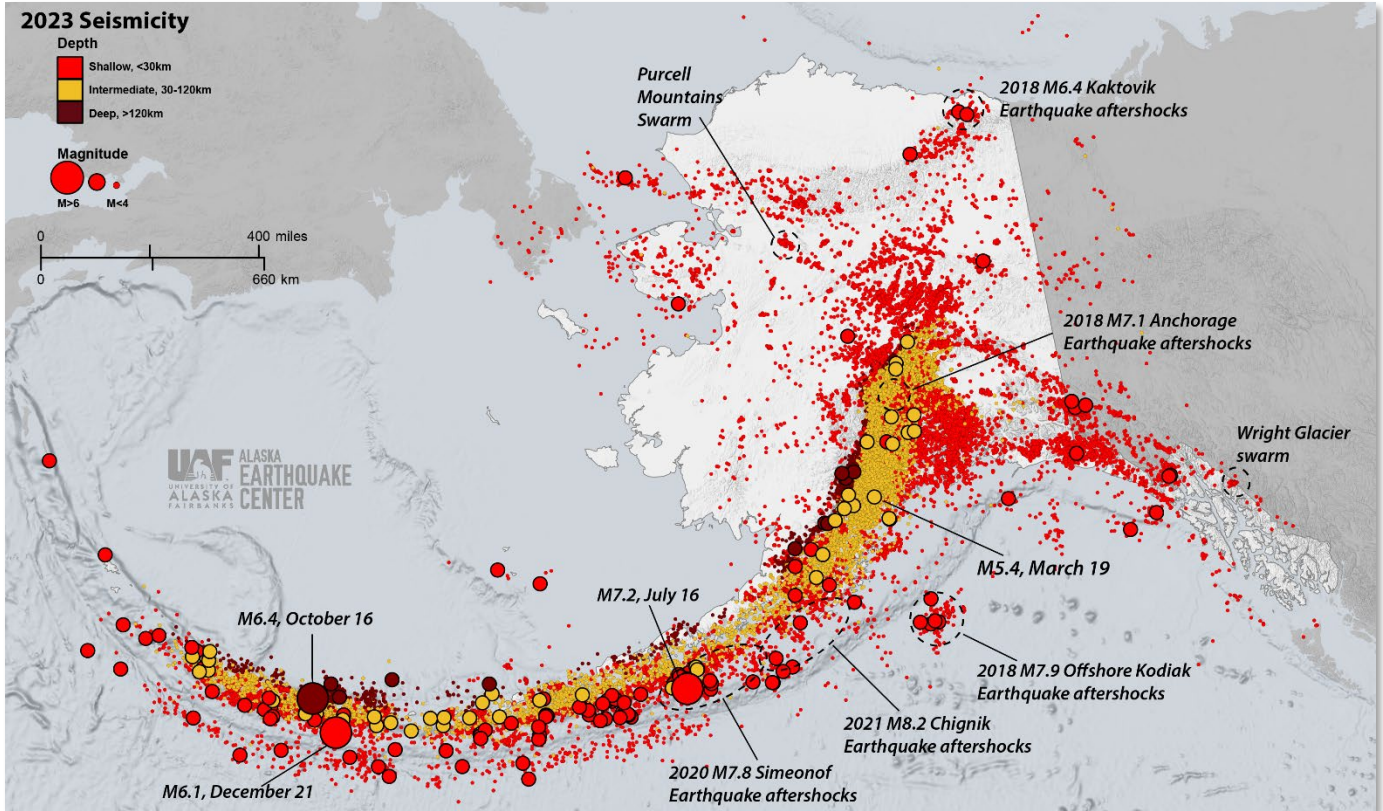


ASHSC Alaska Seismic Hazards Safety Commission



2023 ANNUAL REPORT

TO THE GOVERNOR & STATE LEGISLATURE

EXECUTIVE SUMMARY

The Alaska Seismic Hazards Safety Commission (ASHSC) continues to pursue its mission to improve seismic resilience in Alaska. Earthquake hazards exist in nearly every corner of the state and our active geology and extensive coastlines guarantee that we will continue to experience significant earthquakes and tsunamis. While there were no damaging Alaska earthquakes in 2023, we continue our earthquake and geohazards education and outreach efforts to make Alaskans more resilient.

In alarming opposition to Alaskan resilience, the National Oceanic and Atmospheric Administration (NOAA)-National Weather Service (NWS) announced intent to terminate the National Tsunami Hazard Mitigation Program (NTHMP) in federal fiscal year 2025. The NTHMP grant funds are the primary funding source for tsunami hazard mapping, education and outreach, mitigation, preparedness, and overall tsunami readiness in the United States. Ending this program will end tsunami preparedness activities in Alaska. **Please urge NOAA to continue the NTHMP program—Alaskan lives depend on it.**

The 2018 magnitude (M) 7.1 Anchorage earthquake resulted in significant geotechnical damage to structures throughout Southcentral Alaska and multiple engineering and geotechnical reports have linked this damage to the lack of statewide building code adoption and enforcement. We recommended specific steps in [Policy Recommendation 2020-1](#) to improve building code adoption and enforcement and have vocally supported two bills from the 33rd State Legislature, namely House Bill 150 and Senate Bill 197—both acts relating to statewide residential building codes. Improving the safety and functionality of our homes, schools, hospitals, and businesses following the next significant earthquake remains our top priority.

The Alaska Earthquake Center (AEC) reported 45,540 seismic events in Alaska and neighboring regions in 2023. The largest earthquake was a M7.2 event that occurred on July 16 in the Alaska Peninsula region. It was a late aftershock of the 2020 M7.8 Simeonof Earthquake. Other strong earthquakes include the October 16 M6.4 and December 21 M6.1 earthquakes in the Andreanof Islands region of the Aleutian Islands. The largest earthquake in mainland Alaska, M5.4, occurred in the lower Cook Inlet region on March 19. We continued to monitor ongoing activity within the 2018 M7.1 Anchorage, 2018 M6.4 Kaktovik, 2018 M7.9 Offshore Kodiak, 2020 M7.8 Simeonof, and 2021 M8.2 Chignik aftershock sequences, the Purcell Mountains earthquake swarm, and the Wright Glacier cluster northeast of Juneau. All aftershock sequences continued to slow down compared to previous years.

We are proud of the Commission's work and welcome the opportunity to further discuss our activities.

Barrett Salisbury, DGGS, Chair
Natalia Ruppert, UAF, Vice-Chair

Cover Photo: 2023 Alaska seismic summary map from the AEC

**ALASKA SEISMIC HAZARDS SAFETY COMMISSION
ANNUAL REPORT TO THE GOVERNOR
& STATE LEGISLATURE FOR 2023**

INTRODUCTION

This report¹ summarizes the ASHSC's business, activities, and accomplishments in 2023 as related to its statutory powers and duties (AS 44.37.067) on behalf of the Governor, Legislature, local governments, and the public and private sectors, which include:

- *Recommending goals and priorities for mitigating seismic hazards (e.g. strong ground shaking, landslide, avalanche, liquefaction, tsunami inundation, fault displacement, and subsidence);*
- *Recommending policies including needed research, mapping, and monitoring programs;*
- *Reviewing the practices for recovery and reconstruction after a major earthquake and to recommend improvements to mitigate losses from similar future events; and,*
- *Gathering, analyzing, and disseminating information of general interest on seismic hazard mitigation to reduce the state's vulnerability to earthquakes.*

Alaska has more earthquakes than any other region of the United States and is one of the most seismically active areas of the world. The next significant earthquake and potential tsunami could happen at any time and we must continue to improve our seismic resilience now, before the next disaster occurs. The risks to public safety and infrastructure from future events can be greatly reduced through proper planning, design, construction, and continued education and outreach.

COMMISSION BUSINESS

Membership

The ASHSC membership represents a broad cross-section of Alaskan professionals which allows for a unique perspective on seismic hazards. We have representatives from the scientific sector who study modern and prehistoric earthquakes, engineers who design our infrastructure to minimize earthquake risk, and government representatives and emergency managers who mitigate against and respond to earthquake disasters.

¹ The Commission's documents (e.g., annual reports, meeting agendas and minutes, strategic and operating plans, policy recommendations and white papers, etc.) are available on our website: <https://seismic.alaska.gov>



TABLE 1: COMMISSION MEMBERSHIP

| COMMISSIONER / OCCUPATION / RESIDENCE | REPRESENTATION |
|---|--|
| Barrett Salisbury, PhD - Chair Earthquake Geologist, DGGs; Fairbanks | Alaska Department of Natural Resources |
| Natalia Ruppert, PhD – Vice Chair Seismologist, UAF; Fairbanks | University of Alaska |
| Bryan Fisher Director, DHS&EM; Anchorage | Alaska Department of Military & Veterans Affairs |
| Liam Knecht § Architect, USCG; Juneau | Federal Agency |
| Tom Bergey Mat-Su School Board President; Wasilla | Local Government (1/3) |
| Aaron Baczuk § Emergency Manager, City of Valdez; Valdez | Local Government (2/3) |
| Nicholas Murray, PE, SE Bridge Engineer, AK DOT&PF; Juneau | Public/Restricted (1/3) |
| Colin Maynard, PE, SE, F.NSPE § Retired Structural Engineer; Anchorage | Public/Restricted (2/3) |
| Dan Neuffer, PE Geotechnical Engineer; Palmer | Public/Restricted (3/3) |
| Theresa Harmon Administrative Assistant, DGGs; Fairbanks | n/a |
| Robert Gillespie §† Alaska National Insurance ; Wasilla | Insurance Industry |
| Sterling Strait † Structural Engineer, Alyeska Pipeline; Anchorage | Public/Restricted |
| Sam Bass † Assembly Member; Skagway | Local Government |

† Resigned this year

§ Appointed this year

With nine of 11 seats filled, the ASHSC is actively recruiting for an insurance industry representative and a local government representative from a seismically active area.

Meetings

The ASHSC conducted five regular business meetings in 2023, all of which were public (February 9, March 23, May 11-12, August 17, and September 28). The May 11-12 meeting was in person in Fairbanks, Alaska, where we also received a tour of the Alaska Earthquake Center in the Geophysical Institute, University of Alaska, Fairbanks.

Ethics Act (AS 39.52)

The ASHSC submitted quarterly ethics reports to the Department of Law in 2023, with no written determinations, requests for determinations, or suspected potential violations.

Finances

The ASHSC's expenditures in 2023 (SFY23) totaled \$5,303 out of an annual budget of \$10,000.

ACTIVITIES & ACCOMPLISHMENTS

This section summarizes our activities and accomplishments during the last year. These accomplishments include activities addressed by the full Commission along with the actions of working groups and individual commissioners working on related business.

- **Pursuing improved building code adoption and enforcement in Alaska**

In partnership with the Alaska Department of Homeland Security & Emergency Management (DHS&EM), the ASHSC is defining the scope of work for a contracted study on evaluating building code use in Alaska. Funds for the work are available from the Federal Emergency Management Agency (FEMA) through the National Earthquake Hazards Reduction Program (NEHRP) Individual State Earthquake Assistance (ISEA) program. The ongoing, multi-year project seeks to clarify the current state of building code adoption and enforcement in Alaska, to analyze successful approaches of other seismically active states, and to provide clear recommendations for improvements in Alaska.

To this end, we have offered our support for House Bill 150 and Senate Bill 197—both acts relating to statewide adoption of residential building codes. We formed a subcommittee with members from the insurance industry, the Alaska Housing Finance Corporation, the Alaska Department of Public Safety, and the Municipality of Anchorage Geotechnical Advisory Commission to discuss hurdles to these active bills and to brainstorm ways to improve our understanding of the current situation and provide a roadmap towards achieving the recommendations outlined in Policy Recommendation 2020-1².

- **Collaborated with the U.S. Geological Survey Earthquake Hazards Program to develop an Earthquake Early Warning implementation plan for the State of Alaska**

In the Department of the Interior, Environment, and Related Agencies Appropriations Act of 2022, the U.S. Geological Survey (USGS) was directed by Congress and provided \$1M of one-time Congressionally Directed Spending/Community Project Funding to work with the State of Alaska to develop an implementation plan for the expansion of the ShakeAlert earthquake early warning (EEW) system. An earthquake early warning system detects earthquakes so quickly that an alert can potentially reach some areas seconds before strong shaking arrives so that

² https://seismic.alaska.gov/download/ashsc_meetings_minutes/pr_2020-1_code_adoption_and_enforcement.pdf

protective actions can be taken. During the development of the EEW implementation plan, the USGS Earthquake Hazards Program consulted with the ASHSC over many months to identify potential Alaskan stakeholders and to discuss coverage options and Alaska-specific hurdles. As any potential EEW system would build on the existing seismometer network in Alaska, the AEC was awarded a cooperative agreement for their contributions to the plan and their work coordinating with other networks in Alaska. Commissioner Ruppert lead the development of this implementation plan on behalf of the AEC and ASHSC. Ultimately, developing safer spaces for Alaskans through an Earthquake Early Warning system will be dependent upon Congressionally-appropriated funding.

- **Participated in DHS&EM-facilitated Tsunami Operations Workshop and Rural Resilience Workshop for Aleutian Island, Bering Sea, and Alaska Peninsula communities**



As part of the National Tsunami Hazard Mitigation Program (NTHMP), Commissioner Salisbury participated in several DHS&EM-led earthquake and tsunami workshops to educate coastal Alaska communities about local hazards and how to prepare and respond to emergencies. Working with community governments, emergency responders, and law enforcement, we interacted with over three dozen at-risk

communities in 2023. As mentioned earlier, the NTHMP program is at risk of being eliminated. **Over the past two decades, funding support from NOAA's yearly NTHMP grants have enabled states and territories to undertake and maintain the following critical activities. Without continued funding, these Alaska efforts will cease:**

- **Local tsunami education and preparedness efforts**, which include public outreach, education campaigns, workshops, and other training for the public, elected officials, and emergency management.
- **Tsunami alerting** via state and territory communication processes with hundreds of local partners and coordination with NOAA's Tsunami Warning Centers.
- **Tsunami hazard modeling** to improve understanding of tsunami risk to coastal communities from both local and distant tsunamis, as well as the risk from multi-hazard flood impacts from coastal storms and sea-level rise.
- **Evacuation and response planning**, including the creation of tsunami hazard zone and evacuation maps, community-specific evacuation brochures, wave simulations, response plans, and the facilitation of community evacuation drills.
- **Mitigation and recovery planning** to prevent immediate and long-term impacts from tsunamis, including the construction of tsunami vertical evacuation structures, which are necessary for survival in areas throughout the U.S. where tens of thousands will not be able to evacuate before a local tsunami arrives.



- **Continued multi-agency Barry Arm landslide monitoring and outreach**

Commissioners Ruppert and Salisbury continue to participate in the multi-agency task force studying the potential for a significant tsunami to be generated by a massive subaerial landslide in the Barry Arm of Prince William Sound. Such a tsunami would be dangerous to watercraft, fisheries, and several population centers including the City of Whittier.

Multiple instruments, including an infrasound array, seismometers, cameras, weather and soil data loggers, ground-based radar, and water-level sensors have been established as part of an early warning system in the event of a mass movement.

The AK Division of Geological & Geophysical Surveys continues to maintain a website³ and listserv for regular updates and important announcements from the multi-agency team.

³ <https://dggs.alaska.gov/hazards/barry-arm-landslide.html>