



27 February 2020

# A Match Made in Heaven? Climate Smart Hazard Planning

ACTION TODAY FOR A BETTER TOMORROW



# Welcome



## Housekeeping

- Please mute
- Use the question function



## Today's Speakers

**Sascha Petersen**, Adaptation International

**Kristin Baja**, Urban Sustainability Directors Network

**Eric Chapman**, Lac du Flambeau Band of Lake Superior Chippewa Indians

**Jonathan Olds**, FEMA Region 10



# A Match Made in Heaven? Climate Smart Hazard Planning

National Adaptation Webinar Series  
February 27, 2020



Flooding on Lamar | Drew Anthony Smith/Getty Images

## LOCAL



## Central Texas has seen three 100-year floods in 5 years. Now thousands are destined to flood

Once every 100 years. That's the mark of a major flood. That means homes have a one percent chance of experiencing a flood in any given year. We've had three 100-year flood events in five years. Scientists say it's a sign of the times. Thousands more families in Central Texas are destined to flood.

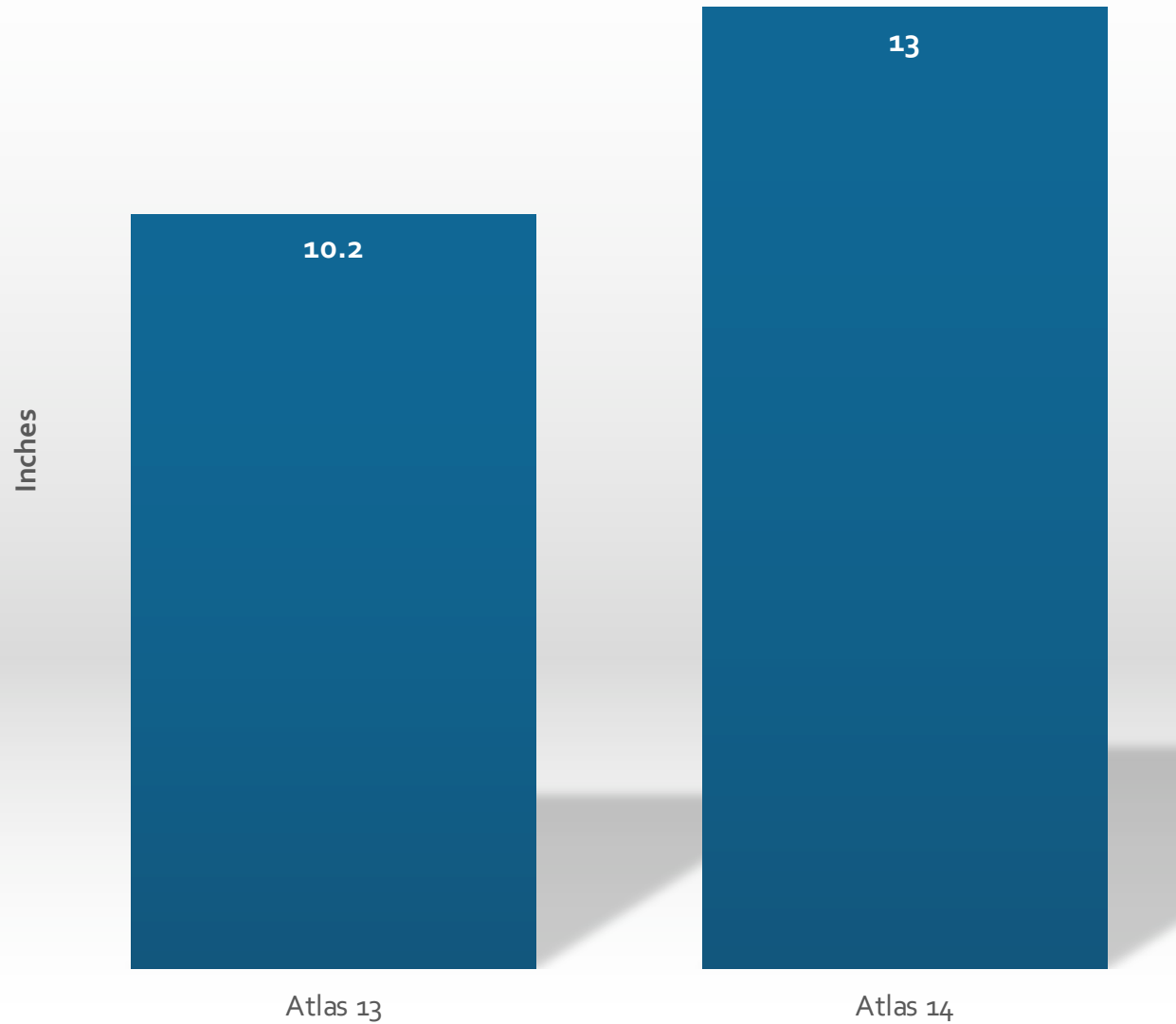
Author: Terri Gruca

Published: 12:41 PM CST November 19, 2018

Updated: 10:22 PM CST November 20, 2018

CENTRAL TEXAS — Halloween 2013, Wimberley 2015, Hill Country 2018. Three 100-year flood events in five years' time.

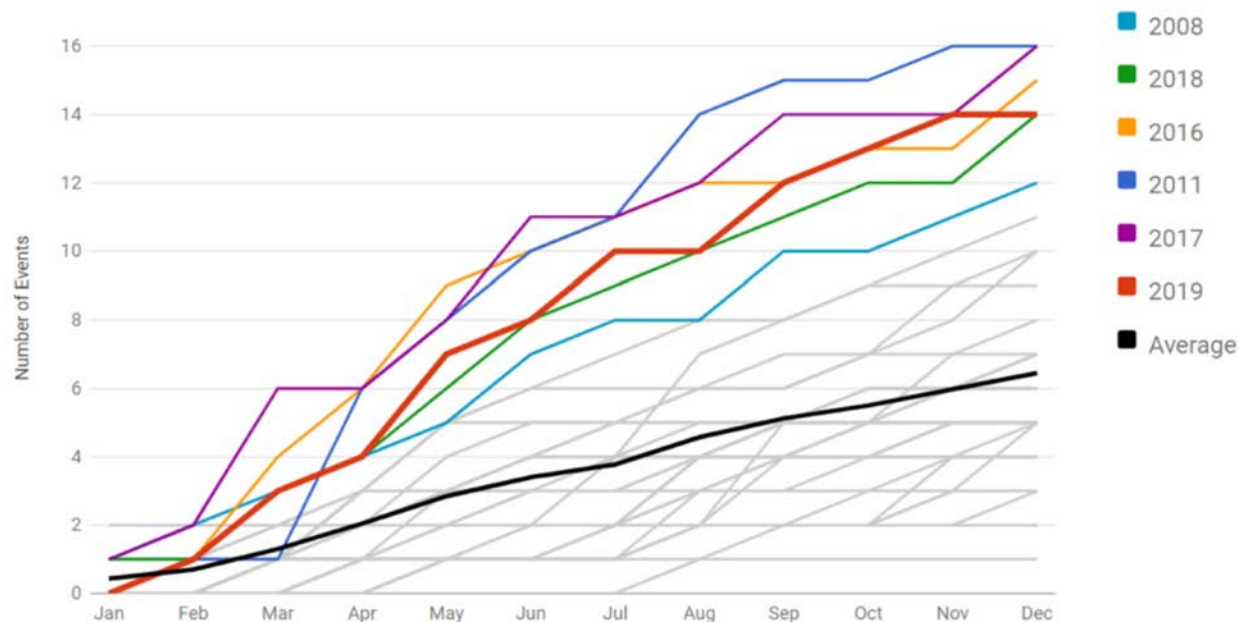
## Changes to 100-yr 24 hour Rainfall in Austin



# Hazard Mitigation Planning and Climate Adaptation

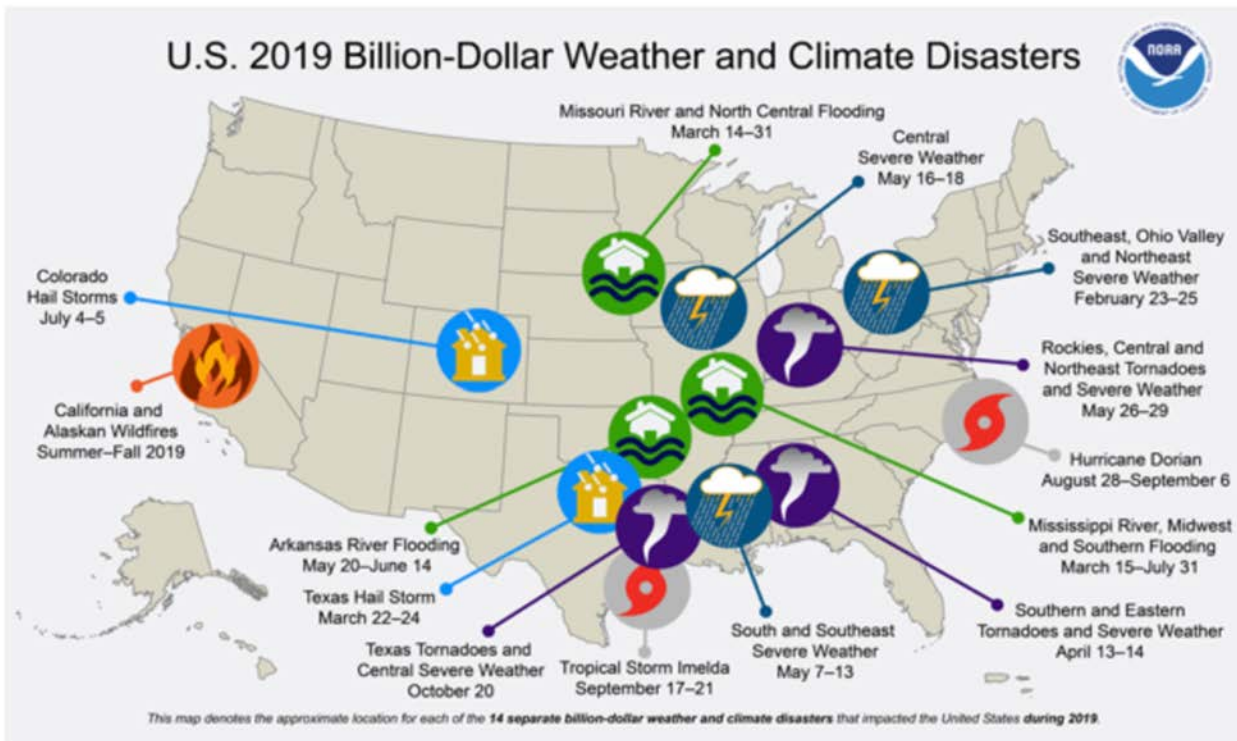
1980-2019 Year-to-Date United States Billion-Dollar Disaster Event Frequency (CPI-Adjusted)

Event statistics are added according to the date on which they ended.

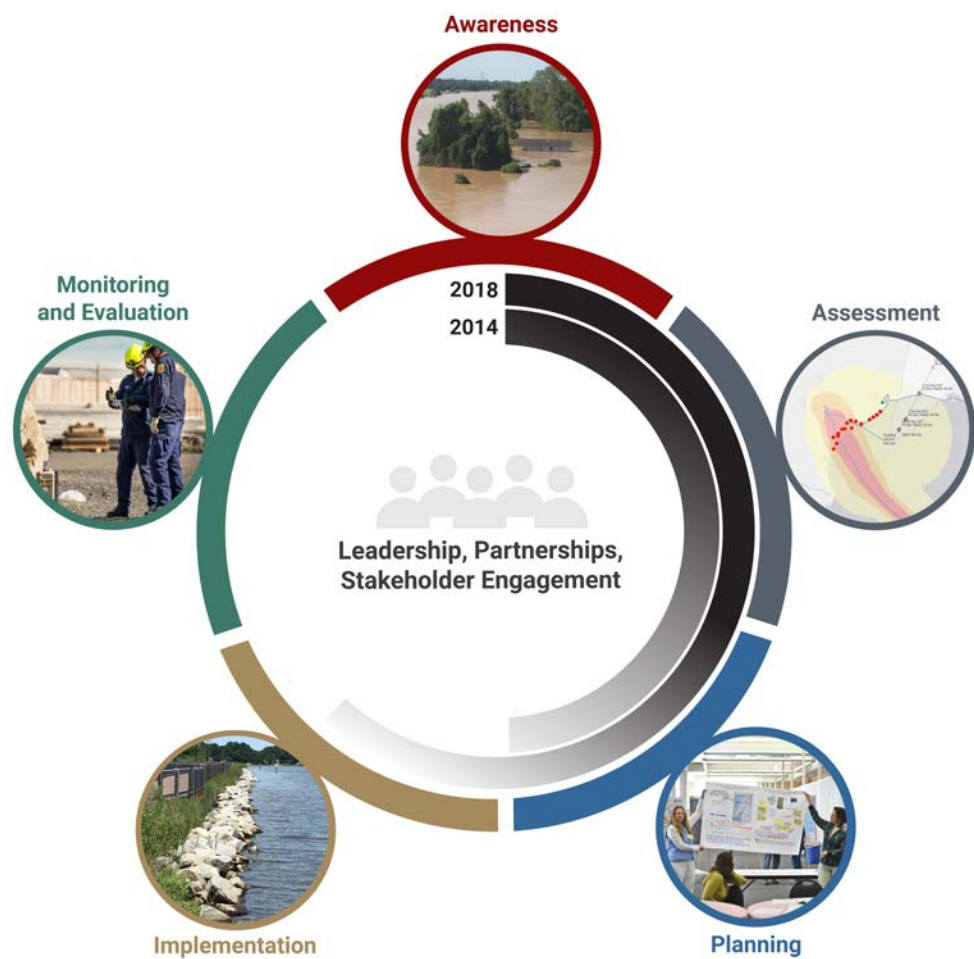


<https://www.ncdc.noaa.gov/billions/>

U.S. 2019 Billion-Dollar Weather and Climate Disasters







- 
- How can we move beyond “Cookie Cutter” Hazard Mitigation Planning?

- 
- What constitutes meaningful community engagement?

- 
- Does “mainstreaming” climate concerns into hazard plans make sense?



# Flow of the Webinar

# Flow of the Session

Brief Overview

Three Real World Examples

Panel / Audience Discussion

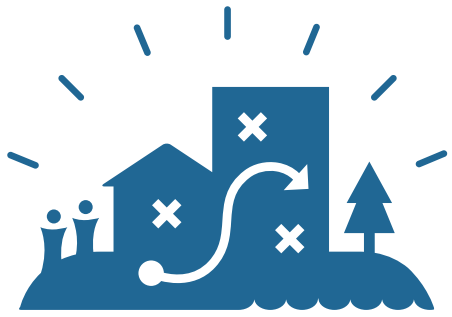


# Panelists



We Build  
Resilience  
Together





Adaptation Strategy Dev



Workshop Design/Support



Community Engagement



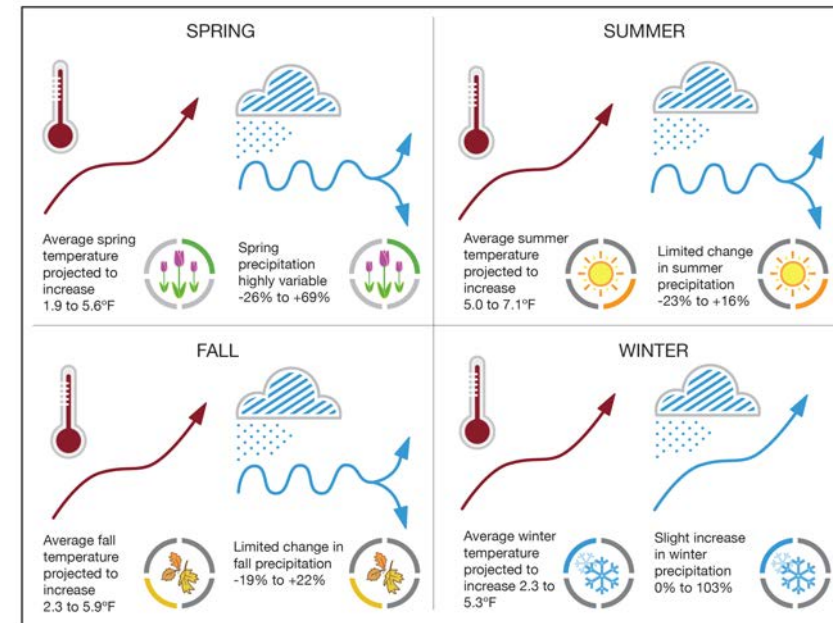
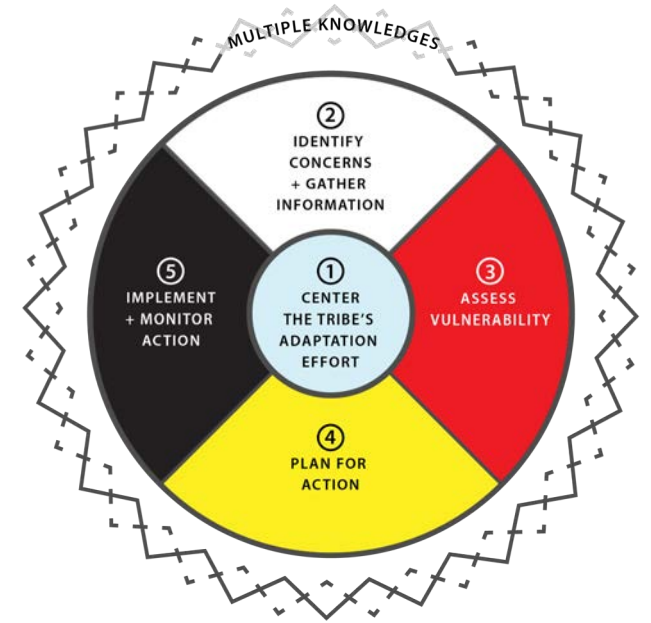
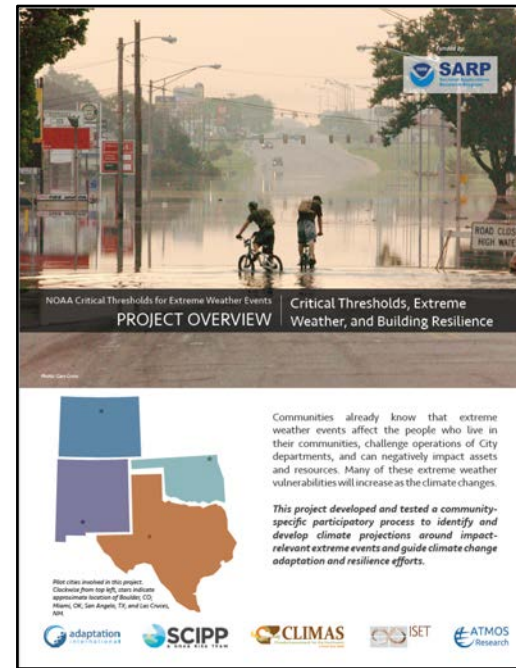
Data Driven Analysis



Planning & Implementation



Climate & Health





# Panelists

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# Thank You!!!

Sascha Petersen

Adaptation International

[www.adaptationinternational.com](http://www.adaptationinternational.com)

[Sascha@adaptationinternational.com](mailto:Sascha@adaptationinternational.com)





CHANGE IS THE NEW NORMAL  
INTEGRATING CLIMATE CHANGE & EQUITY INTO AHMP'S

K.Baja, Program Director, Climate Resilience  
Urban Sustainability Directors Network  
[kristinbaja@usdn.org](mailto:kristinbaja@usdn.org)



# REJECTING THE COOKIE CUTTER



# RESILIENCE & ADAPTATION



**DISRUPTION**



**RECOVERY**



# CENTER WORK ON PEOPLE



# INTEGRATION





**CHANGE IS THE NEW NORMAL**







**adaptation**  
international



**GLISA**  
A NOAA RISA TEAM

**Bullock &  
Haddow LLC**



Gaawiin geyaabi  
naniizanasinooon



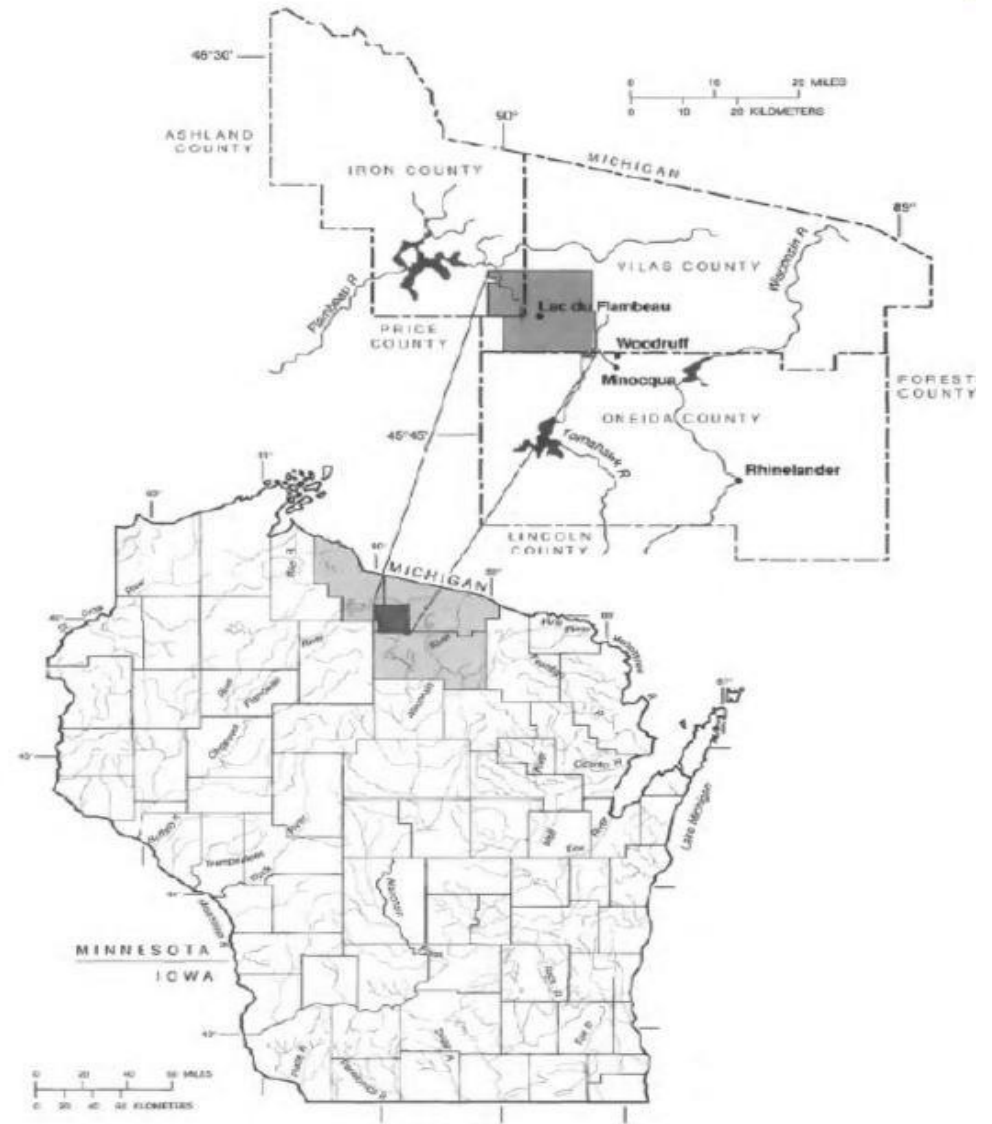
Lac du Flambeau Band of Lake Superior  
Chippewa Indians  
“A Match Made in Heaven”

National Adaptation Forum Webinar  
February 27, 2020

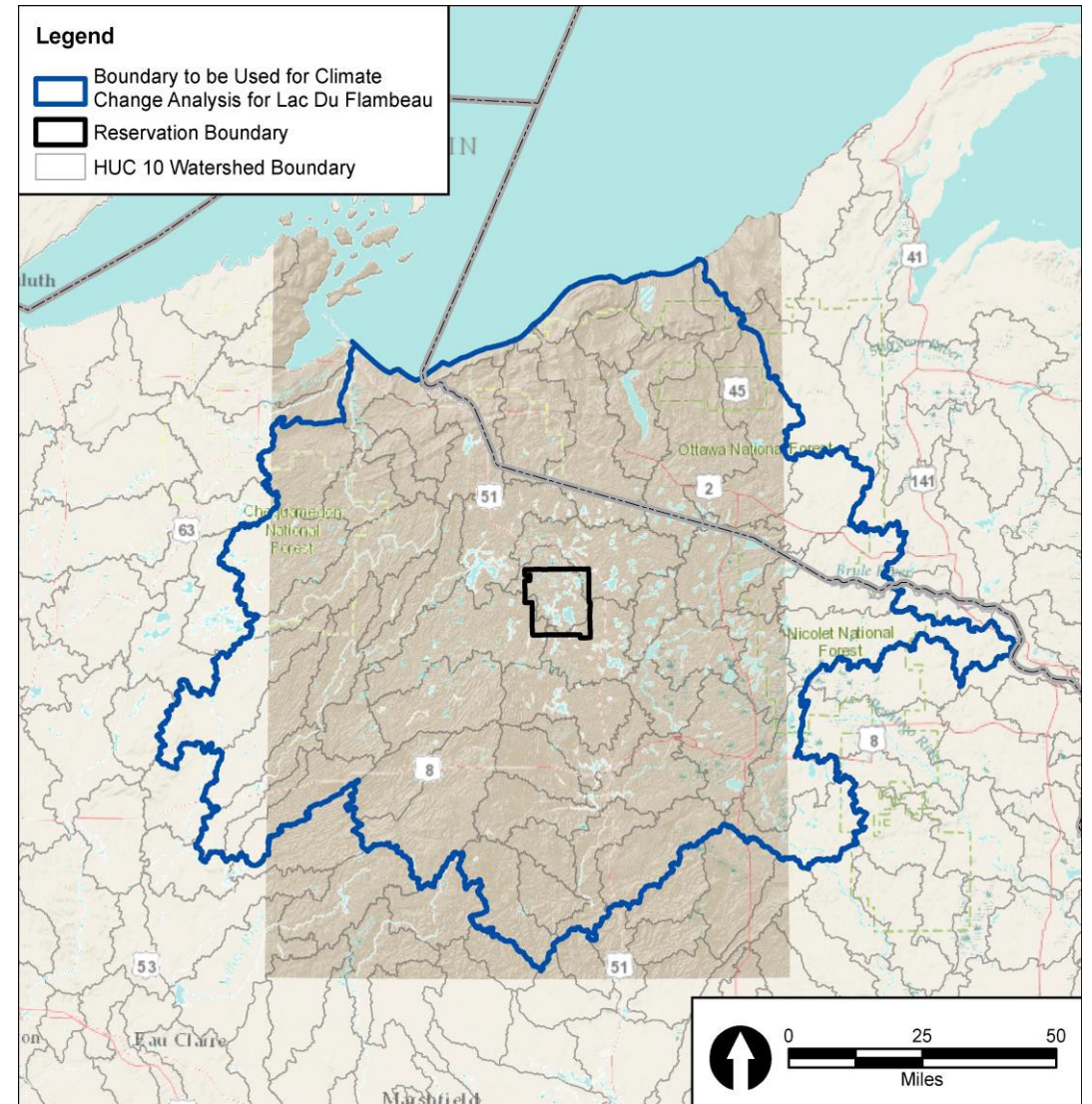
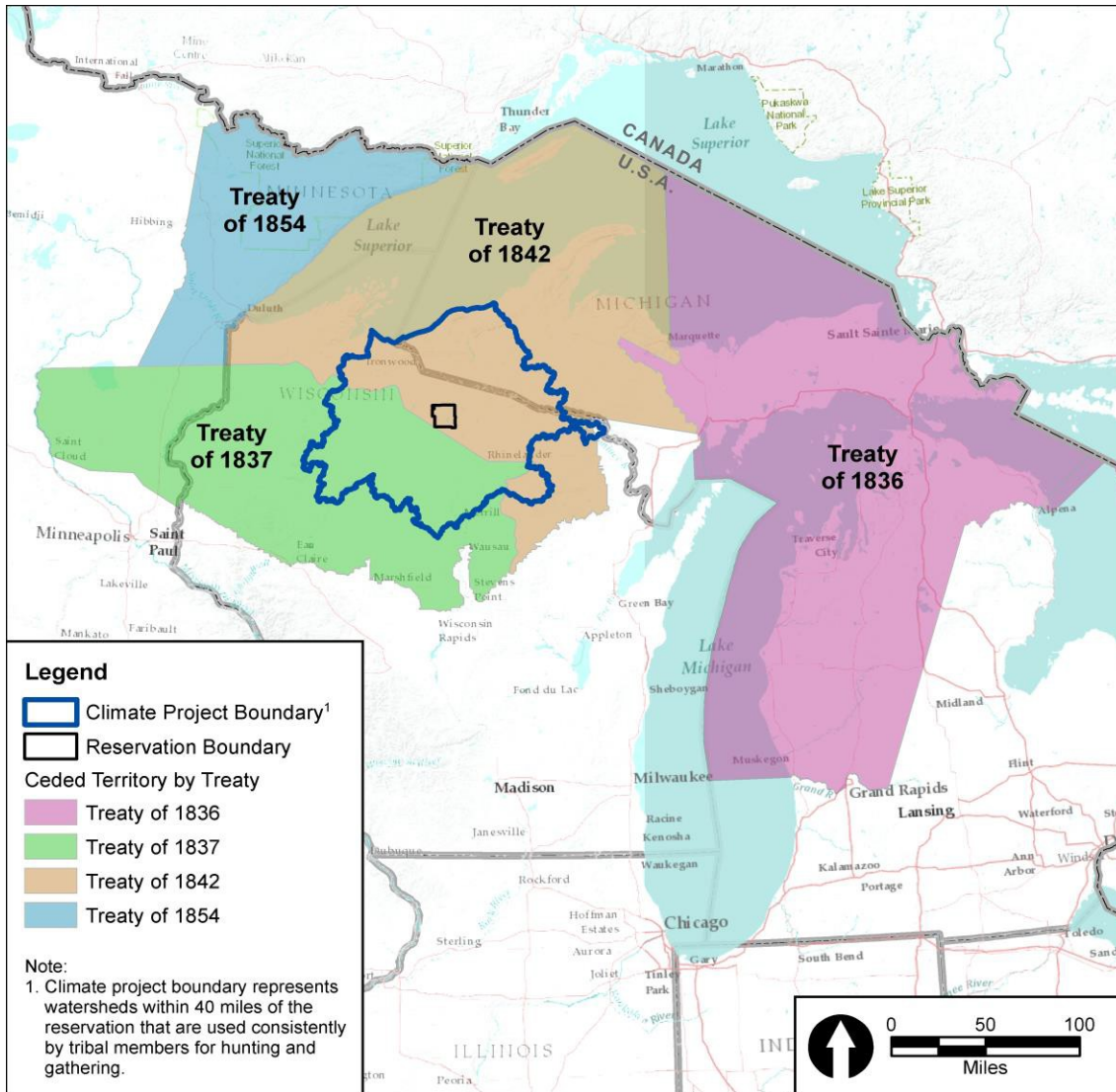
# Lac du Flambeau Band of Lake Superior Chippewa Indians: Location



## Lac du Flambeau Ojibwe



# Lacdu Flambeau Indian Reservation (Waaswagoning)



# Lac du Flambeau Indian Reservation

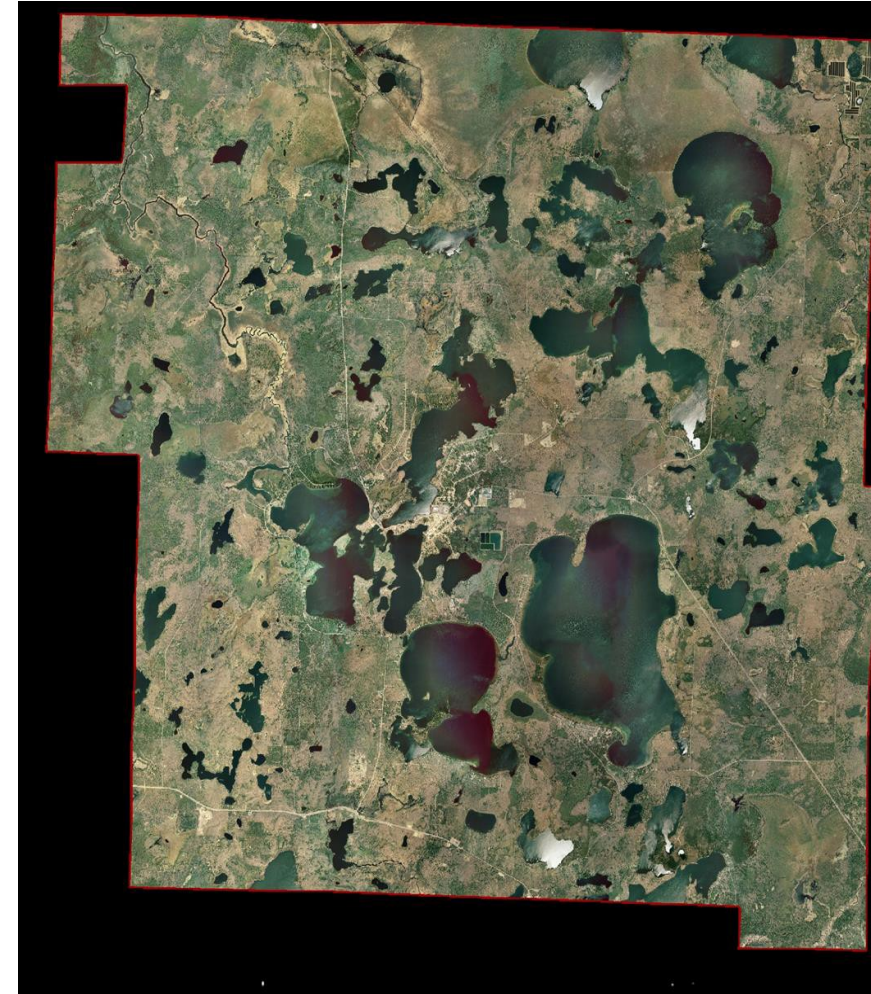
86,500 Acres

260 Inland Lakes

71 Miles of  
Stream/Rivers

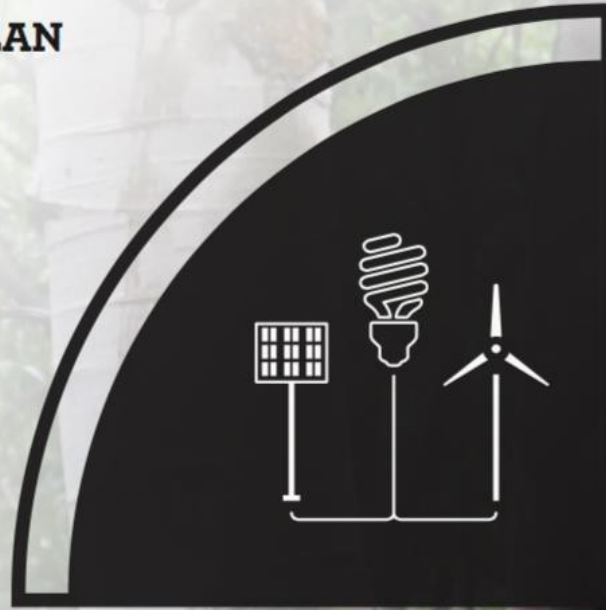
24,000 Acres of  
Wetlands

42,000 Acres of  
Forest



## ENERGY REDUCTION PLAN

The Tribe is identifying ways to reduce energy use, save money, and decrease greenhouse gas emissions.



## VULNERABILITY ASSESSMENT

The Tribe will use a community assessment process to determine the vulnerability of concerns within our tribal environment, health, and infrastructure.



## HAZARD

### MITIGATION PLAN

Through hazard mitigation planning the Tribe will reduce both natural and man-made risks that our community might face now and in the future.



## ADAPTATION PLAN

Through adaptation planning, the Tribe will identify actions the community can take to prepare for climate change.



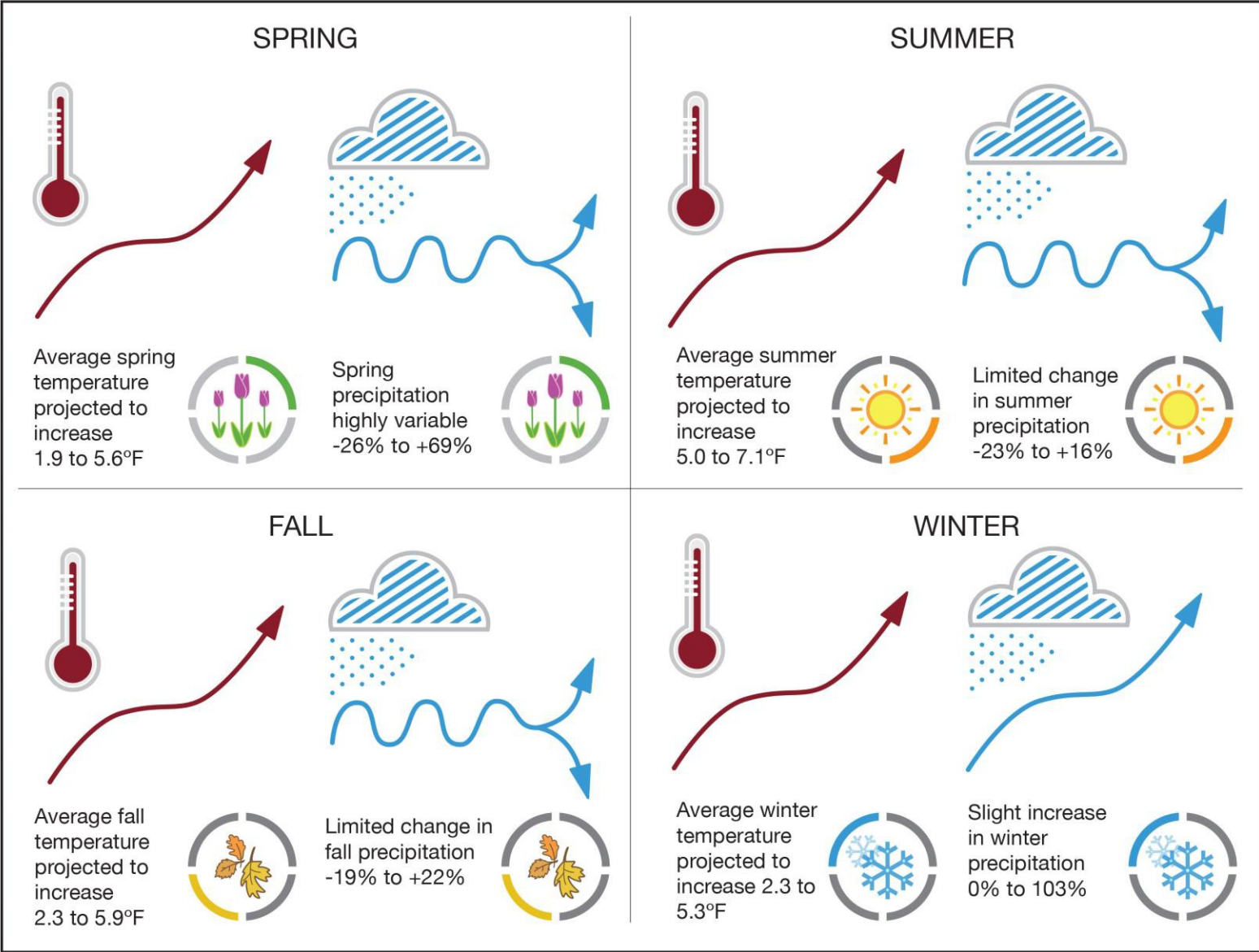
## **Why Do We Need a Hazard Mitigation Plan?**

**“Developing and Implementing a Plan would help the Lac du Flambeau Tribe create a Healthier, Safer and more Resilient Community for the next 7 Generations”**

# Hazard Mitigation Planning Process

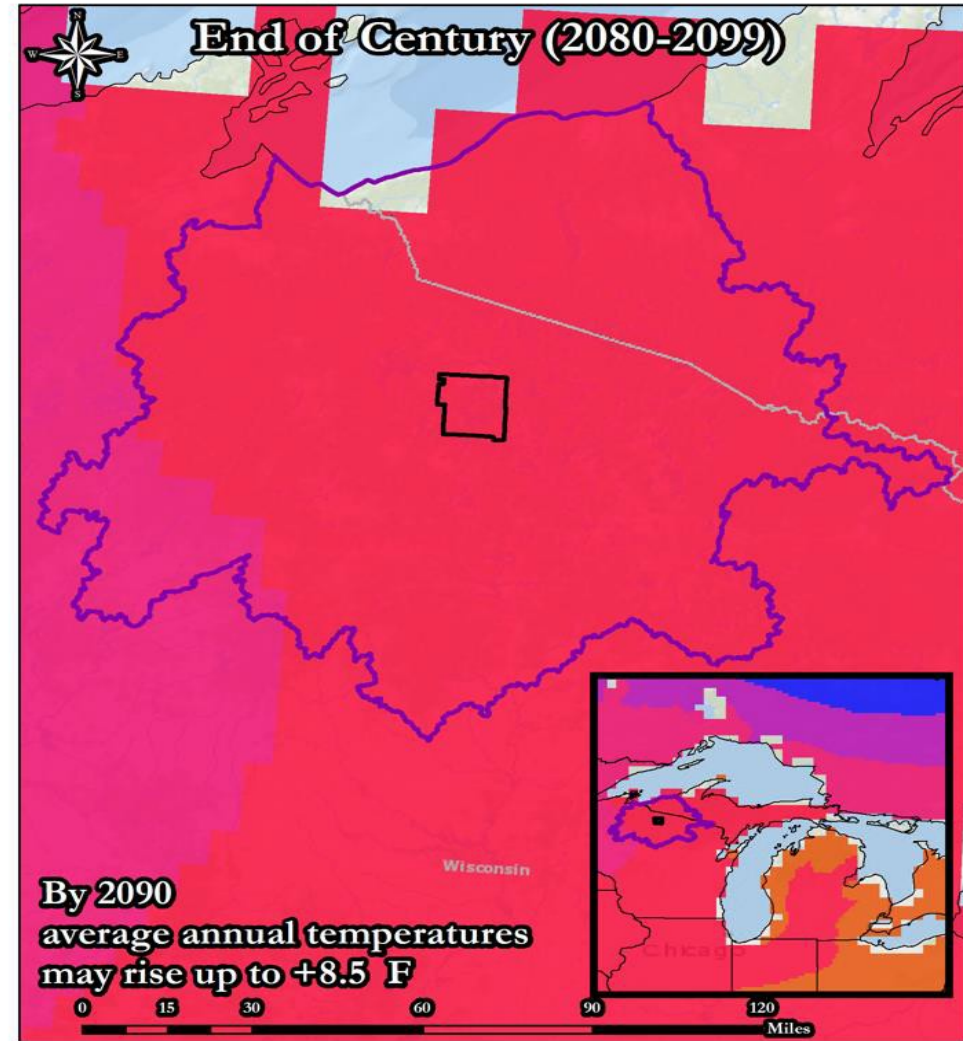
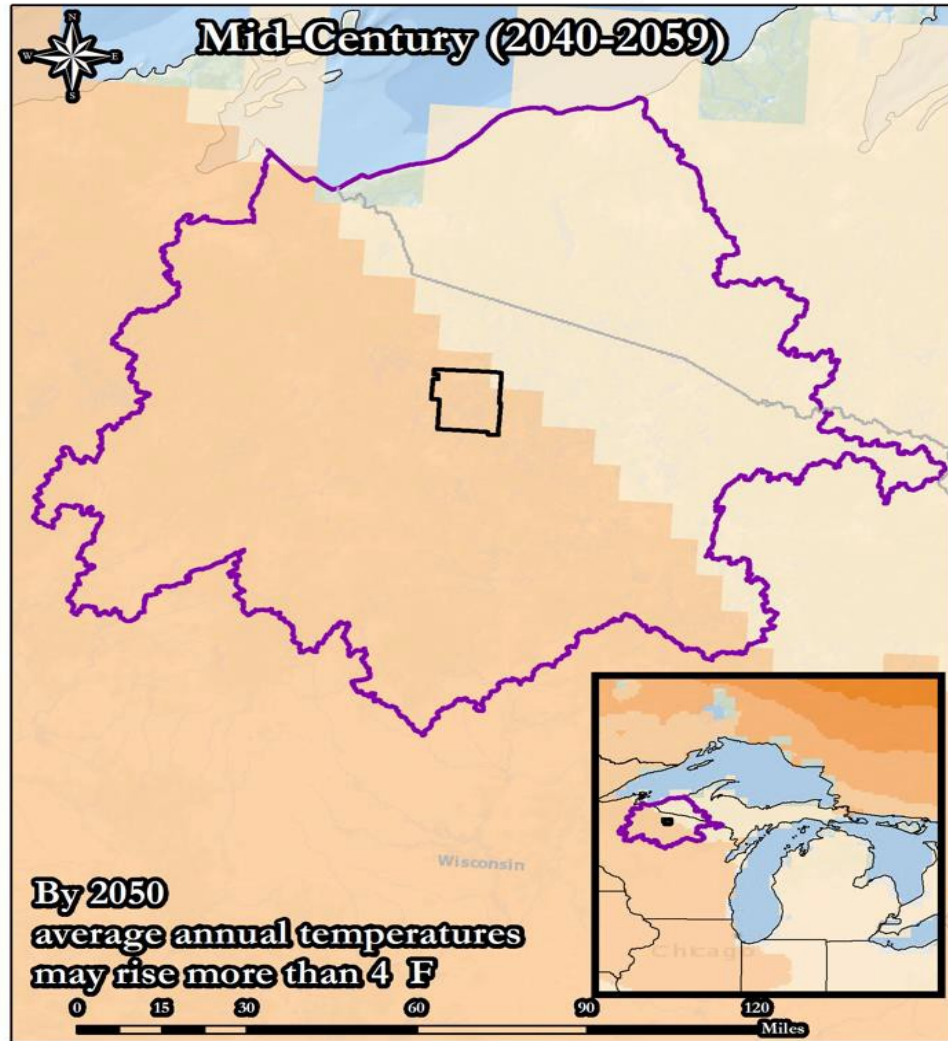


# Seasonal Temp and Precip Projections



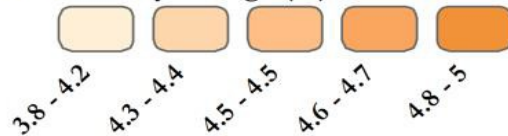


# Change in Average Annual Temperature

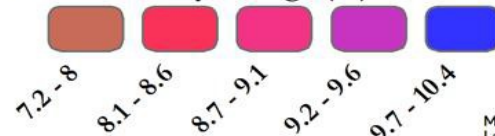


## Legend

### Mid-Century Change ( F )



### End of Century Change ( F )



- Resilience Project Boundary
- Lac du Flambeau Reservation



A collaboration of:

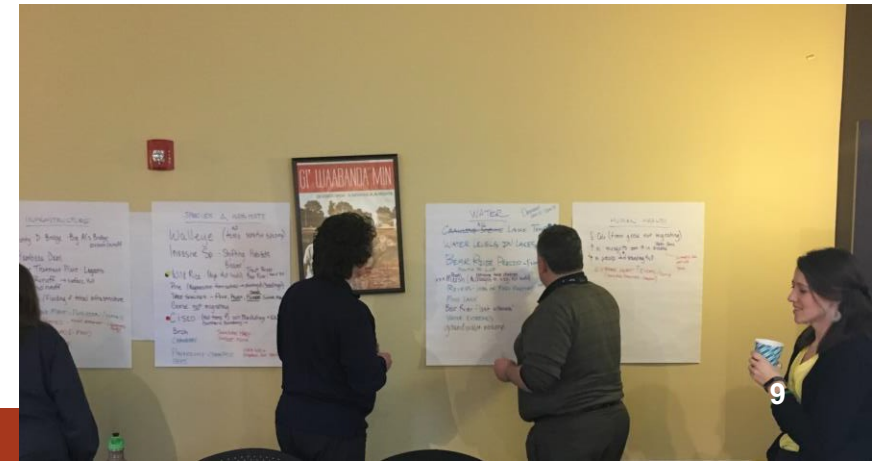
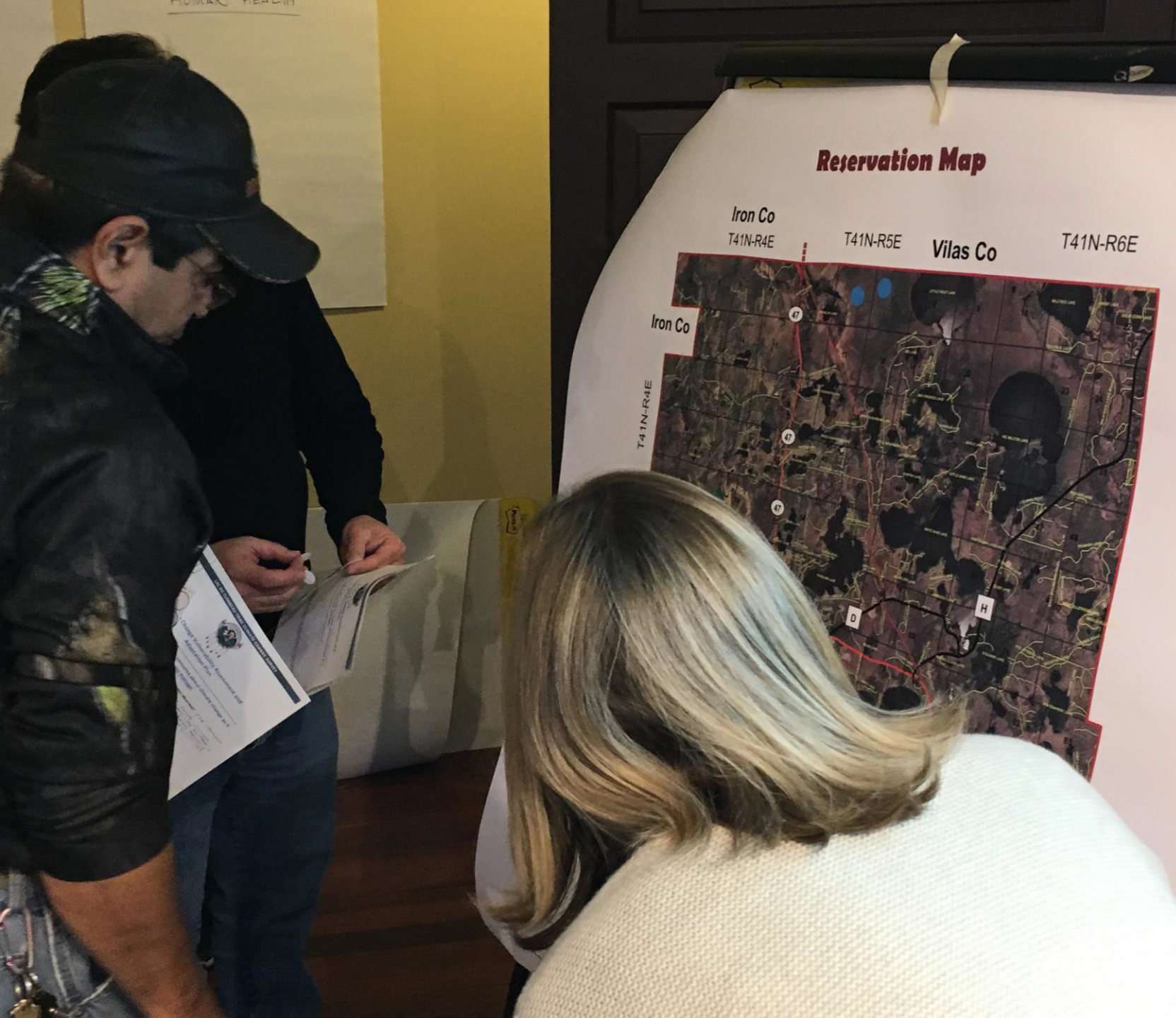


Map Credit: Trevor Even; Adaptation International  
Layer Credit: Project Collaborators; Great Lakes Integrated Sciences and Assessment Team, University of Michigan; National

## Partnerships: Tribal Emergency Planning Committee (TEPC)

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- Land Management
- Police Department
- Water and Sewer Utility
- Community Health
- Planning and Development
- Lake of the Torches Casino
- Facilities/Buildings
- Natural Resources Programs-Fisheries, Wildlife, Great Lakes Restoration Initiative, Water Resources, Environmental Protection, Environmental Response, Wildrice Cultural, and Conservation Enforcement
- Communications/PR
- Administration
- State of Emergency
- Forestry
- Dental Facility
- Housing Authority
- Public School\*
- Fire Department\*



<b>LDF Hazard Risk Assessment Tool</b>	<b>PROBABILITY</b>	<b>TREND</b>	<b>Health and Public Safety</b>	<b>Home and Property Damage</b>	<b>Livelihood Impacts</b>	<b>Cultural Wellbeing</b>	<b>Environmental Harm</b>	<b>Damage to Infrastructure</b>	<b>Recovery Costs</b>	<b>Government Services</b>	<b>Damage to Facilities / Agriculture</b>	<b>Risk Acceptability</b>	<b>Mitigation Potential</b>	<b>Overall Hazard Ranking</b>
Plant and Animal Epidemic / Invasive Species / Species Loss	5	3	1	2	2	3	3	0	3	0	3	3	1	0.98
Illegal Drug Crisis	5	2	2	1	2	3	0	0	2	1	0	3	2	0.89
Severe Thunderstorms / Lightning / Hail	5	3	1	3	0	2	2	3	3	1	2	3	1	0.88
Epidemic / Pandemic / Vector-Borne Disease	2	3	3	0	3	3	0	0	2	2	2	3	2	0.84
Flood (flash flood, lake, river, stormwater)	4	3	0	2	1	3	3	1	3	1	2	2	2	0.83
Severe Winter Storms / Ice Storms	5	3	1	1	0	1	1	3	3	2	3	2	2	0.76
Forest / Wildland Fire	5	2	1	3	2	2	1	2	3	1	2	1	2	0.72
Hazardous Materials Release / Contamination / Run-off	4	3	1	0	0	3	3	0	3	0	0	3	2	0.66
Tornado / High Wind	2	2	2	2	2	2	2	2	3	1	3	2	2	0.44
Extreme Heat	5	3	1	0	0	1	2	1	0	2	0	2	2	0.44
Extreme Cold	4	1	2	2	1	0	0	3	1	2	1	1	2	0.35
School Violence / Armed Attack / Workplace Violence	2	2	3	0	0	1	0	0	1	2	0	2	2	0.31
Dam Failure	1	2	2	3	0	3	3	3	3	1	3	1	1	0.15

## **ILLEGAL DRUG CRISIS**

**Continue to update the Tribal Action Plan developed in response to the illegal drug crisis on a continuous basis.**

**Continue and enhance existing counseling efforts.**

**Enhanced police enforcement on drug interdiction and education on illicit/misused drugs and paraphernalia.**

**Continue and support DEC (Drug Endangered Children) and adult response team that will coordinate with other tribal programs.**

**Review mental health screening process during regular check-ups at the health clinic.**

**Build a Safe House for children in families dealing with an emergent drug situation.**

# Completed and FEMA Approved Hazard Mitigation Plan

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For Review:

[www.ldftribe.com](http://www.ldftribe.com)

\*Other Pages

\*Hazard Mitigation Plan

# Climate Change Impacts on Lac du Flambeau Reservation





# “Miigwech” Thank You! On behalf of our TEPC

Eric Chapman, Sr.

[echapman@ldftribe.com](mailto:echapman@ldftribe.com)

Emergency Management Coordinator

FEMA Hazard Mitigation Project Lead

Climate Resilience Project Director

Lacdu Flambeau Band of Lake Superior Chippewa Indians



# Hazard Mitigation and Climate Adaption Planning

National Adaptation Forum Webinar

Jonathan Olds

Lead Hazard Mitigation Assistance Specialist

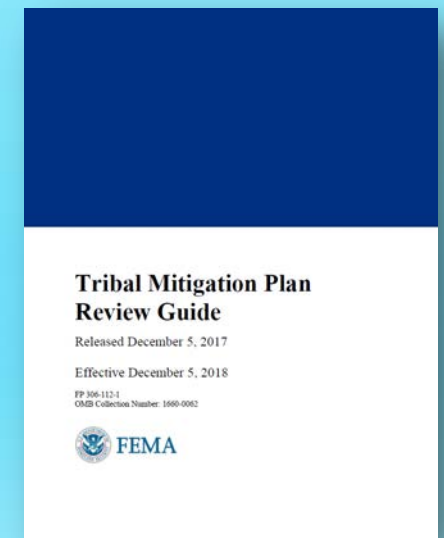
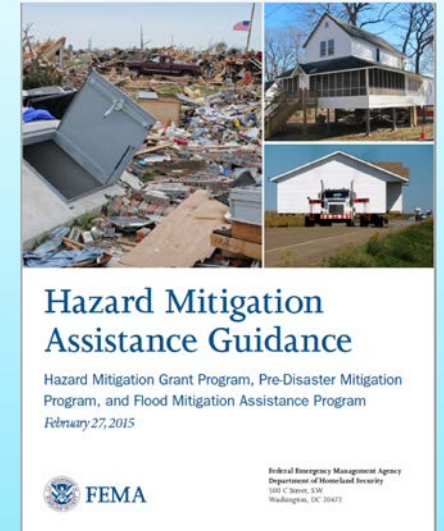
Region X

February 27, 2020



# Federal Hazard Mitigation Planning

- **Disaster Mitigation Act of 2000**
  - Establishes eligibility for FEMA Hazard Mitigation Assistance (HMA)
  - Requires Tribal, State, and local governments to submit plans to FEMA for review
- **Title 44 Code of Federal Regulations (CFR) 201**
  - Plans shall include information on the probability of future hazard events
  - Requires plan update every five years
- **Hazard Mitigation Assistance Guidance (updated 2015)**
  - Resilience and Climate Change Adaptation Commitment
  - Risk reduction for specific vulnerabilities from natural hazards and climate change
- **Tribal and State Mitigation Plan Review Guide (updated)**
  - Clarifies need to include considerations of future conditions, including long-term changes in weather patterns



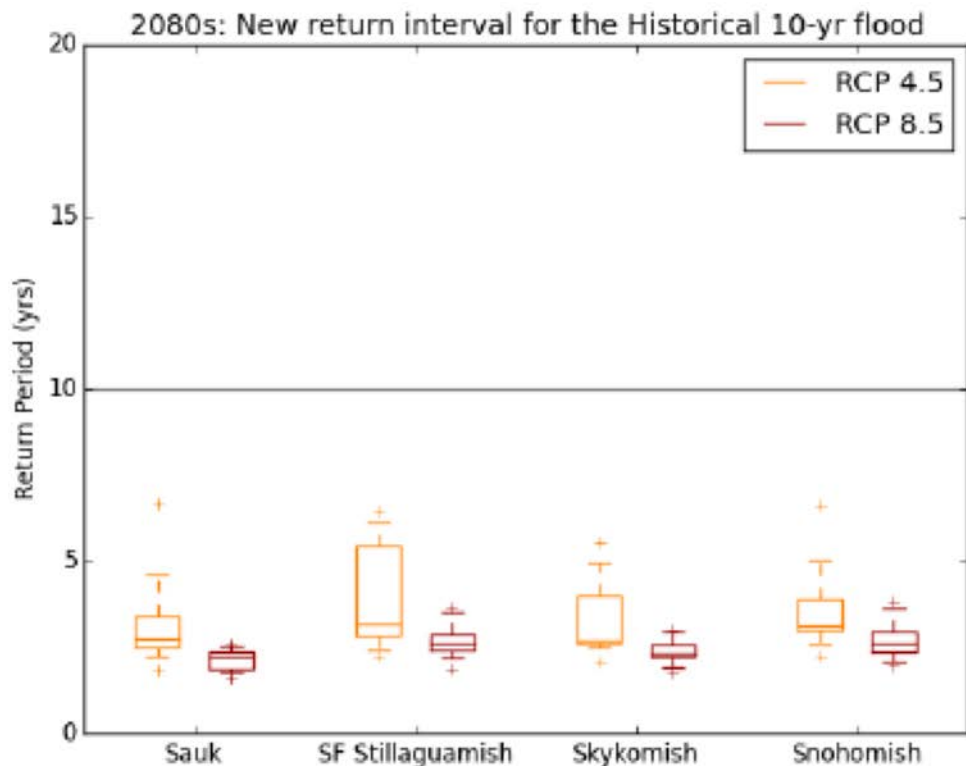


Figure 10-6 2080s: Projected return interval for the Historic 10-Year Flood on Snohomish County Rivers.

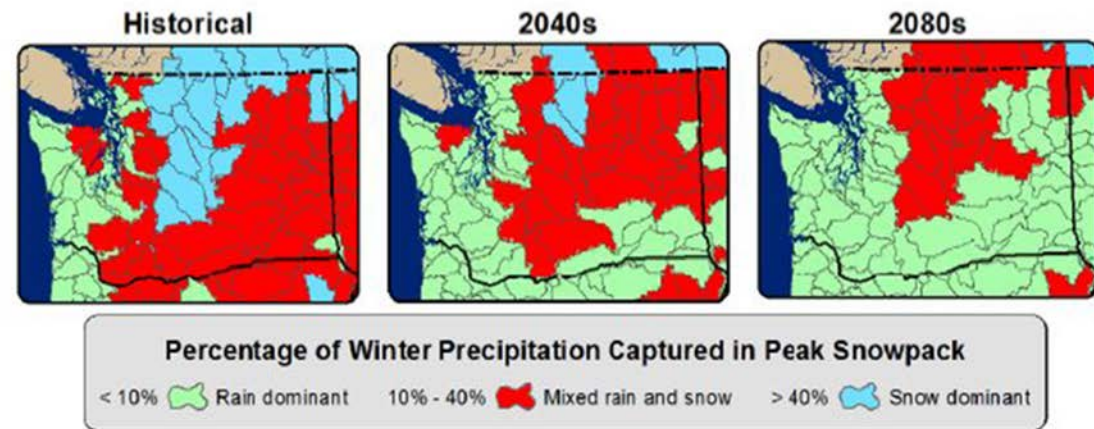
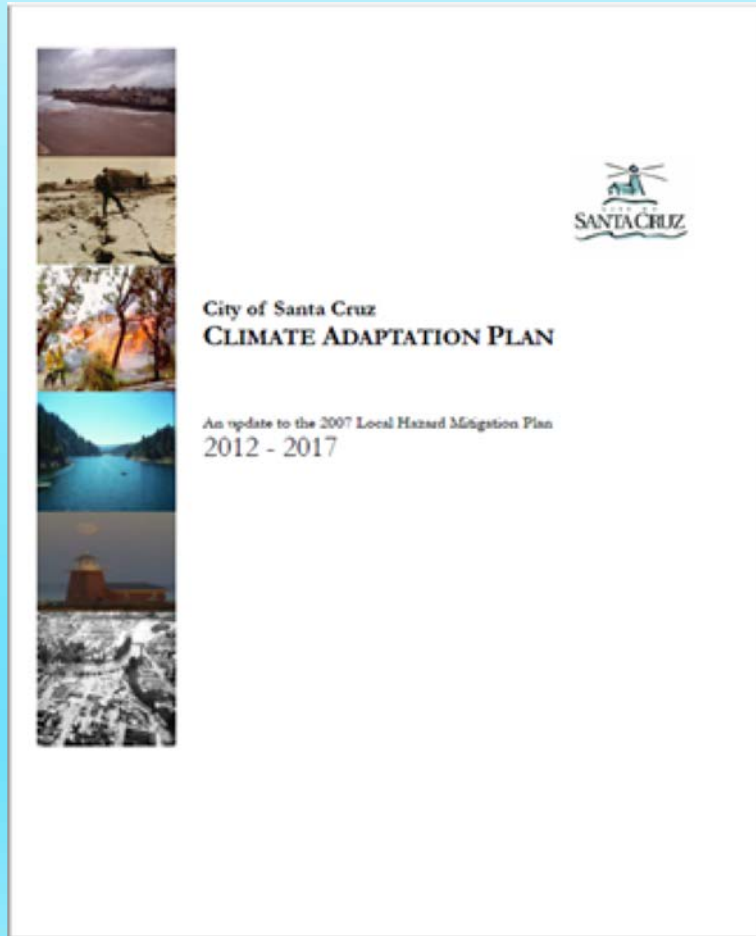


Figure 10-3 Washington State Changes of Hydrology with Warming (Snover et al., 2013)



## Cal-Adapt temperature projections for the Santa Cruz area

Historical Average:	56.8° F
Low-Emissions Scenario:	60.0° F +3.2° F
High-Emissions Scenario:	62.3° F +5.5° F



**City of Santa Cruz**  
**CLIMATE ADAPTATION PLAN**

An update to the 2007 Local Hazard Mitigation Plan  
2012 - 2017

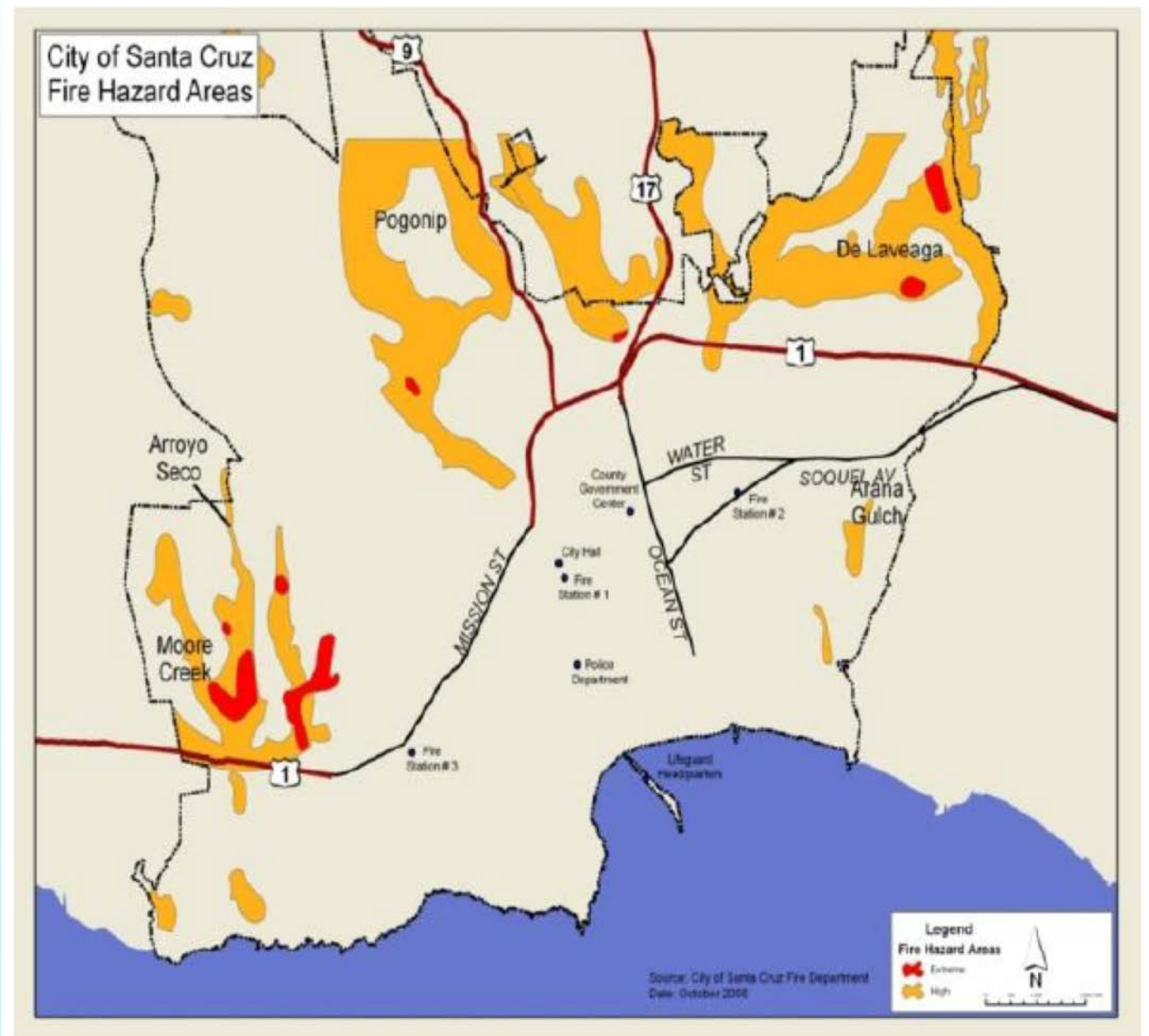


FIGURE 10: URBAN/WILDLAND FIRE HAZARD AREAS



Source: City of Olympia, Water Resources.

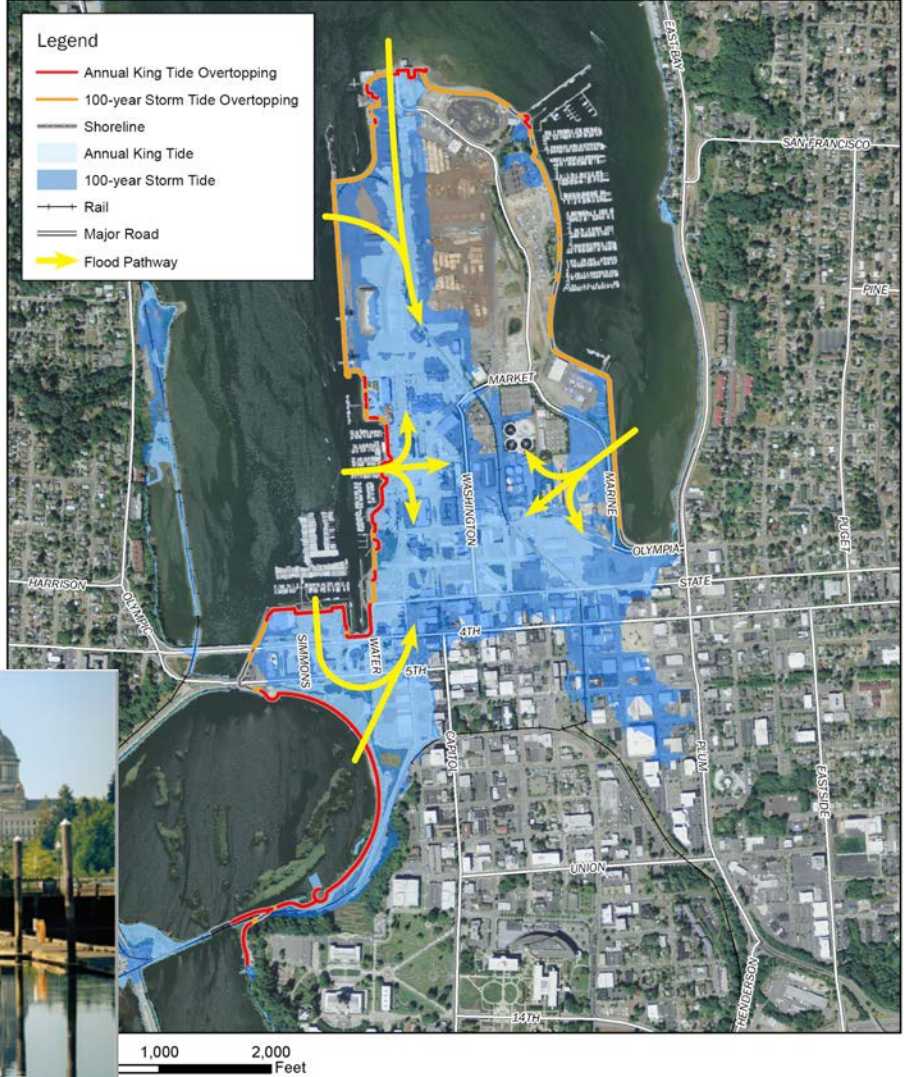
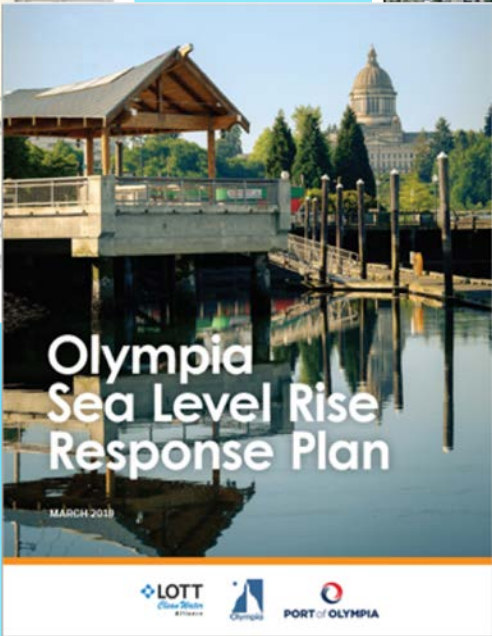
Annex Olympia

**The City of Olympia Annex to the Hazards Mitigation Plan for the Thurston Region**

Table of Contents

Title Page and Table of Contents	1
Adopting Resolution	3
Community Profile	5
City of Olympia Plan Development Process	7
City of Olympia Risk Assessment	13
City of Olympia Mitigation Initiatives	39
City of Olympia Implementation of the National Flood Insurance Program	53
Public Comment Summary	59

Olympia | Hazard Mitigation Plan  
December 2016

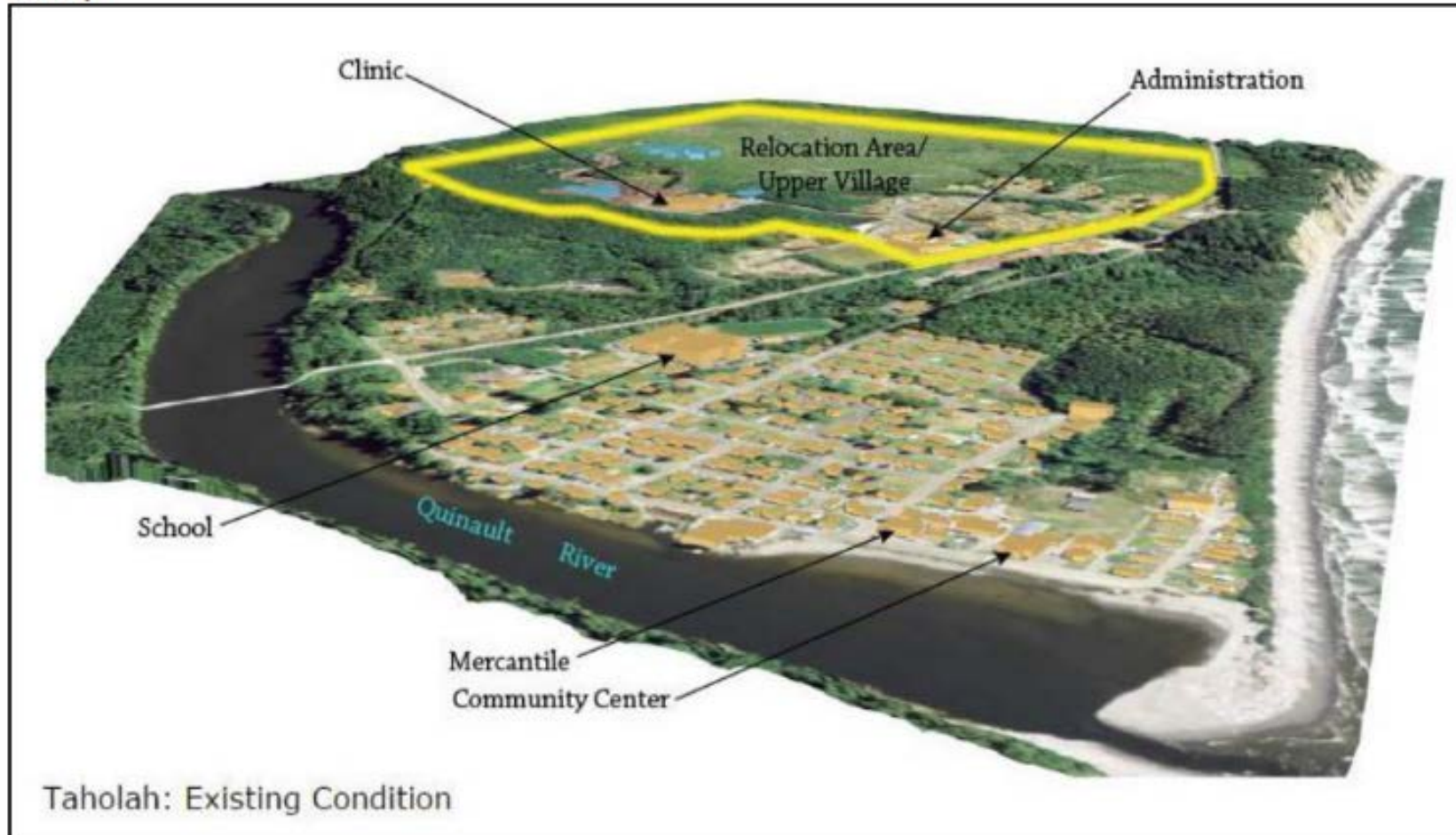


**PORT OF OLYMPIA**

**OLYMPIA SLR RESPONSE PLAN**  
Projected Flooding 24" Sea Level Rise  
**AECOM**

# Quinault Indian Nation – Taholah Village Relocation

Figure 12-1. Map of Existing Condition from Taholah Village Relocation Master Plan (QIN 2016)



# How to be Successful

Leadership and community support for integrating climate adaptation planning into the Hazard Mitigation Plan.

Identify who will lead the planning effort and what resources are available.

Determine information needed to identify, prioritize and generate support for effective hazard mitigation/climate adaptation strategies.

Determine methods of analysis to be used.

Determine community engagement methods and actions.

Develop scope of work, cost estimate and schedule.

When do you need this information?

# Support Tools

Adaptation Clearinghouse: <http://www.adaptationclearinghouse.org/>

Alaska Climate Change Information: <https://climatechange.alaska.gov/>

Alaska Sea Grant: <https://seagrant.uaf.edu/map/climate/>

Climate Adaptation Knowledge Exchange: <http://www.cakex.org/>

Oregon Climate Change Research Institute: <http://www.occri.net/>

Oregon DLCDC Planning for Climate Change:

<http://www.oregon.gov/LCD/CLIMATECHANGE/Pages/index.aspx>

Oregon State University Climate Impacts Research Consortium: <http://pnwcirc.org/circteam>

NOAA Digital Coast: <https://coast.noaa.gov/digitalcoast/>

U.S. Dept. of Housing & Urban Development Climate Resources:

[https://portal.hud.gov/hudportal/HUD?src=/program\\_offices/economic\\_development/resilience/about](https://portal.hud.gov/hudportal/HUD?src=/program_offices/economic_development/resilience/about)

U.S. Resilience Toolkit: <https://toolkit.climate.gov/>

UW Climate Impacts Group: <https://cig.uw.edu/>

WA Coastal Hazards Resilience Network: <http://www.wacoastalnetwork.com/>



# Resources

## DOCUMENTS

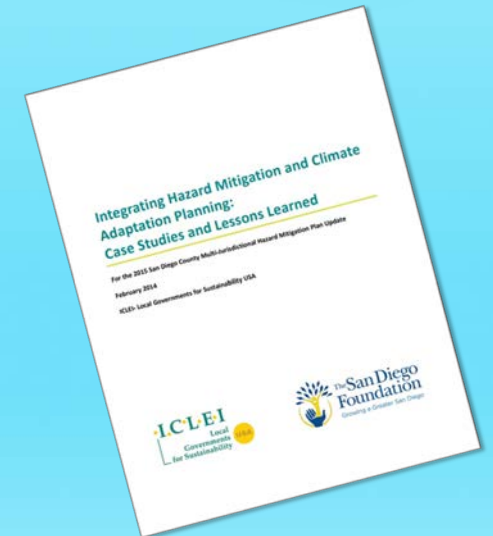
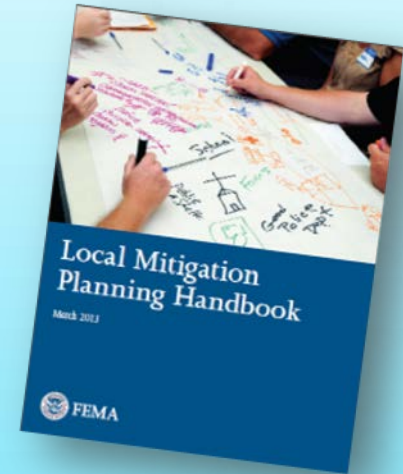
- **Local Mitigation Planning Handbook**  
<http://www.fema.gov/library/viewRecord.do?id=7209>
- **Mitigation Ideas** <http://www.fema.gov/library/viewRecord.do?id=6938>
- **Local Mitigation Planning Guidance** <https://www.fema.gov/media-library/assets/documents/23194>
- **Tribal Multi-Hazard Mitigation Planning Guidance**  
<http://www.fema.gov/media-library/assets/documents/18355>
- **California HMP & Climate Adaptation Guidance**  
<http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/hazard-mitigation-planning/california-climate-adaptation>
- **ICLEI: “Integrating Hazard Mitigation & Climate Adaptation Planning”**  
<http://icleiusa.org/wp-content/uploads/2015/08/Integrating-Hazard-Mitigation-and-Climate-Adaptation-Planning.pdf>

## TRAINING

- **Climate Adaptation Training Opportunities**
- <https://toolkit.climate.gov/training-courses>

## WEBSITE

- **FEMA Mitigation Planning**  
<https://www.fema.gov/hazard-mitigation-planning>





# Questions & Discussion





# Thanks for joining us!

**GAME▶on!**  
FOR ADAPTATION  
Global Adaptation Month™

**April 2020 is Global Adaptation Month**  
*Up your GAME on climate change,  
make a commitment today.*

[www.GlobalAdaptationMonth.org](http://www.GlobalAdaptationMonth.org)

**5<sup>TH</sup> NATIONAL ADAPTATION FORUM**  
April 26-28, 2021 • Atlanta, GA

**ACTION TODAY for  
a BETTER TOMORROW**

All webinars are announced on social media:



@AdaptationForum

