

Climate Adaptation Planning for All Hazards

R10 Climate Adaptation Seminar | 3/17/2023



FEMA

Agenda

- Climate Appendix to the All-Hazards Plan
- State Baselines
- Data & GIS Tools
- Way Forward
- Q&A



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Climate Appendix



Region 10 All-Hazards Plan

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November 3, 2020



Purpose

- Augment the 2020 All Hazards Plan
- Increase climate literacy and equity knowledge
- Incorporate climate and equity considerations



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Project Scope

- Develop regional and state baselines
- Determine the compounding effects of climate change
- Identify strategies to improve equitable access
- Identify climate adaptation and equity resources, data, and GIS tools



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Key Tasks

- Determine planning factors for equity outcomes
- Identify natural hazards that impact the region before, during, and after disasters for each Community Lifeline
- Develop EEIs that support risk-informed decision making as a result of equity and climate adaptation programs



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Climate and Equity Baseline



Regional Natural Hazards Influenced by Climate Change

- Wildfire
- Extreme Heat
- Drought
- Flooding/Flash flooding
- Severe Weather/Winter Storm
- Sea Level Rise/Coastal Hazards
- Glacial/Sea Ice/Snowpack/Permafrost Melt



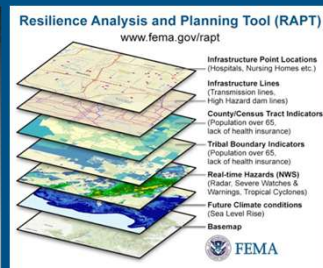
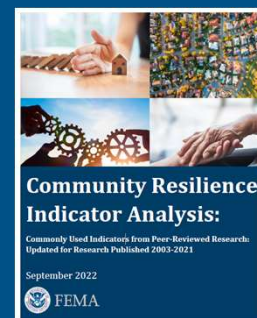
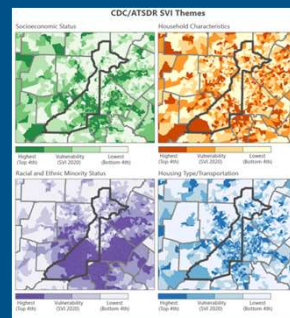
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Climate Baseline: Key Findings

State	Observed	Projected	Resulting Conditions
AK	<ul style="list-style-type: none"> Alaska has warmed more than twice as rapidly as the rest of the United States AK Precipitation has seen an increase in the heaviest 1% of 3-day precipitation totals since the mid-20th century Permafrost near the Alaskan Arctic coast has warmed 4°F to 5°F at 65 foot depth since the late 1970s 	<ul style="list-style-type: none"> Average annual temperatures in Alaska are projected to rise by an additional 2°F-4 to 4°F by 2050 Annual precipitation increases of about 15% to 30% are projected for the region by late this century Alaska's northern waters in late summer could be virtually ice-free before 2050. 	<ul style="list-style-type: none"> Increased glacial and snowpack melt, Lower stream flows, Reduced Sea Ice, melting permafrost Increased wildfire, flooding events, increased Frequency and intensity of coastal flooding Coastal erosion and habitat loss Thawing permafrost is leading to more wildfire and affecting infrastructure and wildlife habitat.
ID	<ul style="list-style-type: none"> Temp increase 2°F since 1900 1inch precipitation from extreme events have increased in the past 16 years. 	<ul style="list-style-type: none"> An increase in average annual temperature of 3.3°F to 9.7°F is projected by 2070 to 2099 	<ul style="list-style-type: none"> Increased wildfire, drought, flooding, flash flooding Increased diseases and pests Increased severe storms or extreme weather events
OR	<ul style="list-style-type: none"> Temp increased approximately 2.2°F per century since 1895-2019 Sea level has risen 7-8 inches since 1900 	<ul style="list-style-type: none"> Sea level to rise another 1-8 ft. w/ a range of 1-4 most likely by 2100 	<ul style="list-style-type: none"> Increased severe storms or extreme weather events (heat and atmospheric rivers and flooding, flash flooding. Increased wildfire season and burn areas Increased drought severity Increased diseases and pests
WA	<ul style="list-style-type: none"> The average annual temperature rose 1.5°F between 1920 and 2003 Frequency of heavy downpours (defined as the top 1 percent of rainfall events) has increased by about 12 percent in the Pacific Northwest 	<ul style="list-style-type: none"> Climate models project an increased risk for more frequent extreme precipitation in the Northwest by the second half of the 21st century 	<ul style="list-style-type: none"> Increased severe storms or extreme weather events (heat and atmospheric rivers) and flooding/flash flooding. Increased wildfire season and burn areas Increased drought severity Snowpack/glacial melt Coastal erosion/flooding

Equity Baseline

- Data: Social Vulnerable Index (SVI) and Community Resilience Indicators (CRI)
- GIS: National Risk Index (NRI) and Resilience Analysis and Planning Tool (RAPT)



Equity Baseline: Key Findings

- 35 census-tracts with “Very High” social vulnerability
- 88% of “Very High” census tracts are Tribal Reservations and Nations
- Correlates with geographic locations
- Four (4) primary indicators for underserved communities



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Data and GIS Tools

Data and GIS Tool

Climate

- National Risk Index
- Resilience Analysis and Planning Tool
- Climate Mapping for Resilience and Adaptation
- NOAA Coastal Flood Exposure
- NOAA Sea Level Riser
- USDA Wildfire Risk
- Northern Climate Reports (AK)

Equity

- Social Vulnerability Index
- Community Resilience Indicators
- Climate and Economic Justice Screening Tool
- Neighborhoods at Risk



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A photograph showing several people's hands, wearing white and blue work gloves, gathered around a small green plant seedling in a field. The image is overlaid with a semi-transparent blue filter. The text "Way Forward" is written in white, bold, sans-serif font on the left side of the image.

Way Forward

Current Initiatives/Projects

Climate Adaptation

- Climate Appendix to the AHP
- Continue engaging/collaborating with Federal and SLTT Partners
- FEMA HQ Climate Literacy Working Group
- Climate resilience and adaptation training

Equity

- Climate Appendix to the AHP
- Community Engagement Working Group
- R10 Equity Assessment



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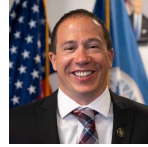
Future Initiatives/Projects

- **Climate Adaptation and Equity Resource Hubs**
- **Lifeline Equity Tool**
- **Response Plans and Annexes**
- Climate Focus Groups
- Climate Policy Working Group
- Community and Tribal Profiles
- Tiny Climate Chronicles

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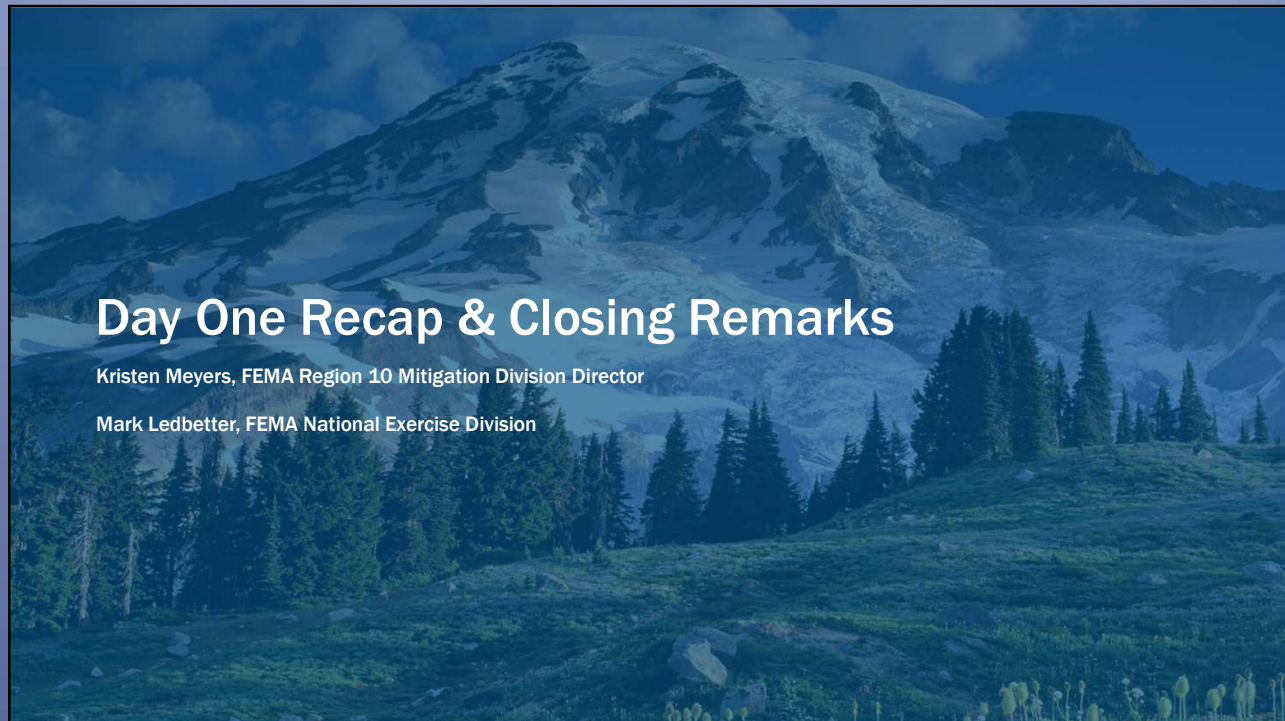
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Thank you!





We welcome your feedback!

Please fill out the Post-Event Survey to help us improve future Mitigation Summits!

<https://forms.office.com/r/wiIXWqC3HY>

Mitigation Summit + Climate Adaptation Seminar
Post-Event Survey

