

Winter rain in Interior Alaska:

Community impacts, effective responses, and policy implications



Winter rain, meaning any liquid precipitation falling in winter months (November– March), poses a unique and growing challenge in Alaska’s Interior. Based on takeaways from 27 interviews with practitioners, managers, and other experts in the Fairbanks area, several key concerns emerge, ranging from transportation challenges to impacts on wildlife. We also explore the December 2021 “Icemageddon” event as a case study of the risks and hazards associated with winter rain and how organizational policy shifts can mitigate these impacts with operational strategies and long-term plans. As winter rain becomes an increasingly acute challenge in the Interior, decision makers have an opportunity to work together and leverage resources to strengthen preparedness and response.

KEY IMPACTS



Icy roads make transportation difficult: Winter rain freezes to roadways and remains stuck to asphalt until spring melt, creating long-term icy roads that are hazardous for travel. Response can be costly.



Downed power lines cause outages: Winter rain makes snow stick to tree limbs, causing them to fall on power lines, and wet snow can collapse lines directly. It drove 6 of Golden Valley Electric Association (GVEA)’s 10 longest and 4 of 10 largest-scale outages.



Hazardous conditions put personal safety at risk: During 7 of 9 winter rain events, the number of cars in crashes increased from non-event days when accounting for traffic. Additional risks include slips, trips, and falls, impacts on homeless populations, and more.



Emergency care is impacted and response is slowed: During events, Emergency Medical Services call volume increases, mostly related to vehicle collisions. Roads may continue being hazardous for response vehicles for weeks after an event.



Road transportation challenges may result in closures: Icy roads contribute to school and business closures. From 2010–2025, 12 of 18 school closures in the FNSB school district were associated with a winter rain event.



Essential goods’ delivery is delayed: Winter rain can delay food deliveries for communities on and off the road system. Especially for homes off of high-priority roads, fuel and water deliveries may also be delayed.



Wildlife challenges and human-wildlife interactions increase: Ice on vegetation and snow can limit wildlife movement and make it difficult to access food, contributing to die-offs or forcing wildlife to move closer to human infrastructure.



Impacts persist past winter months: The spring comes with an array of challenges for infrastructure: flooding from thawing ice, road heaving from liquid seeping into cracks and freezing, and roof collapse from wet, heavy snow.

EVENT SPOTLIGHT: DECEMBER 2021

172
*businesses &
services shut down*

20,000
*GVEA members
without power*

70%
*increase in number
of cars in crashes*

35-40%
*decrease in
moose populations*

\$4.8 million +
*paid by State Dept.
of Transportation*

\$600K +
*paid by City of
Fairbanks*

INSIGHTS AND RESOURCES

Strengthen community preparedness and response through existing networks:

- National Weather Service (NWS) facilitates preparedness during winter rain events through briefings and tabletop exercises.
- Fairbanks Local Emergency Planning Committee provides a space for information-sharing and collaboration.
- Planning processes for policy documents (listed in the box to the right) provide a channel for collaboration.
- While response efforts can remain siloed, drawing on existing relationships can foster collaboration.

Participate in federal resilience programs:

- The [National Weather Service \(NWS\) StormReady® program](#) and [National Oceanic and Atmospheric Administration \(NOAA\) Weather-Ready Nation \(WRN\) Ambassador™ program](#) aim to build local preparedness.
- NWS briefings and decision support are also an invaluable resource.

Policies that enhance preparedness for winter rain events in the Interior

HAZARD MITIGATION PLANS:

Identify hazard risks and plan long-term strategies to mitigate impacts.

FNSB (2024), State of Alaska (2023), FNSB/Cities of Fairbanks and North Pole (2021), Denali Borough/City of Anderson (2020), 20 tribes (2008-2019)

ADAPTATION PLANS: *Prepare communities by identifying present and future environmental risks.*

FNSB (2024)

EMERGENCY OPERATIONS

PLANS: *Provide operational guidance to respond to hazards.*

FNSB (2026), University of Alaska Fairbanks (2024), State of Alaska (2024), Denali Borough (2020)

COMPANY/GOVERNMENT DEPARTMENT POLICY: *Provide operational guidance for emergency and non-emergency situations.*

INSTITUTIONAL KNOWLEDGE: *Expertise gained by personnel.*

Read the full report:

uaf-accap.org/projects/policy-brief-interior-winter-rain/

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