



State of Alaska DHS&EM

Hazard Mitigation



DHS&EM Planning Section



Department of Homeland Security & Emergency Management

Mitigation Team:

- State Hazard Mitigation Officer (SHMO) – Garrett Brooks
- Hazard Mitigation Plans (HMP) – John Andrews, Program Manager
- Building Resilient Infrastructure and Communities (BRIC) – Rai Simpliciano, Program Manager
- Hazard Mitigation Grant Program (HMGP) – Kim Barenburg, Program Manager



What is Hazard Mitigation?



“Any cost-effective action taken to eliminate or reduce the long-term risk to life and property from natural and technological hazards.”

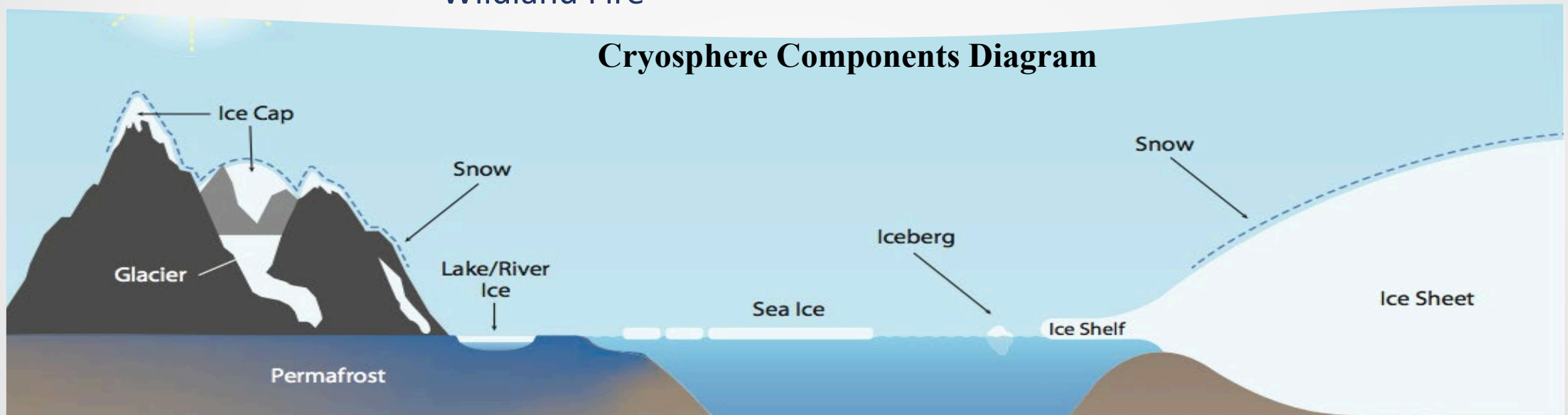
“FEMA's Hazard Mitigation Assistance (HMA) grant programs provide funding for eligible mitigation activities that reduce disaster losses and protect life and property from future disaster damages.”



Hazards

- Cryosphere (Four Major Groups: Glaciers, Permafrost and Periglacial, Sea Ice, Snow Avalanche)
- Earthquake
- Flood & erosion
- Ground failure
- Tsunami & Seiche (localized Tsunami)
- Volcano
- Severe weather
- Wildland Fire

Cryosphere Components Diagram





Hazard Mitigation Examples

property Acquisition Demolition or Relocation



Structure Elevation

Elevation of Utilities

Riverbank Armoring

Public Education

Seismic Retrofit

Soil Stabilization

Generator Project

Tsunami Warning Systems

Wildfire Mitigation



Galena – State/FEMA project where they raised building. The community used its own funds to add on arctic entry.



Eligible Sub-Applicants

Entity	HMGP	HMGP Post Fire	BRIC	FMA
State Agencies	Yes	Yes	Yes	Yes
Local Governments (including Tribal Gov.)	Yes	Yes	Yes	Yes
Federally Recognized Tribal Gov.	Yes	Yes	Yes	Yes
Private Non-Profit org. & institutions that own and operate a facility that provides an essential gov. service as defined in 44CFR§206.221€	Yes	Yes	No	No
Qualifying Conservation Private Non-Profit Org.	Yes	Yes	No	No

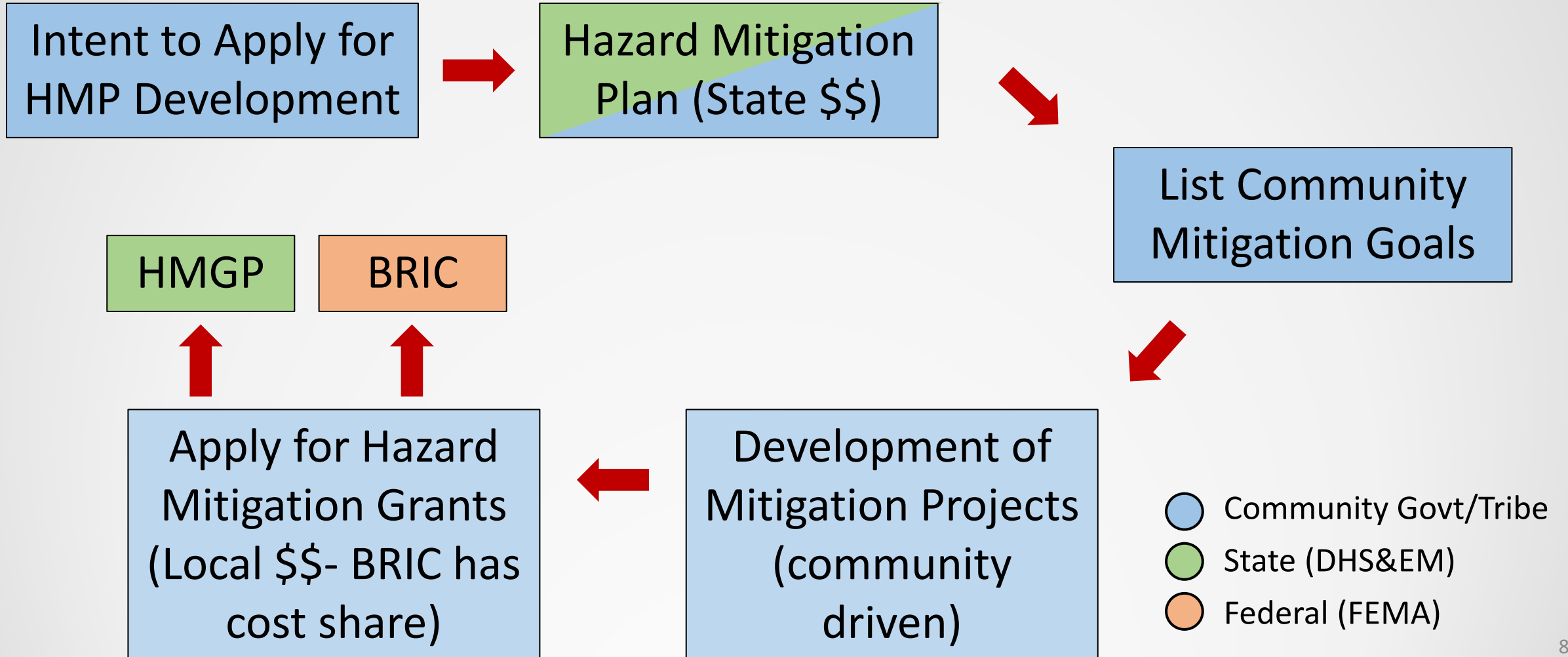


Why develop a Mitigation Plan?

- Reduce risk of future disaster losses
- An ounce of prevention is worth a pound of cure
- Eligibility for FEMA mitigation funding (Pre-Disaster)
- Eligibility for FEMA recovery funding (Post-Disaster)
- Mitigation planning helps communities act now, before a disaster, and to reduce the impact and risk of future disaster losses

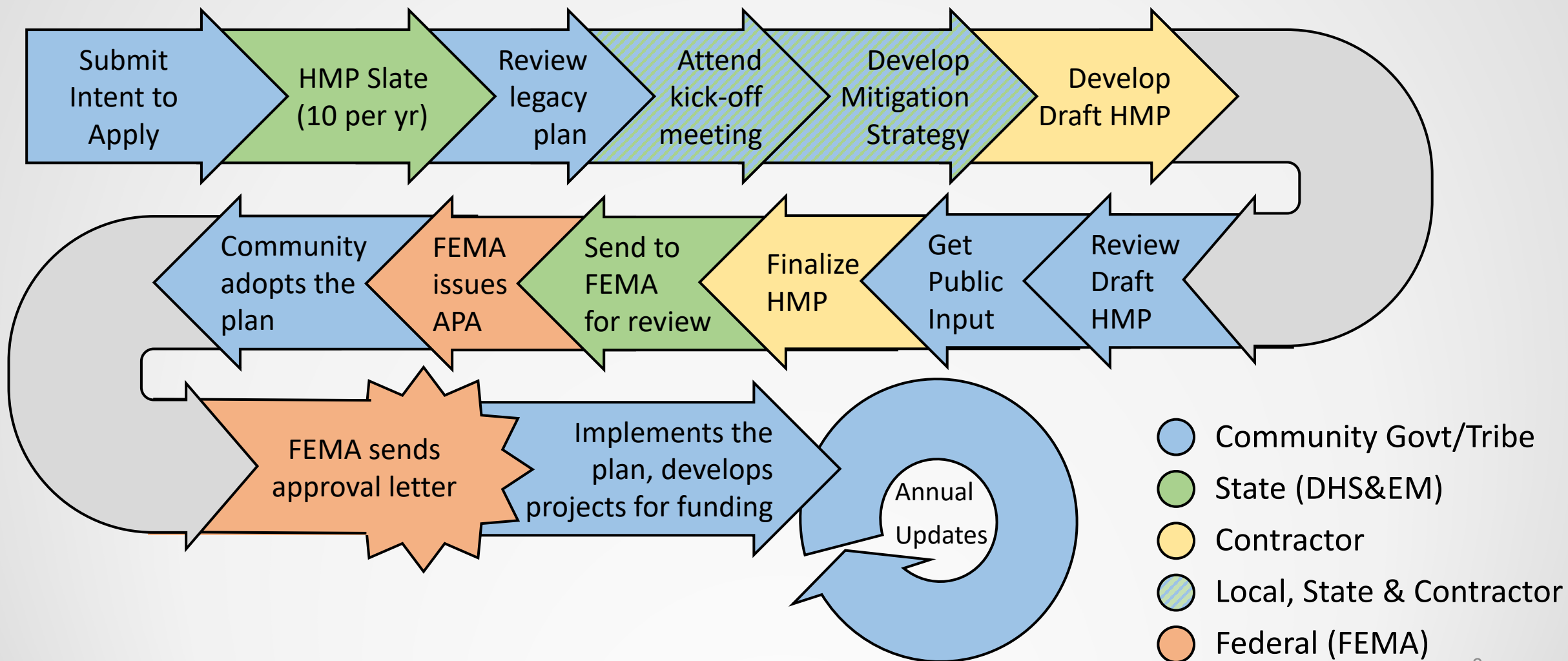


Hazard Mitigation Planning Process





Hazard Mitigation Plan Development Process





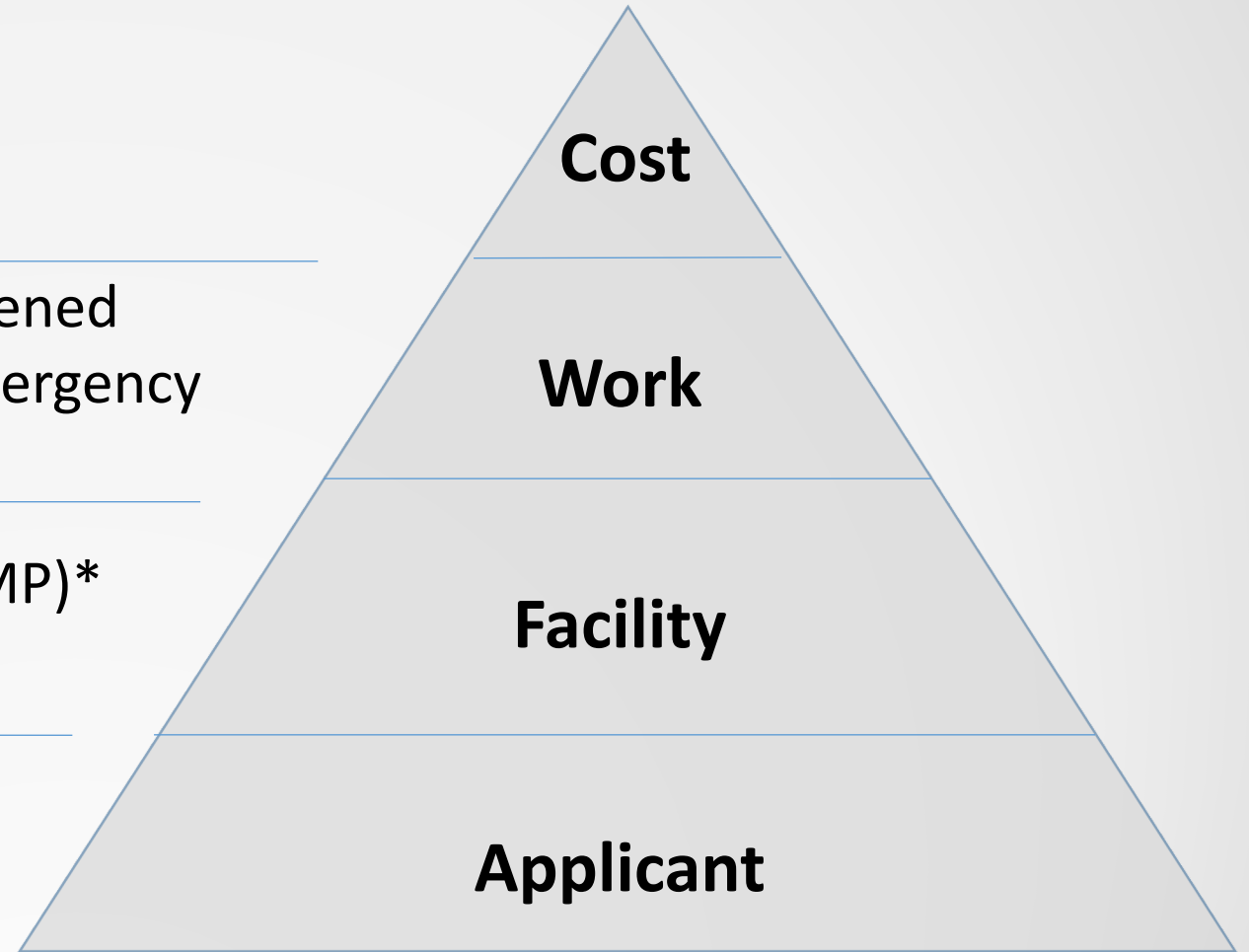
HMGP & BRIC – Project Eligibility

Must have BCA of 1:1 or greater

Elevation or movement of threatened buildings, drainage upgrades, emergency power, other eligible projects

Private homes (if identified in HMP)*
Public facilities

State / local govt organizations
Federally recognized tribes
Certain private non-profits



* Individual homeowners and businesses may not apply directly; however a community may apply on their behalf



FEMA Mitigation Funding: BRIC

Building Resilient Infrastructure & Communities (BRIC)

Nationally Competitive

Annual Application

Larger Projects

\$\$\$ FEMA BRIC

\$ Local Cost Share

- Support state and local governments, tribes and territories through and enable them to identify mitigation actions and implement projects that reduce risks posed by natural hazards.
- Encourage and enable innovation while allowing flexibility, consistency, and effectiveness.
- Promote partnerships and enable high-impact investments to reduce risk from natural hazards with a focus on critical services and facilities, public infrastructure, public safety, public health and communities.
- Promote equity, including by helping members of disadvantaged groups and prioritizing 40% of the benefits to disadvantaged communities as referenced in Executive Order (EO) 14008.
- Support the adoption and enforcement of building codes, standards, and policies that will protect the health, safety, and general welfare of the public, considering future conditions, prominently including the effects of climate change, and have long-lasting impacts on community risk reduction, including for critical services and facilities and for future disaster costs.



BRIC Eligible Projects

- Property Acquisition and Structure Demolition
- Property Acquisition and Structure Relocation
- Structure Elevation
- Mitigation Reconstruction
- Emergency Generators (Fixed Site)
- Infrastructure Retrofit
- Localized Flood Risk Reduction Projects
- Structural Retrofitting of Existing Buildings
- Wind Retrofit for One and Two Family Residences
- Wildfire Mitigation
- Miscellaneous



BRIC **Ineligible** Projects

- Projects that do not reduce the risk to people, structures, or infrastructure, i.e. a project must increase the level of protection
- Projects that are dependent on another phase of a project in order to be effective
- Projects for which actual physical work has occurred prior to award
- Projects constructing **new buildings or facilities**
- Projects that address operation, deferred or future maintenance, repairs, or replacement
- Studies not directly related to design and implementation of a proposed project
- Preparedness measures and **response equipment**
- Projects that involve land that is contaminated with **hazardous waste**



FEMA Mitigation Funding: HMGP

HMGP

HMGP is authorized through a major disaster declaration.

A governor, tribal chief executive, or equivalent, may request that HMGP assistance.

Federally recognized tribes, through their tribal chief executive, may also submit a request for a disaster.

Hazard Mitigation Grant Program (HMGP) & Post Fire

Competitive State-Wide

NOFO following Disaster in State

Smaller Projects

\$\$\$ FEMA HMGP

\$ State Cost Share

HMGP Post Fire

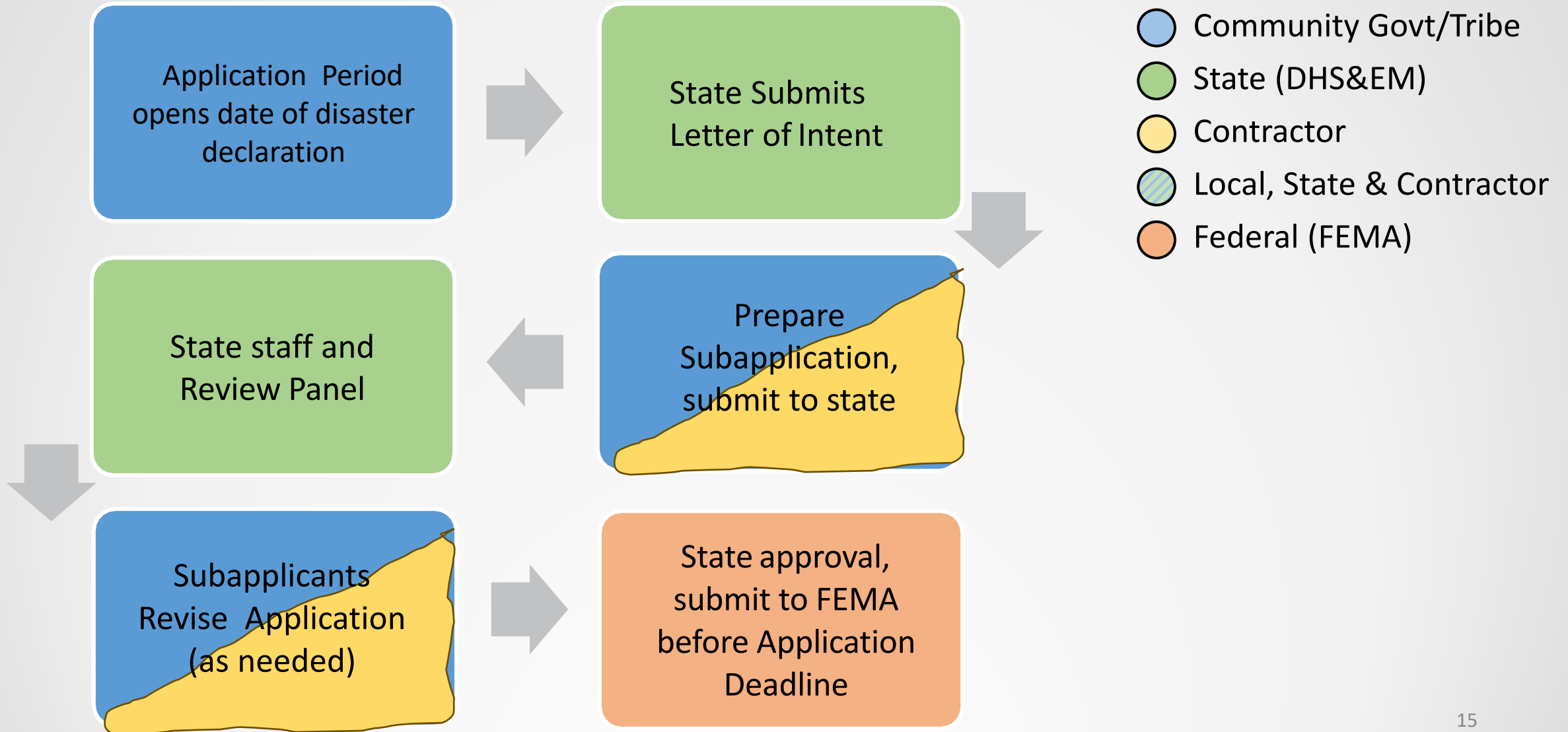
HMGP Post Fire assistance is available for areas that received a Fire Management Assistance Grant (FMAG) declaration.

Provide assistance under FEMA's FMAG program for the mitigation, management and control of any fire that threatens such destruction as would constitute a major disaster.

Whether or not a major disaster is declared, the President may provide HMGP Post Fire assistance in accordance with the Stafford Act in any area affected by a fire for which assistance was provided under the Stafford Act.



HMGP Application: Applying





HMGP Eligible Projects

- Property Acquisition and Structure Demolition
- Property Acquisition and Structure Relocation
- Structure Elevation
- Mitigation Reconstruction
- Flood Risk Reduction
- Stabilization
- Localized Flood Risk Reduction Projects
- Tsunami Vertical Evacuation
- Safe Room
- Wildfire Mitigation
- Infrastructure Retrofit
- Structural Retrofitting of Existing Buildings
- Wind Retrofit for One and Two Family Residences
- Emergency Generators
- Warning Systems
- Miscellaneous



HMGP **Ineligible** Projects

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HMGP Post Fire

Eligible Applicants

States and territories that have received an FMAG declaration are eligible to apply for assistance under HMGP Post Fire.

Federally recognized tribes with burned land under a state or territory FMAG declared event may apply for HMGP Post Fire as an applicant/recipient.

Tribes (including federally recognized tribes) may apply through the state to FEMA as sub-applicant and will follow the standard HMGP sub-applicant procedures consistent with program guidance, including updates in effect at the time of the FMAG declaration.

Private nonprofit organizations may act as the sub-applicant for HMGP Post Fire if they own or operate a private nonprofit facility.

Eligible Activities

HMGP Post Fire prioritizes wildfire and post-wildfire mitigation activities, to include:

Defensible Space Measures

Ignition-resistant Building Materials

Hazardous Fuels Reduction Activities

Erosion Control Measures

Slope Stabilization

Post-wildfire Flood Reduction Measures



Mitigation Projects – Funding Sources

Building Resilient Infrastructure & Communities (BRIC)



- Annual Federal funding opportunity
- **Community pays 25% cost share / FEMA 75%**
- Competes with other eligible projects nation-wide

Hazard Mitigation Grant Program (HMGP)



- Portion of Federal funding when a disaster occurs
- NOFO is based on federally declared disaster anywhere in State
- **State pays 25% cost share / FEMA 75%**
- Competes with other eligible projects state-wide

- Community/Tribe/Borough must have an adopted, FEMA-approved Hazard Mitigation Plan (HMP)
- In order to be eligible, projects must be registered in HMP and be “Shovel-Ready”
- Grant application requires extensive documentation, including a Benefit-Cost Analysis (BCA)



FEMA Mitigation Funding: FMA

FMA Eligible Properties:

Properties included in a project sub-application for FMA must be insured by the National Flood Insurance Program (NFIP) prior to the opening of the application period and be maintained for the life of the structure.

Under certain circumstances, properties may be eligible for a federal cost share greater than 75%. Properties must meet one of the two definitions below to receive an increased federal cost share:

- The property is a severe repetitive loss structure.
- For which four or more separate claims payments have been made under flood insurance coverage exceeding \$5,000 and with the cumulative amount of claims payments exceeding \$20,000; or
- For which at least two separate flood insurance claims payments have been made, with the cumulative amount of such claims exceeding the value of the insured structure.
- The property is a repetitive loss structure. In this case, the structure is eligible for a 90% cost share. IF:

Flood Mitigation Assistance (FMA)

Community must participate in NFIP

\$\$\$ FEMA FMA

\$ Local Flood Insurance

FMA Eligible Properties:

- Has incurred flood-related damage on two occasions, in which the cost of repair, on average, equaled or exceeded 25% of the value of the structure at the time of each such flood event; and
- At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.



FEMA Mitigation Funding: Tsunami Preparedness

Geohazards Mitigation

- Geohazards include earthquakes, volcanos and tsunamis
- Two federal-level programs that implement a nationwide, coordinated approach to mitigating geohazards :
 - National Earthquake Hazard Reduction Program (NEHRP)
 - National Tsunami Hazard Mitigation Program (NTHMP)
- Focus is on outreach and local-level engagement in federal programs

Tsunami Preparedness (NOAA/NWS)

Mitigate tsunami impacts through:

Public education
Response planning
Inundation mapping
Warning systems

\$ NOAA/NWS



National Earthquake Hazards Reduction Program (NEHRP)

- Implemented following the Great Alaska Quake of '64
- Earthquake Hazards Reduction Act of 1977
- Federal government's coordinated long-term nationwide program to reduce risks to life and property in the United States that result from earthquakes
- Four primary NEHRP agencies:
 - National Institute of Standards and Technology (NIST)
 - Federal Emergency Management Agency (FEMA)
 - National Science Foundation (NSF)
 - United States Geological Survey (USGS)





National Earthquake Hazards Reduction Program (NEHRP)

Four NEHRP goals:

- Develop effective practices and policies for earthquake loss reduction and accelerate their implementation.
- Improve techniques for reducing earthquake vulnerabilities of facilities and systems.
- Improve earthquake hazards identification and risk assessment methods, and their use.
- Improve the understanding of earthquakes and their effects.





National Earthquake Hazards Reduction Program (NEHRP)

Allowable activities:

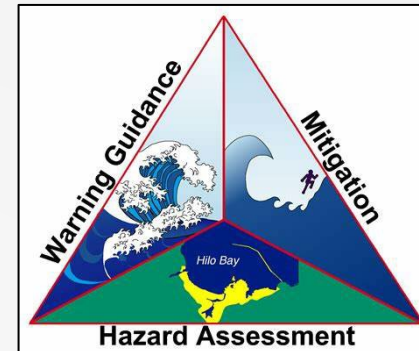
1. Develop seismic mitigation plans
2. Develop inventories and conduct seismic safety inspections of critical structures and lifeline infrastructure (URM inventory, RVS, etc.)
3. Update building codes, zoning codes, and ordinances to enhance seismic safety
4. Increase earthquake awareness and education
5. Participation in emergency management exercises
6. Supporting the promotion of earthquake insurance
7. Assistance to multi-State groups for such purposes





National Tsunami Hazard Mitigation Program (NTHMP)

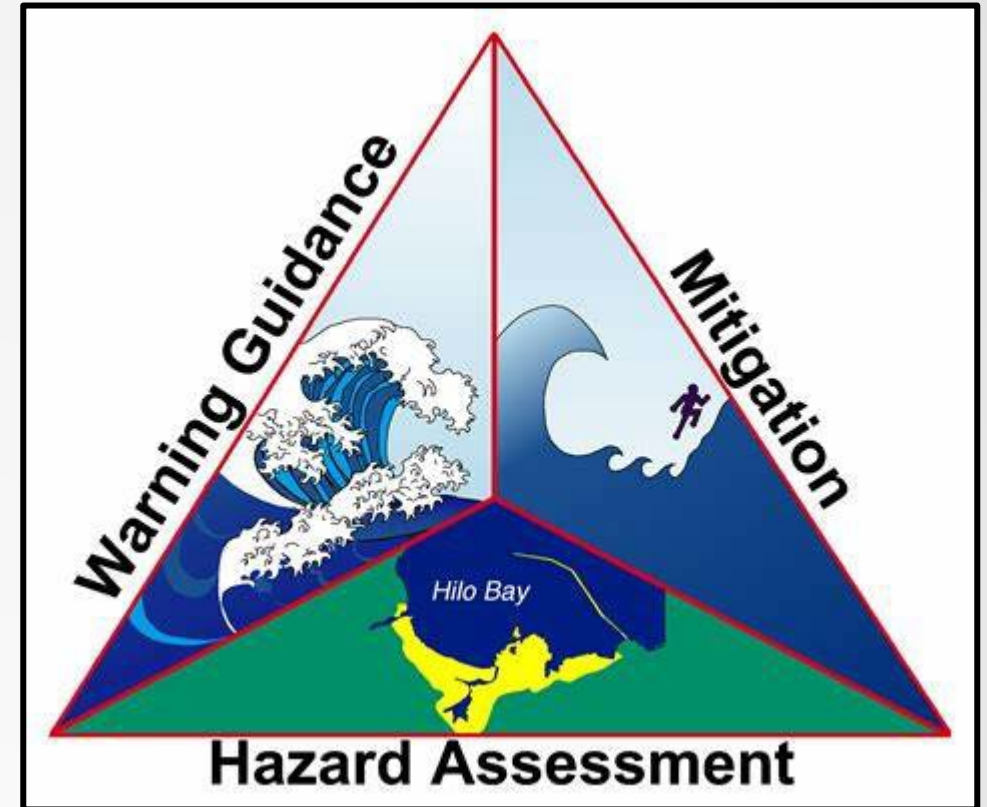
- Est. 1995 - National Oceanic and Atmospheric Administration (NOAA)
- NOAA formed and leads this federal/state working group to develop a plan for reducing tsunami risk to U.S. coastal communities
- NTHMP includes:
 - NOAA
 - the Federal Emergency Management Agency (FEMA)
 - the U.S. Geological Survey (USGS)
 - 28 U.S. states and territories
- Connects states with the federal agencies responsible for the U.S. Tsunami Warning System
- Enables all levels of government to work together toward the common goals of protecting lives and reducing economic losses from tsunamis at the community level.
- Three NTHMP sub-committees:
 - 1) Warning Coordination
 - 2) Mitigation and Education
 - 3) Mapping/Modeling





What does NTHMP fund?

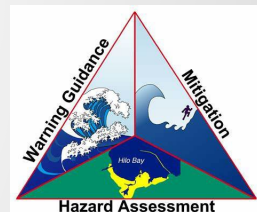
- ✓ Warning Siren Infrastructure
- ✓ Inundation Mapping & Modeling
- ✓ Outreach & Education





Warning Siren Infrastructure

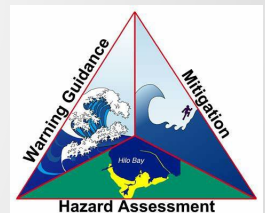
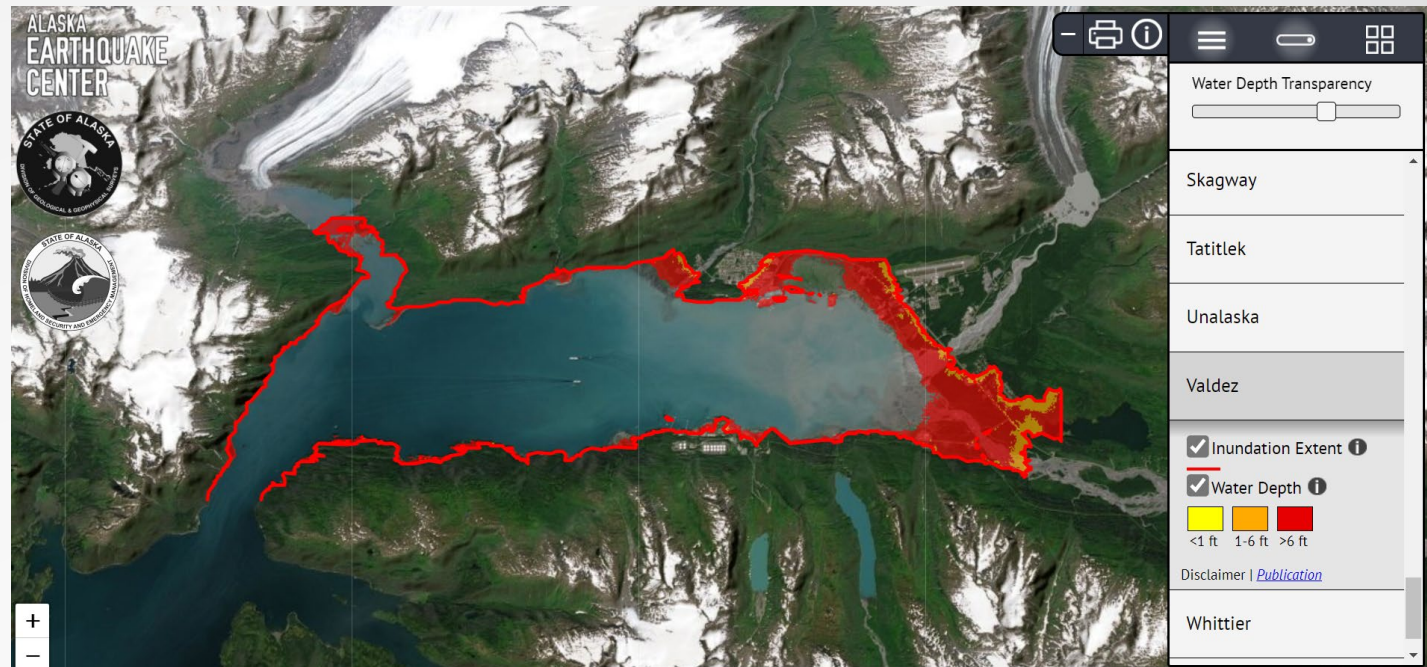
- Free to community; responsible for day-to-day maintenance
 - “Virtual” assistance is available from vendor(s)
 - NTHMP can fund maintenance
- Not activated by State EOC
- Incorporate into readiness and planning
 - Participate in annual tsunami community call-down TTX
 - Inform your community through community outreach – we have resources!
- Establish evacuation routes; Request evacuation signage through our team





Inundation Mapping & Modeling

- Community inundation maps:
<http://tsunami.alaska.edu>
- provides guidance to at-risk populations with tsunami hazard assessment, evacuation planning and public education
- Partners: Alaska Earthquake Center, Alaska Division of Geological and Geophysical Sciences



Check Your Community Hazard

Knowing your risk before disaster hits could save your life. Explore the online tool at tsunami.alaska.edu to determine whether your house, workplace, or school is in the hazard zone.

Historical Tsunamis

Valdez faces a double threat from tsunamis: those caused by earthquakes and those caused by landslides. Half a dozen tsunamis caused by earthquakes have damaged Valdez in the past 125 years. The most deadly occurred during the 1964 earthquake. Local underwater landslides caused tsunamis that struck within minutes, leaving little to no time for warnings.

High-risk Areas

Tsunami impacts are greatest near ocean beaches, low-lying coastal areas, and waterways such as harbors and estuaries. Always avoid these areas during tsunamis. A tsunami can be a series of waves that may last for hours, so wait for local authorities to announce when these areas are safe. In addition to wave action, tsunamis can stir up currents that threaten harbors, facilities, and boats.

Learn More about Tsunami Hazards in Valdez

For emergency and disaster preparedness:

City of Valdez office of Emergency and Disaster Management

www.valdezak.gov/294/Emergency-and-Disaster-Management
EDM@ValdezAK.gov

For Barry Arm potential landslide information:

dgg.s.alaska.gov/hazards/barry-arm-landslide.html

For the full scientific community report and maps:

dgg.s.alaska.gov/pubs/id/25055

For the maritime response report:

earthquake.alaska.edu/tsunamis



[Explore the online tool
tsunami.alaska.edu](https://tsunami.alaska.edu)

Learn More about Tsunami Safety in Alaska

Preparing for tsunamis

Alaska Division of Homeland Security and Emergency Management at www.ready.alaska.gov/Plans/Mitigation/Tsunamis



Tsunami warning information

National Tsunami Warning Center
www.tsunami.gov

National Tsunami Hazard Mitigation Program

nws.weather.gov

Know Your Tsunami Hazard in Valdez



Big Waves in the Biggest State

In Alaska, tsunamis can strike within minutes of an earthquake. Tsunami awareness and safety are crucial to anyone who lives, works, or travels along Alaska's coast.

Earthquakes frequently rumble coastal Alaska. Just offshore, the Pacific Ocean plate scrapes under the continental plate of mainland Alaska, causing much of this activity. Many places along Alaska's rugged coast are poised for landslides above or below the ocean's surface. A major earthquake or landslide near the coast could generate a tsunami.

Keeping Alaska Safe

Tsunami researchers use cutting-edge science to examine historical tsunamis and earthquakes, along with geologic records from prehistoric tsunamis, then generate possible worst-case scenarios. This information is visualized in maps showing potential flood zones to help communities create emergency plans.



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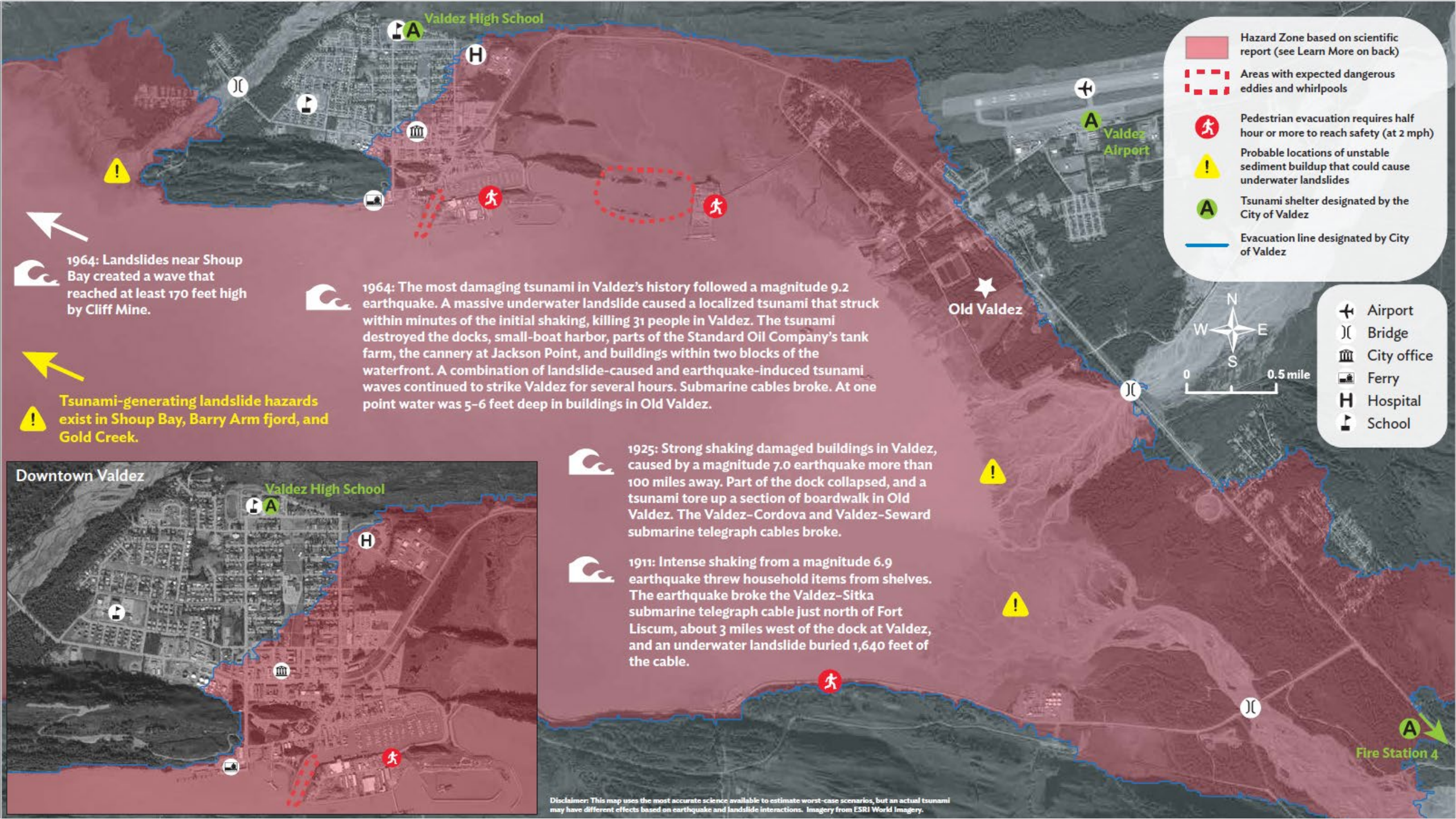


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ALASKA CENTER
FAIRBANKS



Hazard Zone based on scientific report (see Learn More on back)

Areas with expected dangerous eddies and whirlpools

Pedestrian evacuation requires half hour or more to reach safety (at 2 mph)

Probable locations of unstable sediment buildup that could cause underwater landslides

Tsunami shelter designated by the City of Valdez

Evacuation line designated by City of Valdez

Airport

Bridge

City office

Ferry

Hospital

School



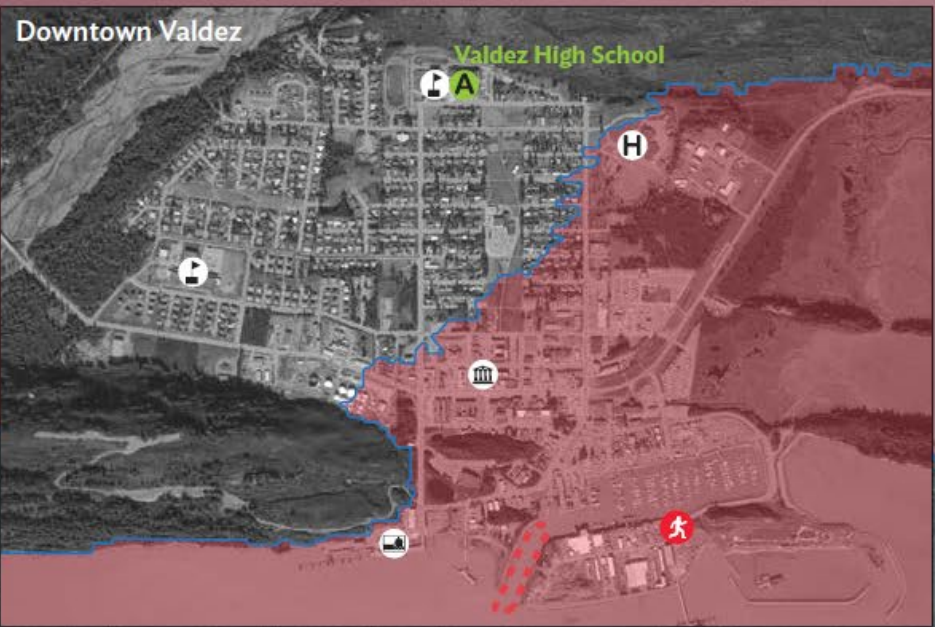
1964: Landslides near Shoup Bay created a wave that reached at least 170 feet high by Cliff Mine.

1964: The most damaging tsunami in Valdez's history followed a magnitude 9.2 earthquake. A massive underwater landslide caused a localized tsunami that struck within minutes of the initial shaking, killing 31 people in Valdez. The tsunami destroyed the docks, small-boat harbor, parts of the Standard Oil Company's tank farm, the cannery at Jackson Point, and buildings within two blocks of the waterfront. A combination of landslide-caused and earthquake-induced tsunami waves continued to strike Valdez for several hours. Submarine cables broke. At one point water was 5-6 feet deep in buildings in Old Valdez.

Tsunami-generating landslide hazards exist in Shoup Bay, Barry Arm fjord, and Gold Creek.

1925: Strong shaking damaged buildings in Valdez, caused by a magnitude 7.0 earthquake more than 100 miles away. Part of the dock collapsed, and a tsunami tore up a section of boardwalk in Old Valdez. The Valdez-Cordova and Valdez-Seward submarine telegraph cables broke.

1911: Intense shaking from a magnitude 6.9 earthquake threw household items from shelves. The earthquake broke the Valdez-Sitka submarine telegraph cable just north of Fort Liscum, about 3 miles west of the dock at Valdez, and an underwater landslide buried 1,640 feet of the cable.



Disclaimer: This map uses the most accurate science available to estimate worst-case scenarios, but an actual tsunami may have different effects based on earthquake and landslide interactions. Imagery from ESRI World Imagery.



Questions?



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