Schools and Earthquake Safety

Identifying Alaska's most vulnerable school buildings

In 2018 Alaska had 129,935 students and 7,952 teachers occupying 509 public schools

Alaska is the most seismically active region of the United States and is at risk of economic and societal losses due to large damaging earthquakes.

Schools in Alaska serve not only as educational facilities but also as gathering places for the general public, and many are designated as emergency shelters in case of a natural disaster.

Concrete column failure at West High School in Anchorage, Alaska, after the 1964 Great Alaska Earthquake.

What is being done to identify vulnerable school buildings?

FEMA's "Rapid Visual Screening" process helps sort safe from "questionable" schools

The Alaska Seismic Hazards Safety Commission secured $100,000 in federal grant funding to hire a professional Alaska engineering firm to conduct screening surveys.

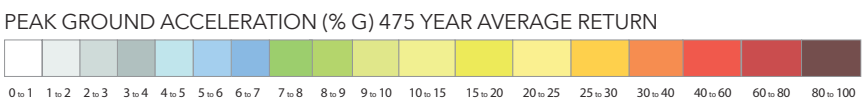
Schools evaluated in Mat-Su (2015), Kenai (2016), Fairbanks (2017), Juneau (2018), and Sitka (2018).

Benefits of screening

- **Identifying the most vulnerable schools allows the state to prioritize limited capital resources**
- **Screening helps secure federal grant funding by demonstrating the need for building improvements**

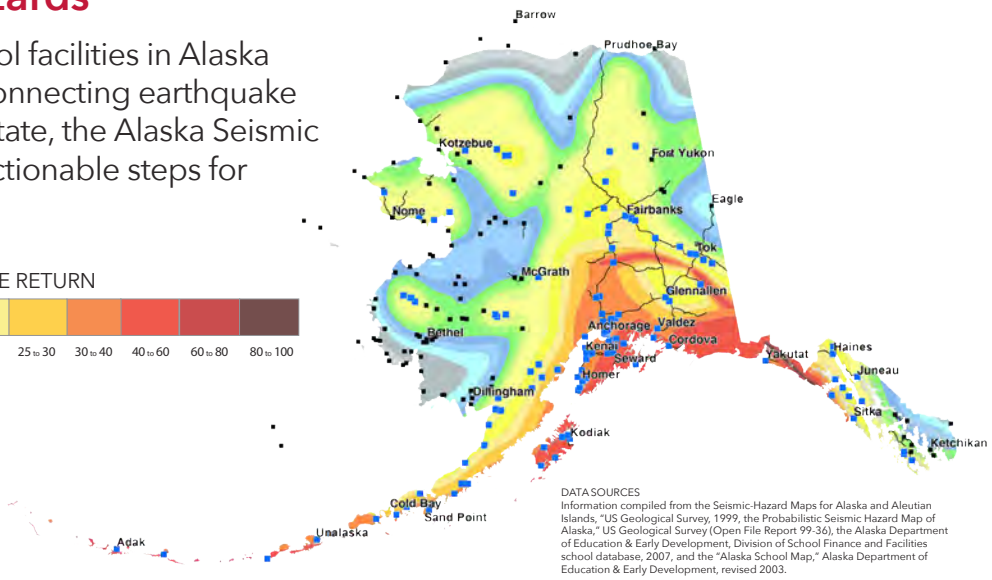
Schools and Earthquake Hazards

This map shows the distribution of school facilities in Alaska with respect to earthquake hazard. By connecting earthquake science with a deep knowledge of the state, the Alaska Seismic Hazards Safety Commission identifies actionable steps for improving our resilience.



Probability of exceeding 10% peak ground acceleration in a 50 year period. Building integrity can be compromised above 10% PGA.

> 10% PGA (360 Facilities) < 10% PGA (144 Facilities)



DATA SOURCES
Information compiled from the Seismic-Hazard Maps for Alaska and Aleutian Islands, "US Geological Survey, 1999, the Probabilistic Seismic Hazard Map of Alaska," US Geological Survey (Open File Report 99-36), the Alaska Department of Education & Early Development, Division of School Finance and Facilities school database, 2007, and the "Alaska School Map," Alaska Department of Education & Early Development, revised 2003.

ASHSC Alaska Seismic Hazards Safety Commission

Learn more at www.seismic.alaska.gov

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Rapid Visual Screening

What is Rapid Visual Screening?

The rapid visual screening (RVS) procedure was developed by the Federal Emergency Management Agency (FEMA) to **identify, inventory, and screen buildings that are potentially seismically hazardous**. The screening process ranks the buildings by approximate level of safety, based on generalizations such as construction type, age of building, building practices common at the time, local seismicity, structural irregularities, and the like.

How to interpret the RVS score

The score is the estimate of the **collapse probability** if ground motion from a significant earthquake occurs. For example, a final score of 10% implies there is a chance of 10 in 100 that the building will collapse if such ground motions occur. These are not exact probabilities and additional investigation is required to determine the true seismic risk.

What if the RVS score is high?

Structures with a risk value greater than 1% are potentially hazardous and are recommended for more thorough investigation by a design professional experienced in seismic design to determine if, in fact, they are seismically hazardous. The detailed engineering study may find the building to be safe, or to be hazardous. Seismically hazardous buildings should be retrofitted or replaced with safer construction.

Alaska Seismic Hazards Safety Commission

- The Alaska Seismic Hazards Safety Commission brings together a broad set of professionals with expertise in science, engineering, emergency services, local government, and insurance
- This commission helps translate the global lessons learned during earthquakes, reducing the state's vulnerability to future earthquakes and tsunamis
- The commission was established in Alaska statutes 44.37.065–.069, has 11 members appointed by the Governor, and is administered by the Department of Natural Resources, Division of Geological & Geophysical Surveys.

Learn more at www.seismic.alaska.gov

ASHSC Alaska Seismic Hazards Safety Commission

EERI

WSSPC Western States Seismic Policy Council

Results - Lower is Safer

	FEMA Risk
Juneau School District	
Dzantiki Heeni Middle School	20%
Floyd Dryden Middle School	20%
Gastineau Elementary School	25%
Mendenhall River Community School	6.3%
Riverbend Elementary School	20%
Yakoosge Alternative High School	25%
Sitka School District	
Baranof Elementary School	50%
Blatchley Middle School	16%
Keet Gooshi Heen Elementary School	12.6%
Kenai Peninsula Borough	
Chapman School	20%
Cooper Landing School	0.2%
Homer Middle School	4%
Kenai Central High School	6%
Moose Pass School	8%
Nikolaevsk School	0.1%
Ninilchik School	0.6%
Paul Banks Elementary School	0.5%
Sears-Kaleidoscope Elementary	1%
Seward High School	<0.1%
Soldotna Middle School	16%
Sterling Elementary School	0.8%
Susan B English School	8%
Tustumena Elementary School	2%
Matanuska-Susitna School District	
Big Lake Elementary School	0.5%
Butte Elementary School	<0.1%
Cottonwood Creek Elementary School	<0.1%
Snowshoe Elementary School	<0.1%
Swanson Elementary School	4%
Willow Elementary School	2%
Wasilla High School	50%
Fairbanks North Star Borough	
Barnette Elementary School	6.3%
Hunter Elementary School	6.3%
Hutchison Career Center	10%
Joy Elementary School	6.3%
West Valley High School	13%
Woodriver Elementary School	13%
Lathrop High School	10%
North Pole Elementary School	10%
North Pole Middle School	10%
Tanana Middle School	10%

FEMA risk percentages provide a ranking based on information considered during screening. Structures with a risk value greater than 1% are recommended for more thorough investigation. For facilities with multiple structures, only the highest risk value is listed here. See Commission website for complete reports.