



TRIBAL TRANSPORTATION CLIMATE VULNERABILITY ASSESSMENT RESEARCH

NTICC

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U.S. Global Change
Research Program

Fourth National Climate Assessment

Volume II

Impacts, Risks, and Adaptation in the United States

[https://www.
globalchange.
gov/nca4](https://www.globalchange.gov/nca4)



Photo: Flooding (2019); Photo provided by Confederated Tribes of the Umatilla Indian Reservation

Climate Risks to Transportation - Bridge and Culvert Damage



Climate Risks to Transportation - Coastal and River Erosion



Photo: Flooding from Hurricane Barry (2019); Photo provided by the Coushatta Tribe of Louisiana



Photo: Flooding (2019); Photo provided by Confederated Tribes of the Umatilla Indian Reservation

Climate Risks to Transportation - Flooding



Climate Risks to Transportation - Unstable Trails and Ice Roads



Climate Risks to Transportation - Sinking Boardwalks



Climate Risks to Transportation - Dust Storms and Wildfires



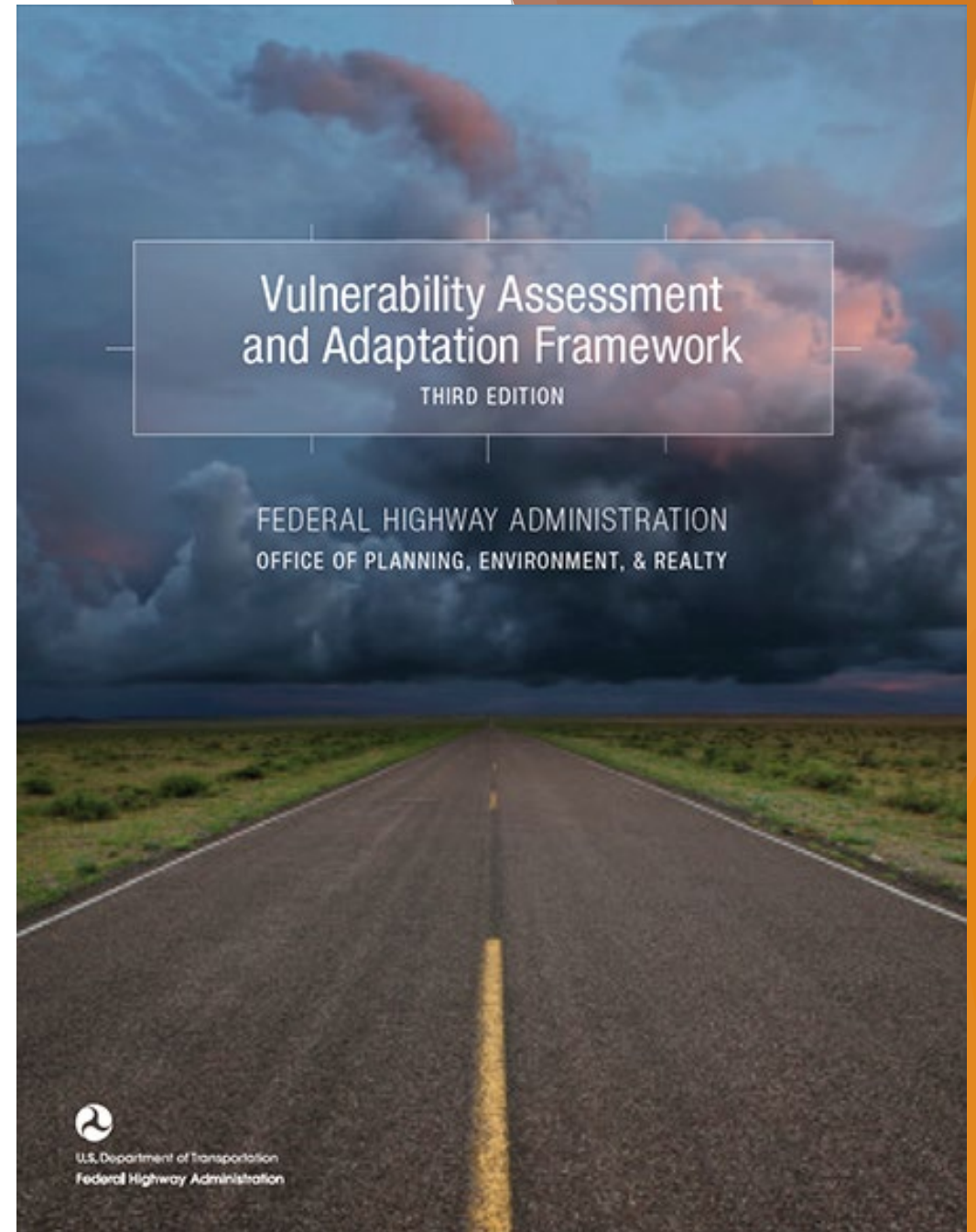
Climate Risks to Transportation - Landslides



Climate Risks to Transportation - Extreme Heat

FHWA's Vulnerability Assessment and Adaptation Framework

https://www.fhwa.dot.gov/environment/sustainability/resilience/adaptation_framework/



FHWA's Vulnerability Assessment and Adaptation Framework

▶ Framework steps

1. Collect data on transportation assets
 - ▶ Roads, bridges, culverts, trails, etc.
2. Collect climate data for your area
 - ▶ Projections of temperature, precipitation, hydrology, floodplains, sea level, storm surge...
3. Assess vulnerability
 - ▶ Function of asset's sensitivity, exposure, and adaptive capacity to climate effects
 - ▶ Assign a level of risk of the climate impacts on the asset/system

FHWA's Vulnerability Assessment and Adaptation Framework

▶ Framework steps (continued)

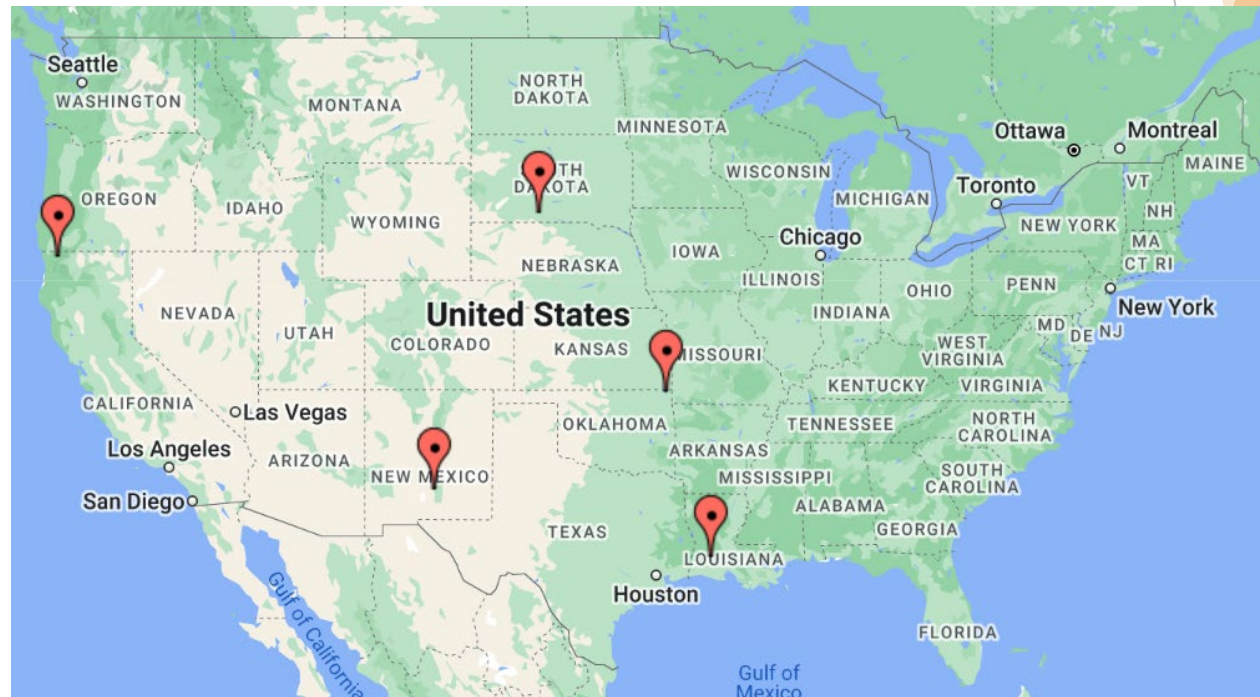
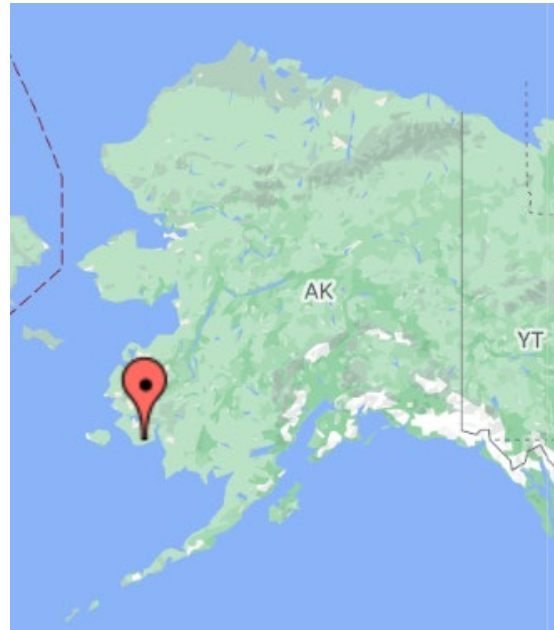
4. Identify, analyze, and prioritize adaptation options
 - ▶ How can an asset be made to have less risk or improve its adaptability?
5. Incorporate assessment results in planning
 - ▶ The results should help make informed transportation decisions
6. Monitor and revisit
 - ▶ Periodically assess success of adaptation strategies
 - ▶ Update asset data and climate data

Objectives

- ▶ Apply the FHWA Framework to seven Tribal communities
 - ▶ Incorporate vulnerability assessment results into Tribal transportation planning
 - ▶ Align with funding opportunities
- ▶ Create separate summary report:
 - ▶ Summarize the results of the vulnerability assessments
 - ▶ Document challenges when developing vulnerability assessments
 - ▶ Document lessons learned and recommendations to improve the development of future vulnerability assessments of Tribal transportation networks
- ▶ Make Tribal transportation more resilient

Participating Tribes

- ▶ Native Village of Kwigillingok
- ▶ Karuk Tribe
- ▶ Mescalero Apache Tribe
- ▶ Rosebud Sioux Tribe
- ▶ Coushatta Tribe of Louisiana
- ▶ Ottawa Tribe of Oklahoma
- ▶ Modoc Nation



Current Status

- ▶ WSP USA is conducting the vulnerability assessments and writing the summary report
 - ▶ Karuk VA complete
 - ▶ Mescalero Apache VA expected November 2022
 - ▶ Kwigillingok VA expected December 2022
 - ▶ Coughatta VA expected December 2022
 - ▶ Rosebud Sioux VA expected April 2023
 - ▶ Ottawa and Modoc VA expected April 2023
- ▶ Summary Report expected June 2023

Questions?

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