A
DROUGHT:	–
WILDFIRE:	–
INLAND FLOODING:	–
COASTAL FLOODING:	B-

Note: The climate threat analysis and grading methodology for Alaska and Hawaii differ from those for the lower 48 states due to the use of a different climate dataset. For details, see the methodology.

Alaska faces considerable and significantly increasing threat levels from extreme heat and coastal flooding; wildfire results were inconclusive, and threats from drought and inland flooding were not assessed due to a lack of appropriate hydrology data. Extreme heat was evaluated relative to Alaska's 95th percentile daily maximum temperature threshold of 65 degrees Fahrenheit over the period of 1991-2010; while days above this temperature threshold do not all pose a risk to human health, they do indicate general warming that can affect climate risks unique to Alaska, like thawing permafrost. Alaska earns an overall grade of B+ on the Report Card, with an A for extreme heat and a B- for coastal flooding. Alaska is taking *extensive action* to address its current climate risks through its comprehensive Hazard Mitigation Plan and numerous sector-level programs. While Alaska has taken a *fair amount of action* to assess its climate vulnerabilities and plan for adaptation, *limited action* has been taken to implement recommendations resulting from this work. For example, the Climate Change Sub-Cabinet was created in 2007 to advise the Office of the Governor on preparing and implementing Alaska's climate change strategy, but very little evidence exists of studies, plans, or meetings past 2011. Alaska could improve its climate preparedness by restarting its climate planning work and beginning to implement adaptation measures.

ACTION TAKEN:



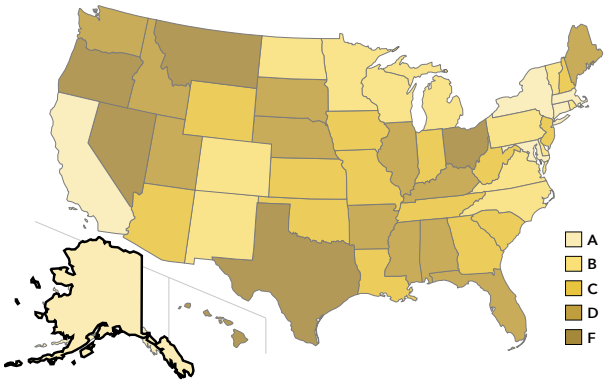
SOME ACTIONS ALREADY TAKEN

- Alaska's *Hazard Mitigation Plan*, technical assistance programs, disaster response plans, and emergency communications materials address current climate risks across sectors; sector-specific programs and resources include the Alaska Community Coastal Protection Project; drinking water regulations calling for emergency preparedness plans; and the Alaska Energy Authority's Emergency Response Program.
- *Alaska's Climate Change Strategy: Addressing Impacts in Alaska* outlines projected changes in temperature, precipitation, sea level, and wildfire, as well as potential impacts of climate threats. The report also provides a strategy with recommended actions to address impacts.
- Alaska Department of Transportation and Public Facilities participated in a Federal Highway Administration Climate Change Adaptation Pilot Program, which assessed the vulnerability of various transportation assets throughout the state to permafrost thaw and coastal flooding/ice loss.
- The Alaska Climate Change Impact Mitigation Program (ACCIMP) provides technical assistance and funding to communities threatened by climate-related natural hazards. The intent of the program is to assist impacted communities develop a planned approach to shoreline protection, building relocation and/or eventual relocation of the village.

WEAKNESSES

- No evidence that *Alaska's Climate Change Strategy: Addressing Impacts in Alaska* was formally accepted by the state with an implementation plan for recommended actions.
- No evidence of quantitative climate change vulnerability assessments in energy, health, water, or community sectors.
- Almost no evidence of action to incorporate future climate change projections associated with extreme heat, wildfire, or coastal flooding into state-level programs, investments, and activities.
- Almost no evidence of official state funding, policies, or guidelines for increasing resiliency to climate change threats.

EXTREME HEAT: A



OVERALL:	B+
EXTREME HEAT:	**A**
DROUGHT:	–
WILDFIRE:	–
INLAND FLOODING:	–
COASTAL FLOODING:	B-

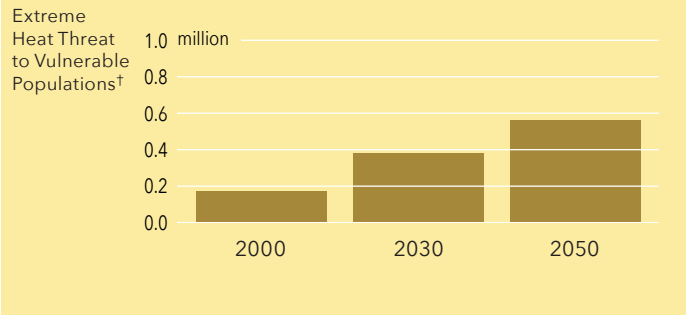
Alaska earns an A for its generally strong preparedness in the face of a relatively low extreme* heat threat. Despite Alaska's overall lower temperatures compared to other states, many portions of the state regularly experience summer temperatures in excess of 90 degrees Fahrenheit. Alaska also faces a unique risk: the thawing of permafrost due to warming, which can pose a risk to communities and built infrastructure. The extreme heat index used in this analysis, while not a proxy for permafrost thaw, does provide an indication for general warming. Other studies suggest that Alaska, and other Arctic regions, may experience warming more rapidly than temperate regions.

Alaska has taken *extensive action* to address its current heat risks its Hazard Mitigation Plan, in addition to energy efficiency and conservation programs, drinking water regulations, and public health preparedness programs. Alaska has also taken a *fair amount of action* to understand its vulnerability to future changes in heat, as well as climate change adaptation measures to address them. However, aside from some efforts by the Department of Transportation and Public Facilities to address permafrost thaw on state roads, Alaska has taken *limited action* to address its future changes in heat risks.

* Extreme heat is measured relative to local norms. For consistency of methodology, the annual number of heatwave days is calculated as the average number of days each year on which the daily maximum temperature exceeds the 95th percentile of daily maximum temperature in the baseline (1991-2010) period for at least three consecutive days. This comparison is done on a grid approximately 17 miles East-West and 30 miles North-South, so warmer locations would have a higher temperature threshold. Statewide, the 95th percentile of daily maximum temperature is approximately 65 degrees Fahrenheit. While days above this temperature are not all potentially harmful to human health, an increase in hot days is an indicator of general warming. Modeling the exact response of permafrost thaw and wildfire to warming is highly complex and beyond the scope of this analysis, but studies have shown that higher temperatures are one of the contributing causes of increased thawing of permafrost and higher wildfire potential.

KEY FINDINGS:

EXTREME HEAT THREAT



† Average number of heat wave days per year times total vulnerable population. A score of 1 represents 1 vulnerable person exposed to 1 heat wave day.

▶ Average annual number of heat wave days: Average number of days each year on which the maximum temperature exceeds the 95th percentile of daily maximum temperature in the baseline period (1991-2010) for at least three consecutive days.

DID YOU KNOW?

- Currently, Alaska experiences about 15 heat wave days a year. By 2050, that figure is projected to more than triple, to more than 45 days annually.
- Close to 30,000 people in Alaska are aged 65 and older, or less than 5 years old, living below the poverty line. These groups are considered to be especially vulnerable to extreme heat. This represents more than 1 in every 50 residents of Alaska.
- According to the National Climate Assessment, more than 80% of Alaska is underlain by permafrost, and temperatures 1 meter below the surface have warmed by 6 to 8 degrees Fahrenheit since the mid-1980s. This trend is projected to persist into the future.

EXTREME HEAT: A

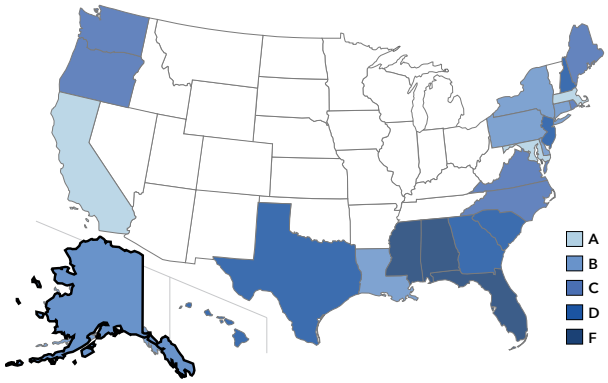
EXAMPLE CRITERIA

A subset of the criteria used to develop Alaska's extreme heat preparedness grade.

	Transportation	Energy	Water	Health	Communities
ADDRESSING CURRENT RISKS					
Does the State Hazard Mitigation Plan cover extreme heat?	n/a	✓	✓	✓	n/a
Does the state have an extreme heat emergency response plan that is updated routinely?	✓	✓	✓	✓	n/a
Does the state provide extreme heat emergency communication materials for citizens?	✓	✓	✓	✓	n/a
CONDUCTING VULNERABILITY ASSESSMENTS					
Has the state published information on how the frequency or severity of extreme heat events may change in the future?	✓	✓	✓	✓	n/a
Has the state conducted extreme heat vulnerability assessments for each sector?	✓	NO	✓	NO	n/a
Is the state tracking extreme heat impacts?	NO	n/a	NO	NO	n/a
PLANNING FOR ADAPTATION					
Is there a statewide climate change adaptation plan covering extreme heat?	✓	✓	✓	✓	n/a
Is there a statewide implementation plan for climate change adaptation?	NO	NO	NO	NO	n/a
Does the state have sector-specific extreme heat adaptation plans?	✓	✓	✓	✓	n/a
IMPLEMENTING RESILIENCE ACTIONS					
Are there optional state guidelines for resilient activities (e.g., construction)?	NO	NO	NO	NO	n/a
Are there state requirements for resilient activities (e.g, construction)?	NO	NO	NO	NO	n/a
Is there evidence that the state is implementing extreme heat adaptation policy/guidelines?	✓	NO	NO	NO	n/a

"n/a" indicates that the sector is either insensitive to the threat or the state does not have a significant role.

COASTAL FLOODING: B-



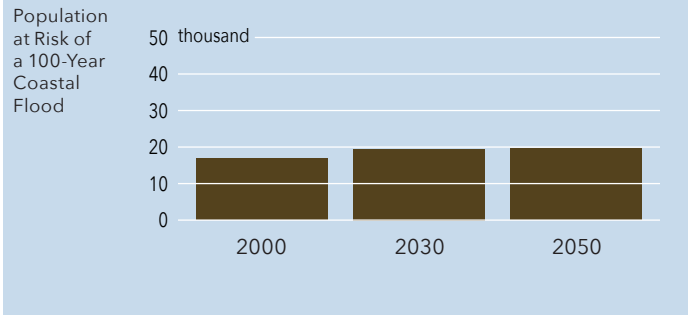
OVERALL:	B+
EXTREME HEAT:	A
DROUGHT:	–
WILDFIRE:	–
INLAND FLOODING:	–
COASTAL FLOODING:	**B-**

Alaska earns a B- for its moderate level of preparedness in the face of a relatively low level of coastal flooding threat. By 2050, the 100-year coastal floodplain is projected to encompass fewer than 20,000 people but is projected to put more than 15,000 square miles at risk, by far the most land of any state. Although not part of the scope of this analysis, coastal flooding could disproportionately affect Native Alaskans, who make up the majority of residents in Alaska's remote coastal villages along the western and northern coasts where topography is relatively flat. Indeed, communities like Shishmaref have been forced to relocate as storm-driven erosion has washed large portions of the towns away.

Alaska has taken *extensive action* to address its current coastal flooding risks through its Hazard Mitigation Plan, the Alaska Community Coastal Protection Project, transportation resilience programs, and energy and public health emergency preparedness programs. The state has taken a *fair amount of action* to understand its vulnerability to future changes in sea levels as well as develop climate change adaptation measures. However, aside from some community and transportation efforts, *limited action* has been taken to implement climate change adaptation measures.

KEY FINDINGS:

COASTAL FLOODING THREAT



▶ Total population at risk of a 100-year coastal flood.

DID YOU KNOW?

- Currently, close to 17,000 people live within the 100-year coastal floodplain in Alaska. By 2050, this is projected to increase by more than 15%, to almost 20,000 people, as a result of rising sea levels alone (no change in population or its distribution from 2010 Census levels).
- Nearly 13,000 square miles of Alaska is currently within the 100-year coastal floodplain. By 2050, this floodplain is projected to expand to more than 15,000 square miles.

COASTAL FLOODING: B-

EXAMPLE CRITERIA

A subset of the criteria used to develop Alaska's coastal flooding preparedness grade.

	Transportation	Energy	Water	Health	Communities
ADDRESSING CURRENT RISKS					
Does the State Hazard Mitigation Plan cover coastal flooding?	✓	✓	✓	✓	✓
Does the state have a coastal flooding emergency response plan that is updated routinely?	✓	✓	✓	✓	✓
Does the state provide coastal flooding emergency communication materials for citizens?	✓	✓	✓	✓	✓
CONDUCTING VULNERABILITY ASSESSMENTS					
Has the state published information on how the frequency or severity of coastal flooding may change in the future?	✓	✓	✓	✓	✓
Has the state conducted coastal flooding vulnerability assessments for each sector?	✓	NO	✓	NO	NO
Is the state tracking coastal flooding impacts?	✓	n/a	NO	NO	✓
PLANNING FOR ADAPTATION					
Is there a statewide climate change adaptation plan covering coastal flooding?	✓	✓	✓	✓	✓
Is there a statewide implementation plan for climate change adaptation?	NO	NO	NO	NO	NO
Does the state have sector-specific coastal flooding adaptation plans?	✓	✓	✓	✓	✓
IMPLEMENTING RESILIENCE ACTIONS					
Are there optional state guidelines for resilient activities (e.g., construction)?	NO	NO	NO	NO	NO
Are there state requirements for resilient activities (e.g, construction)?	NO	NO	NO	NO	NO
Is there evidence that the state is implementing coastal flooding adaptation policy/guidelines?	✓	NO	NO	NO	✓

"n/a" indicates that the sector is either insensitive to the threat or the state does not have a significant role.