

# WHAT'S IN STORE FOR THE FUTURE INTERSTATE SYSTEM:

## WORKING TODAY FOR A MORE RESILIENT STATE & NATIONAL NETWORK



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**Future Interstate Highway System Study Committee**  
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Via webinar

# Key issues from WSDOT Environmental perspective

- **Climate Readiness**

- Assess vulnerabilities and use results in decision making for future investments
- Avoid mal-adaptation
- Protect assets
- Be nimble and inclusive

- **Emerging Policy Issues**

Drilled shafts on Interstate 90  
in the Cascade Mountains







# 1. DEFINE SCOPE

**IDENTIFY KEY CLIMATE VARIABLES**

- Climate impacts of concern
- Sensitive assets & thresholds for impacts

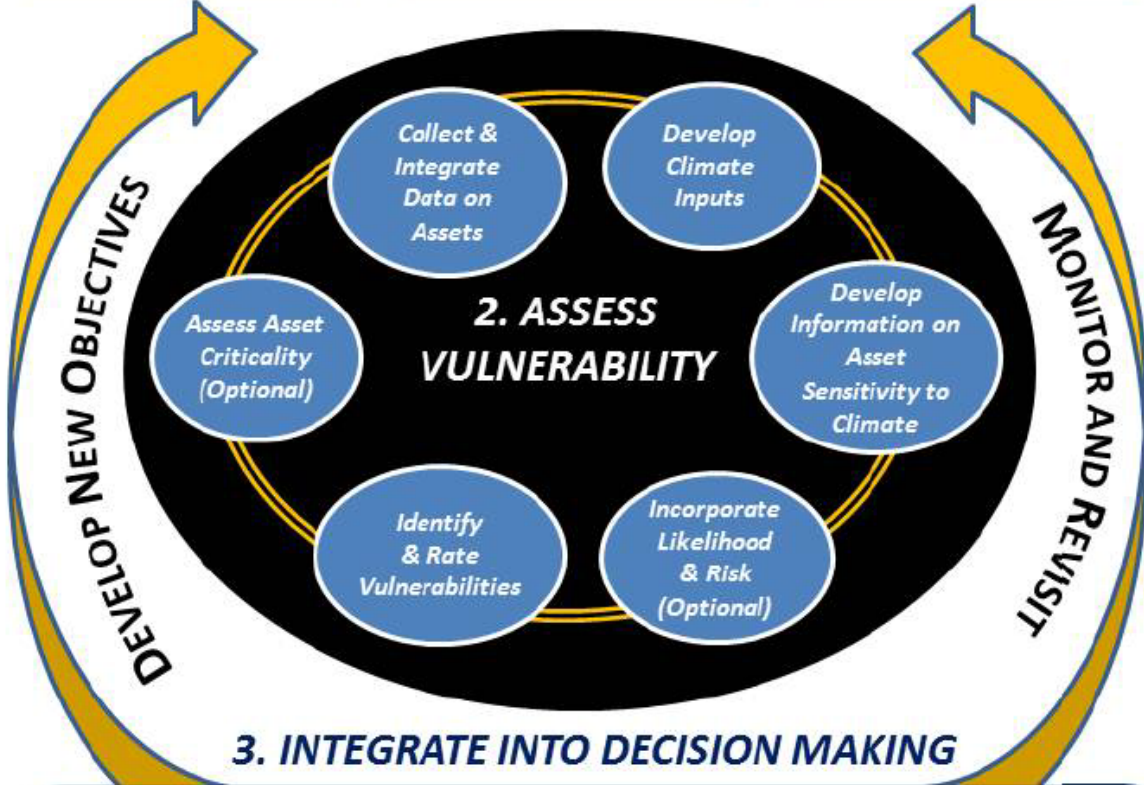
**ARTICULATE OBJECTIVES**

- Actions motivated by assessment
- Target audience
- Products needed
- Level of detail required

**SELECT & CHARACTERIZE RELEVANT ASSETS**

- Asset type
- Existing vs. planned
- Data availability
- Further delineate

FHWA's Framework

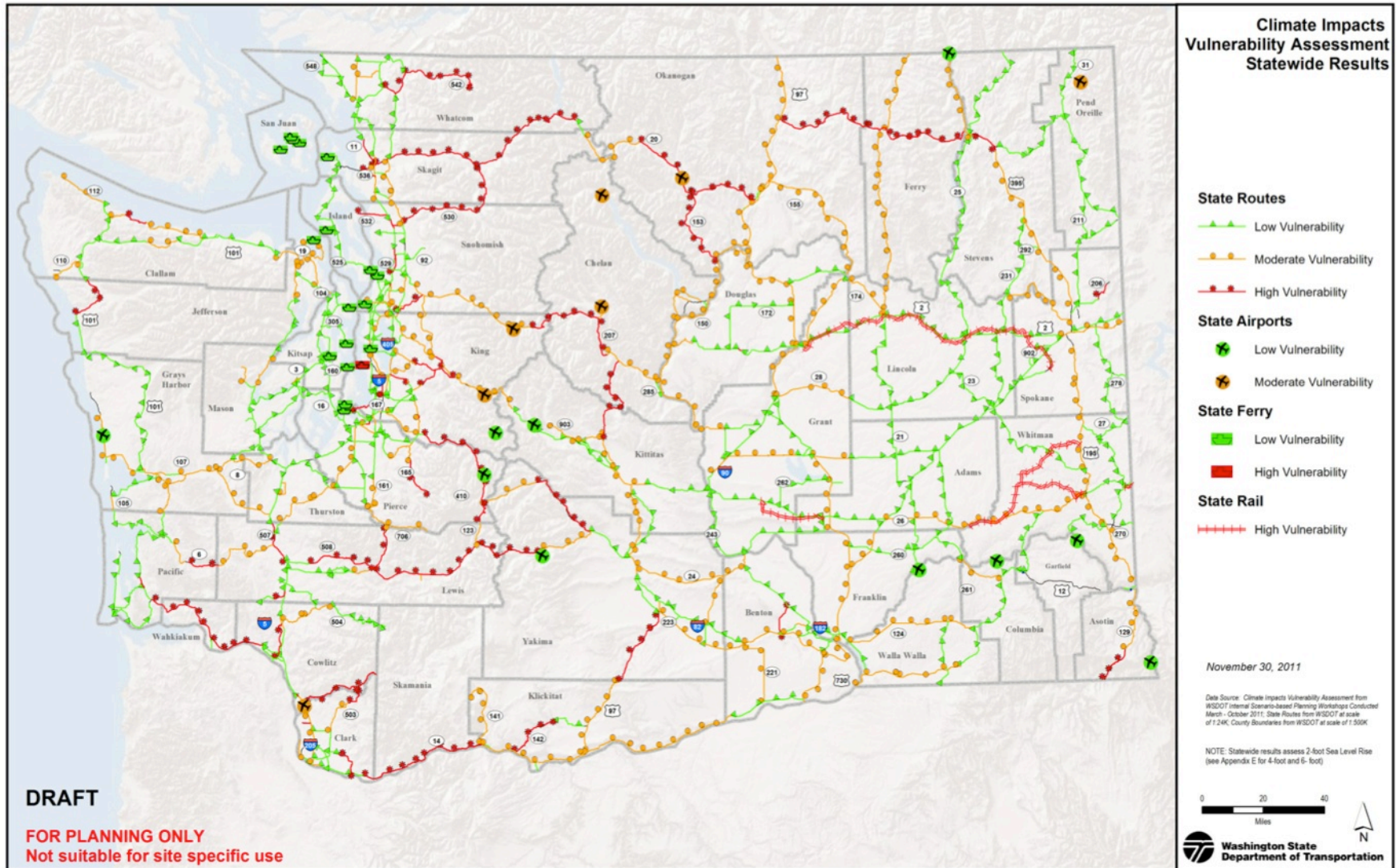


# 3. INTEGRATE INTO DECISION MAKING

- INCORPORATE INTO ASSET MANAGEMENT
- INTEGRATE INTO EMERGENCY & RISK MANAGEMENT
- CONTRIBUTE TO LONG RANGE TRANSPORTATION PLAN
- ASSIST IN PROJECT PRIORITIZATION
- IDENTIFY OPPORTUNITIES FOR IMPROVING DATA COLLECTION, OPERATIONS OR DESIGNS
- BUILD PUBLIC SUPPORT FOR ADAPTATION INVESTMENT
- EDUCATE & ENGAGE STAFF & DECISION MAKERS

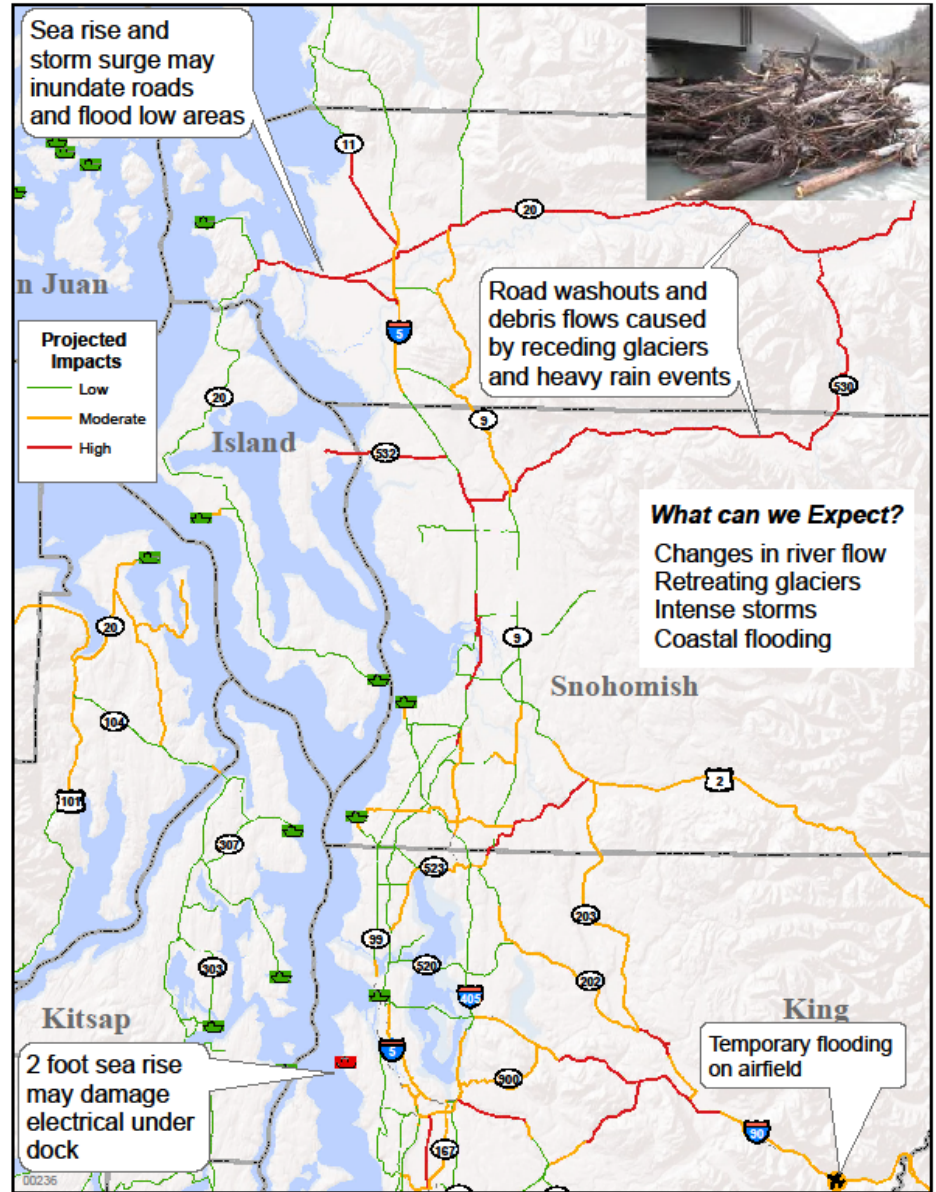
# Statewide Results

(map shows results with 2 foot sea-rise & all other threats)



# What did we find?

- Climate change will intensify known threats
- Reinforces value of our current maintenance and retrofit programs
- Unique way to capture knowledge of field staff
- New awareness of combinations of climate risks / extreme events





# Co-Benefits: Highlighting current practices that are effective adaptation strategies



Before: old culverts obstruct fish passage



- Also:
- Slope Stabilization
  - Stormwater Flow Control
  - Roadside Vegetation Management

After: WSDOT project removes barrier and restores access to fish and wildlife habitat



# Asset Management: Incorporating the results into WSDOT's work

## Planning

Major emphasis in our strategic plan: **Consider climate change and propose ways to improve resilience** (corridor studies and plans)

## Design & Environmental Review

Evaluate potential risks during the environmental and design phase. Project teams follow WSDOT's NEPA /SEPA guidance (2008 to present) <http://www.wsdot.wa.gov/SustainableTransportation/adapting.htm>

## Construction

Look at potential for new issues: Salt water corrosion, heat or precipitation changes for long-term impacts on materials

## Maintenance & Operations

Multi-hazard risk reduction, awareness of maintenance activities that may be affected by heat or extreme weather events



# SR 522/US 2 PROJECT – Snohomish River

Our first environmental document to consider climate (NEPA 2008)

Includes project elements that add resilience for future flooding



# SR 522/US 2 Completed December 2015



# Mukilteo Multimodal Ferry Terminal

Final EIS (2013)

- Sea-level rise
- Stormwater

2016 @ 60% Design  
2019 opening

Consider climate risk in  
Project Planning and Design

## 60% Submittal

NOT TO BE USED FOR CONSTRUCTION

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Washington State  
Department of Transportation

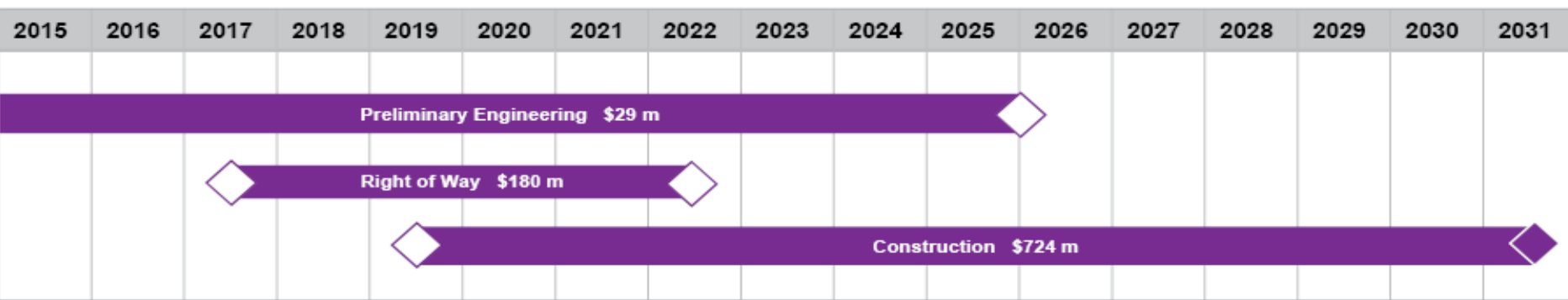
SR 525

MUKILTEO TERMINAL (PHASE 2)  
FERRY TERMINAL CONSTRUCTION

ARCHITECTURAL COVER SHEET

ADD.00  
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# SR 167 Completion Project: Connects Port to I-5 and regional highway network

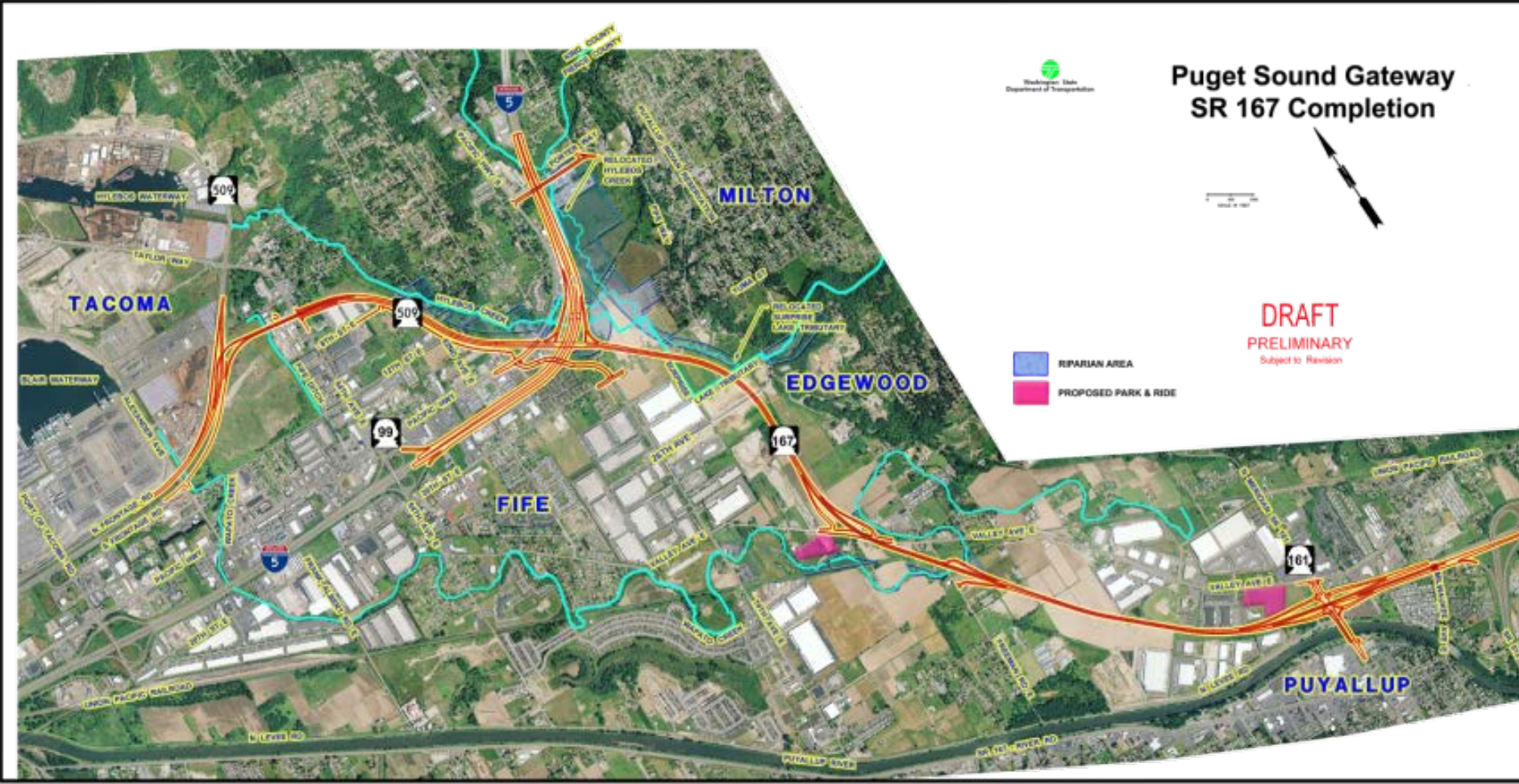


# SR 167 Completion Project – Constraints & Opportunities

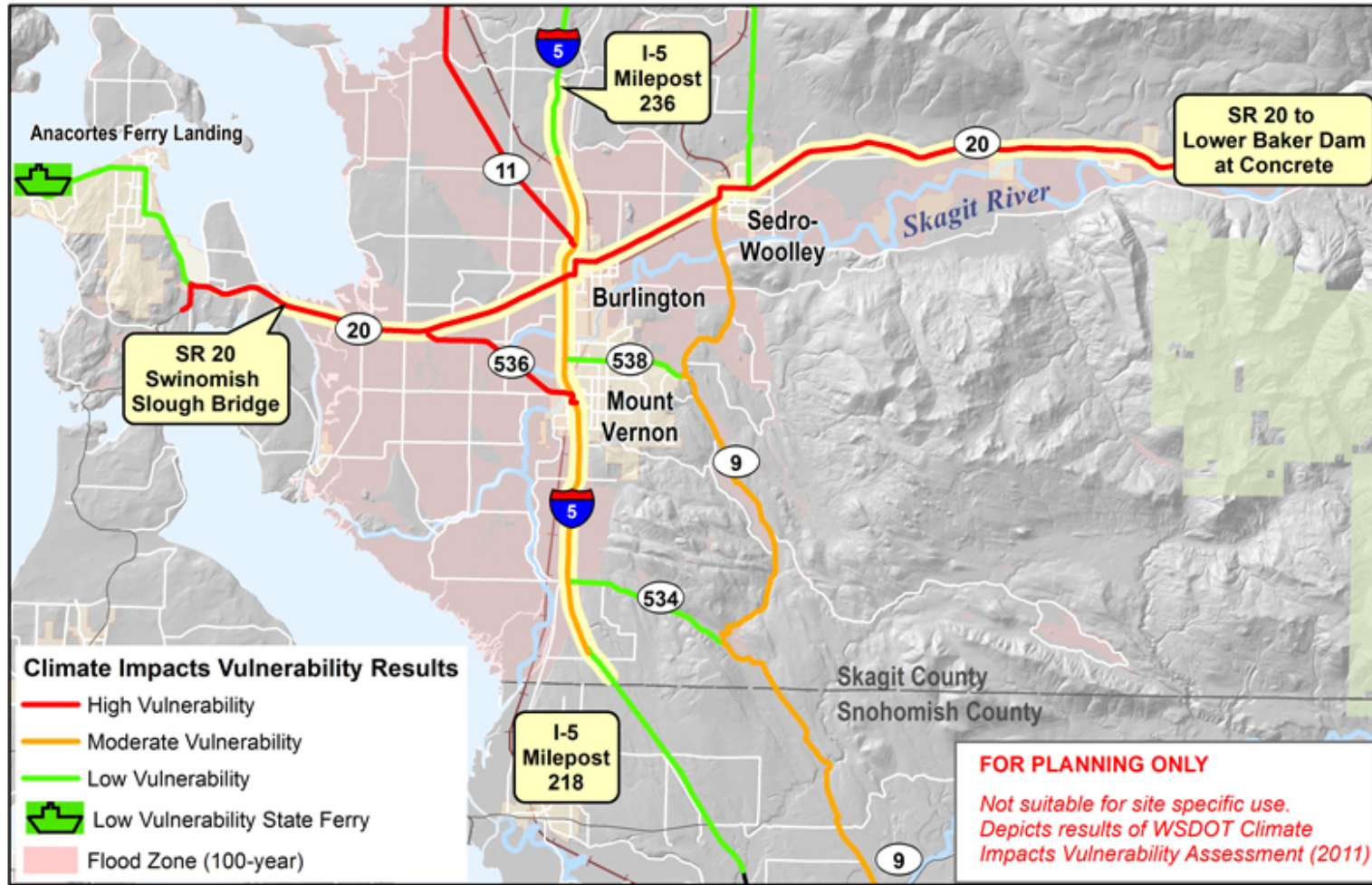
- Topography
  - low point of the valley
  - located in the floodplain
  - shallow groundwater
- Aquatic Habitat
  - salmon bearing streams
  - wetlands
- ✓ Surrounding land use
- ✓ Riparian Restoration & public support for habitat projects



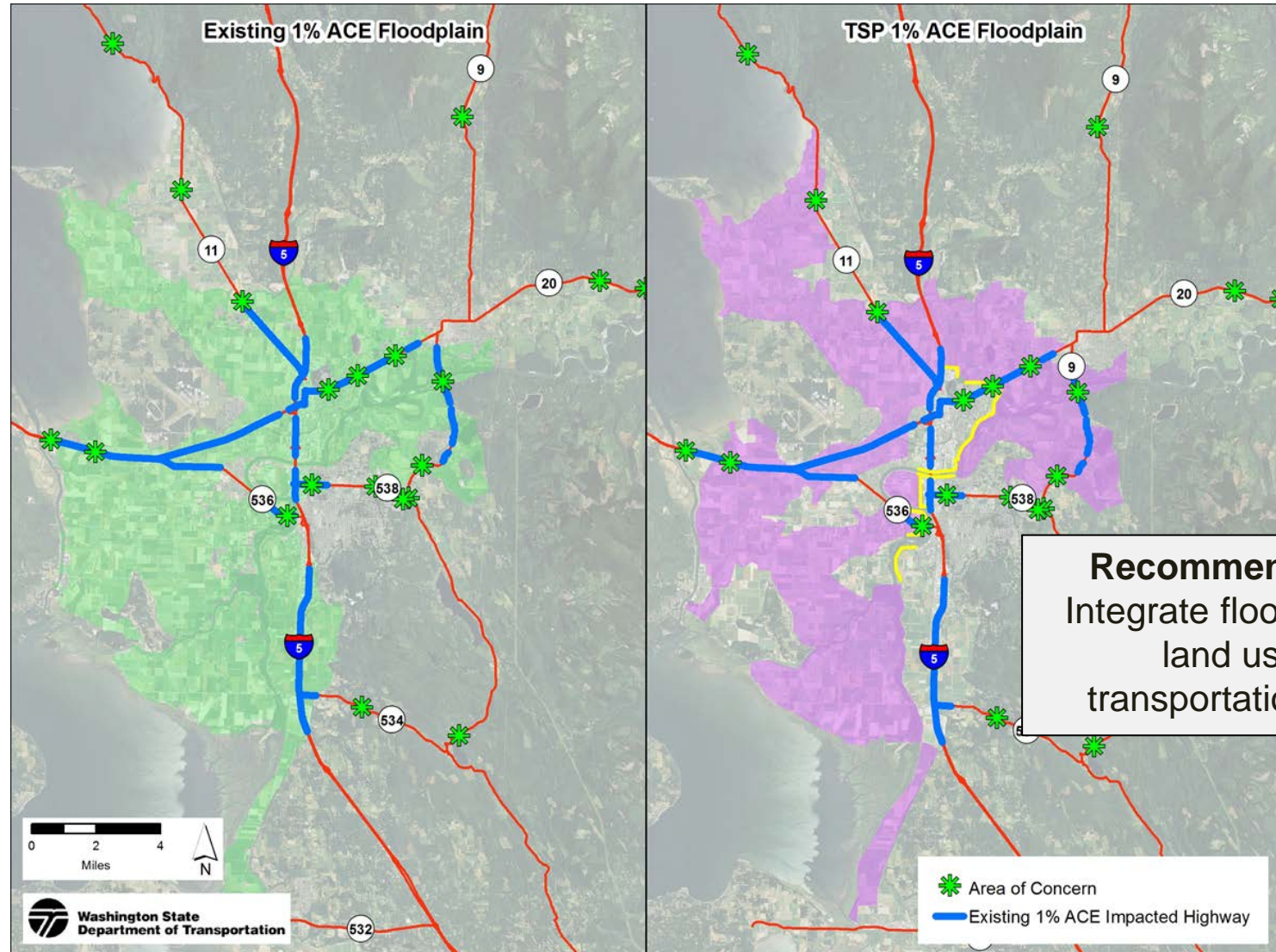
# New Alignment with Riparian Restoration & Flood Storage (considers SLR & Precip)



# WSDOT Climate Impacts Vulnerability Assessment Results in Skagit Basin



# Skagit Basin Pilot: Used flood studies to inform transportation asset management







# Early Lessons from WSDOT

- **Climate consideration is responsible asset management**
- **Collaboration & Communication are Essential**
  - Achieve co-benefits & avoid mal-adaptation
  - Skagit Basin Flood Risk Management & Transportation Asset Management
  - Multisector planning like HUD's National Disaster Resiliency Competition (lessons of our unsuccessful bid)
- **It's all local** – that's where impacts are felt, and where climate readiness & hazard risk reduction happens

# Understand how others are adapting & improving resilience

- Identify critical natural and built environments
- Restore shorelines & floodplains
  - limit armoring, remove dikes, connect wetlands
  - Protect key geomorphologic processes (sediment supply)



*“When engineering is inevitable, be imaginative”*

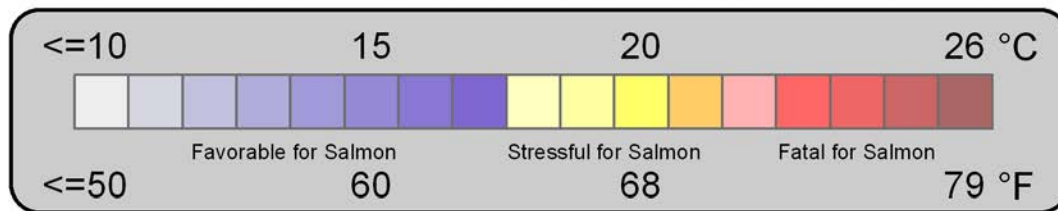
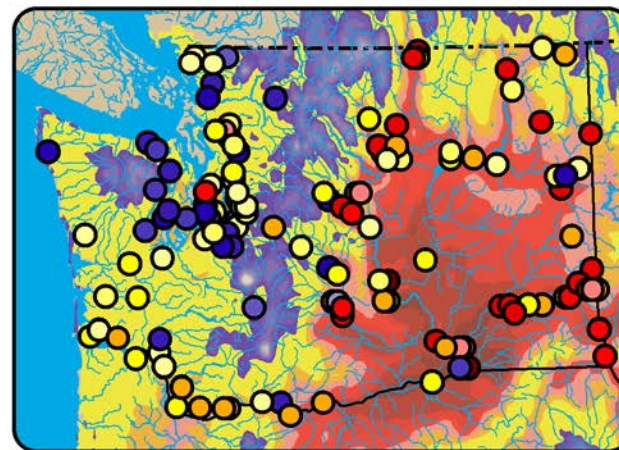
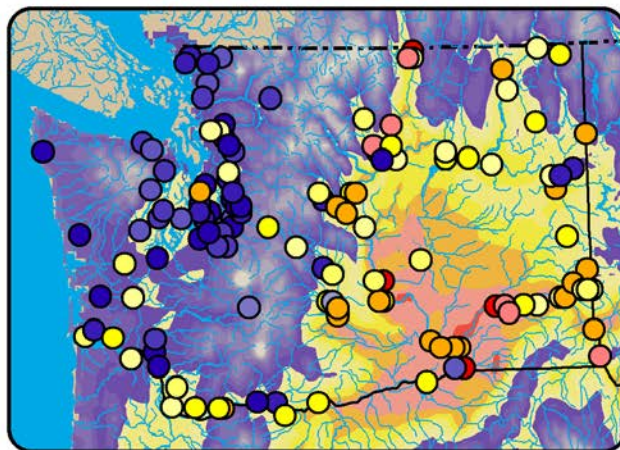
# Emerging Issues

- Environmental Mitigation
- Endangered Species & Habitats
- Climate Refugees
- Healthy, Sustainable Communities



Historical

2040s A1B



Fatal temperatures for salmon (UW CIG 2009)

# BUILDING A CLIMATE-READY TRANSPORTATION SYSTEM

## Essential elements:

- Understand the climate forecast
- Assess our risks
- Integrate into planning and design
- Look for co-benefits
- Partner with others

## For more information:

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