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**KITSAP COUNTY**

# **Sea Level Rise Vulnerability and Risk Assessment**

*formerly DCG/Watershed*





# Agenda

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- Team Introductions
- Project Overview
- Project Analyses
- Community Engagement Plan
- Timeline
- Next Steps



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# Project Team



**Project Manager**  
JIM ROGERS



**Principal-in-Charge**  
DAN NICKEL



**Project Manager**  
ALEXANDRA PLUMB



**Outreach/Shoreline Planning**  
DONNA KEELER



**Outreach/Resiliency Specialist**  
CHUCK McDOWELL



**SLR Technical Lead**  
DAWN SPILSBURY



**Coastal Processes Lead**  
JESSICA COTE, PE  
(Blue Coast)



**GIS Mapping/Analyst**  
NATHAN BURROUGHS



**Coastal Processes Support**  
GREG CURTISS, PE  
(Blue Coast)



**Marine Engineering Lead**  
STEVEN ROBERT



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# Project Purpose

## Identify

Identify assets with potential for loss of damage from sea level rise.

## Complete

Complete risk analysis and vulnerability assessment, based on mapping predictions to be decided by the TAC in July.

## Propose

Propose practical region-specific actions or projects, to address increased sea water interactions where appropriate.



# Approach

- Mapping Development
- Community Engagement
- Audit of Existing Development Regulations and Policies
- Vulnerability and Risk Assessment Report



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# Project Analyses

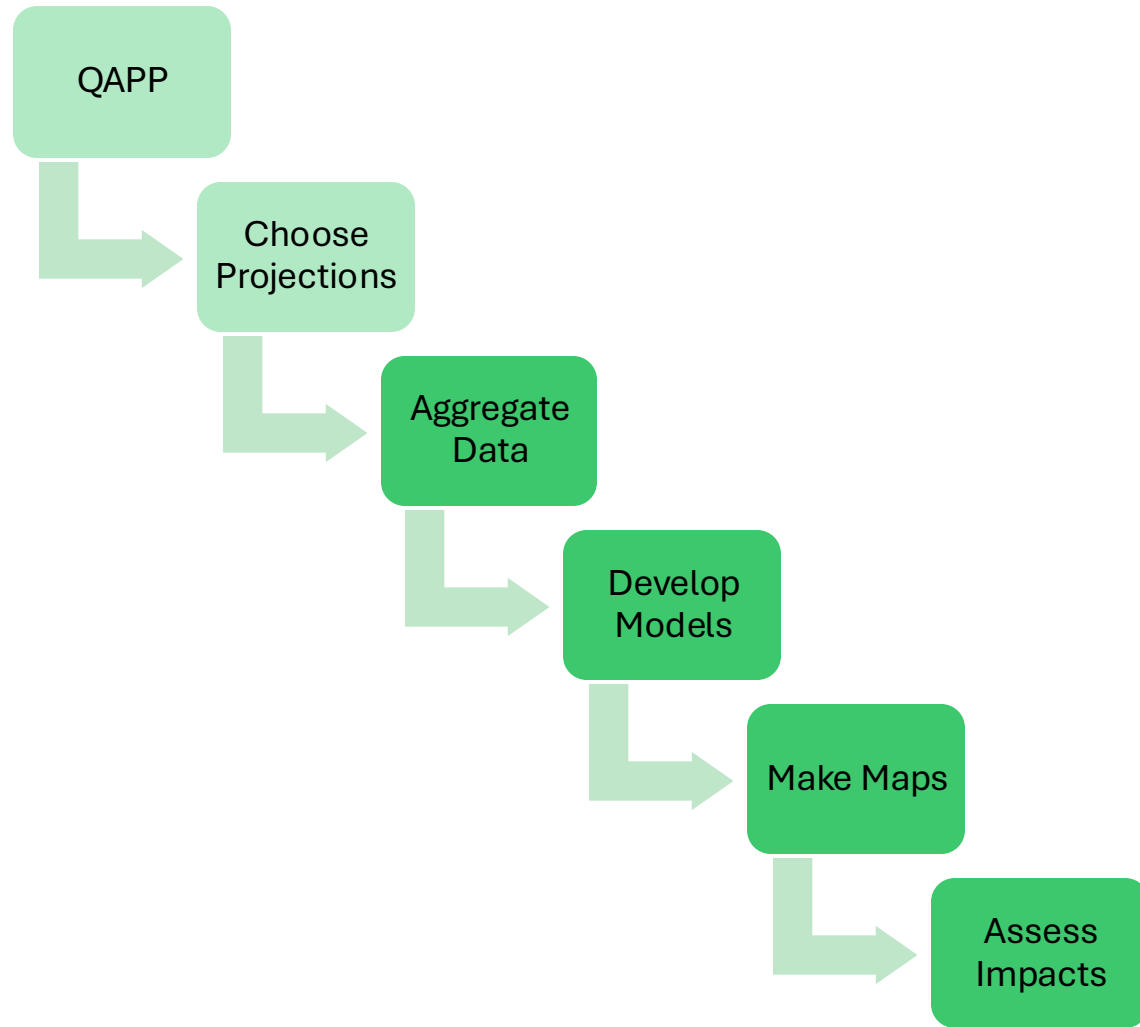


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# Map Development Overview



# Projections – What are they?

- How are Sea Level Rise (SLR) & flood levels estimated?
  - Probability Confidence
  - International predictions based on emissions
  - Tide gauge trends – MHHW and extreme flood
- Relative Sea Level Rise
  - Absolute SLR + Land Movement
- Confidence Intervals by year



# Projections - Where do the levels come from?

- **2018 Report**
  - “Stillwater”, no wave run-up
- **2019 Report**
  - Extreme water levels seen by tide gauges

[Resilience Resource Library | Washington Coastal Hazards Resilience Network](#)  
([wacoastalnetwork.com](http://wacoastalnetwork.com))

[Washington Sea Grant - YouTube](#)

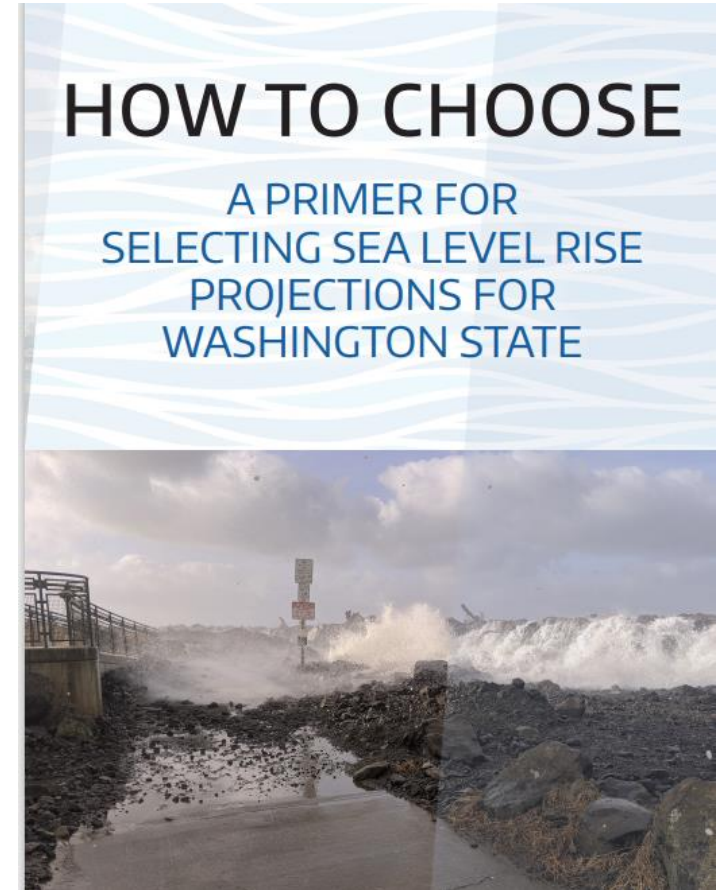


# Projections – Selected by Technical Advisory Committee

1. RCP: 4.5 or **8.5**

2. Timeframe: **2050?** 2060? **2100?** 2150\*?

3. Certainty/Level of Risk: **1%** (less likely),  
**50%, 90%** (very likely)



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# Next Steps - Modeling

## SLR:

1. Projections displayed over a DEM,
2. Intersect mapped resources with new tidal surfaces,
3. Quantify and rank impacts

## Wind-Wave:

- 1-D wind-wave hindcast on shoreline reaches w/ moderate to high wind-wave energy
- Estimate wind-wave runup using empirical methods



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# Assets for Vulnerability Assessment

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- Roads, Transportation
- Hospitals, Police Stations, Fire Depts
- Schools, Libraries
- Residences
- Agricultural, Farmland
- On-site septic systems
- Electrical Substations
- Historic and Cultural Resources
- Group A Wells, WWTPs
- Beach Access, Parks
- Wetlands, Estuaries
- Marinas, Bays
- Brownfield Sites, Landfills

# **Audit of Existing Development Regulations and Policies**

- **Review applicable regulations and policies including the following:**
  - **Shoreline Master Program (SMP)**
  - **Flood Hazard regulations**
  - **Critical Areas Ordinance (CAO)**
  - **Comprehensive Plan**
- **Summary of recommended updates to applicable regulations and policies**

# Community Participation Plan



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# Timeline

<b>Project Kick-off</b>	June 2024	Public Announcement, Website Materials
<b>TAC Meeting #1</b>	June 2024	Kick off meeting with TAC, Review project and roles
<b>TAC Meeting #2</b>	July 2024	Determine SLR projection to be used in Assessment
<b>Planning Commission / Board of Commissioners Brief</b>	August 2024	Project Overview and Outreach Approach
<b>Community Advisory Council Briefs</b>	September 2024	Project Overview
<b>Public Meeting #1</b>	September 2024	Project Overview
<b>Public Survey</b>	September 2024	Public and Agency Surveys on Concerns and Priorities
<b>TAC Meeting #3</b>	November 2024	Review of Preliminary Maps
<b>Public Meeting #2</b>	December 2024	Review Draft Maps, Survey Results and Preliminary Findings
<b>Draft Documents</b>	January 2024	Draft Maps Published
<b>TAC Meeting #4</b>	February 2025	Review and Discussion of Draft Audit Summary Memorandum and Report
<b>Planning Commission Meeting /Public Meeting #3</b>	March 2025	Review and Discussion of Draft Audit Summary Memorandum and Report
<b>Board of Commissioners/Public Meeting #4</b>	May 2025	Review and Discussion of Final Documents and draft amendments contained within the Audit Summary Memorandum.
<b>Final Report</b>	June 2025	Final Documents Published

# Role of the Technical Advisory Committee (TAC)



Establish projections &  
provide input on mapping  
priorities



Identifying specific areas of  
concern and gaps



Informing future code and plan  
amendments



Consider and utilize feedback  
obtained from the Public  
Meetings in developing the  
priorities, maps, and strategies

# Community Engagement

## Community Engagement Plan

## Outreach Events

- Open House Events
- Planning Commission
- Board of County Commissioners

## Focused Outreach & Coordination

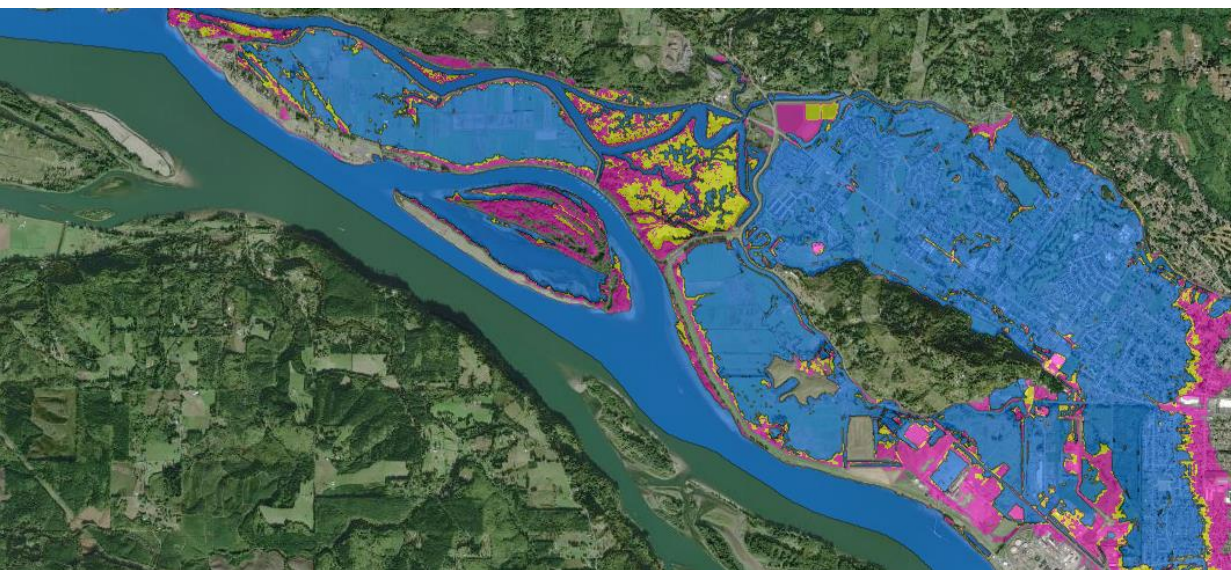
- Public Information Meetings

## ArcGIS Storymap



# StoryMap Example

## Pacific County SLR Story Map



## Port of Port Townsend SLR Web Map



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# Public Survey #1

8:13 AM


## Kitsap County Sea Level Rise Vulnerab...

Kitsap County is conducting a Sea Level Rise Vulnerability and Risk Assessment that will identify potential impacts from flooding due to sea level rise in unincorporated areas of the county. The assessment will characterize the risk of loss, and highlight areas of the community, resources, infrastructure, or assets considered most vulnerable.

This first survey is being used to inform the public about the project and to learn more about the community's thoughts, opinions, and priorities for sea level rise planning.

Next

Page 1 of 3



8:19 AM

How familiar are you with the topic of sea level rise, coastal flooding and their impacts?

☐ Very familiar

☐ Somewhat familiar

☐ Not familiar

How concerned are you about the future impacts of sea level rise and coastal flooding in Kitsap County?

☐ Not concerned

☐ A little concerned

☐ Moderately concerned

☐ Very concerned

Are there specific topics or issues that you'd like to learn about related to sea level rise and coastal flooding in Kitsap County?



# Public Survey #1

8:21 AM

This assessment will look at impacts to a number of natural and infrastructure assets and facilities along the shoreline. Which assets do you consider most important for this assessment?

- ☐ Bluffs
- ☐ Parks, open space and trails
- ☐ Natural assets including beaches and wetlands
- ☐ Roads
- ☐ Public access points
- ☐ Utility infrastructure
- ☐ Buildings and structures
- ☐ Other

Has coastal flooding impacted property of yours or someone you know?

8:22 AM

Has coastal flooding impacted property of yours or someone you know?

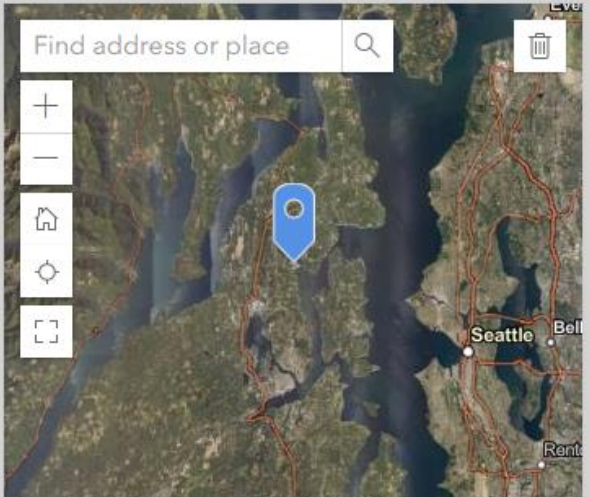
☐ Yes

☐ No

**Areas of Observed Flooding**

If you have observed coastal flooding anywhere in Kitsap County, use the map below to share the location of flood events.

Find address or place



County of Kitsap, WA State Parks GIS, Esri, T... Powered by Esri

Lat: 47.702839 Lon: -122.625255

Flooding Date (optional)



# Public Survey #1

8:23 AM

Flooding Date (optional)

8/9/2024

Description of Flooding Extents or Event

Flooding Photo (optional)

Drop image here or select image

Are there any other comments and considerations you would like to share with the County about this planning process?

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Page 2 of 3

8:24 AM

About You

The following are optional demographic questions to help us understand who is responding to the survey. If you choose not to fill these out, please continue to submit the survey.

What is your relationship to Kitsap County (check all that apply)

☐ I own a home in Unincorporated Kitsap County

☐ I rent in Unincorporated Kitsap County

☐ I own a business in Unincorporated Kitsap County

☐ I work in Unincorporated Kitsap County

☐ I am a student Unincorporated Kitsap County

☐ I am a visitor to Unincorporated Kitsap County

☐ Other

# Public Survey #1

8:25 AM

Are you willing to share your address, approximate address, or neighborhood? This will help the county to understand who is participating in this survey.

What is your age?

☐ 12 and under

☐ 13-19

☐ 20-29

☐ 30-39

☐ 40-49

☐ 50-59

☐ 60-69

8:26 AM

Do you identify as any of the following groups?

☐ White

☐ Black or African American

☐ Hispanic or Latino

☐ Asian or Asian American

☐ Native American or Alaskan Native

☐ Native Hawaiian or Pacific Islander

☐ Prefer not to answer

☐ Other

How many people live in your household?

☐ Just me

# Public Survey #1

8:27 AM

How many people live in your household?

☐ Just me

☐ Me and one other person

☐ Three people

☐ Four people

☐ Fiver or more people

How many people in your household are younger than 18?

☐ None

☐ One

☐ Two

☐ Three

☐ Four or more

8:28 AM

What is your household income?

☐ Less than \$30,000

☐ \$30,000 to \$50,000

☐ \$50,000 to \$70,000

☐ \$70,000 to \$100,000

☐ \$100,000 to \$200,000

☐ \$200,000 or more

☐ Prefer not to answer

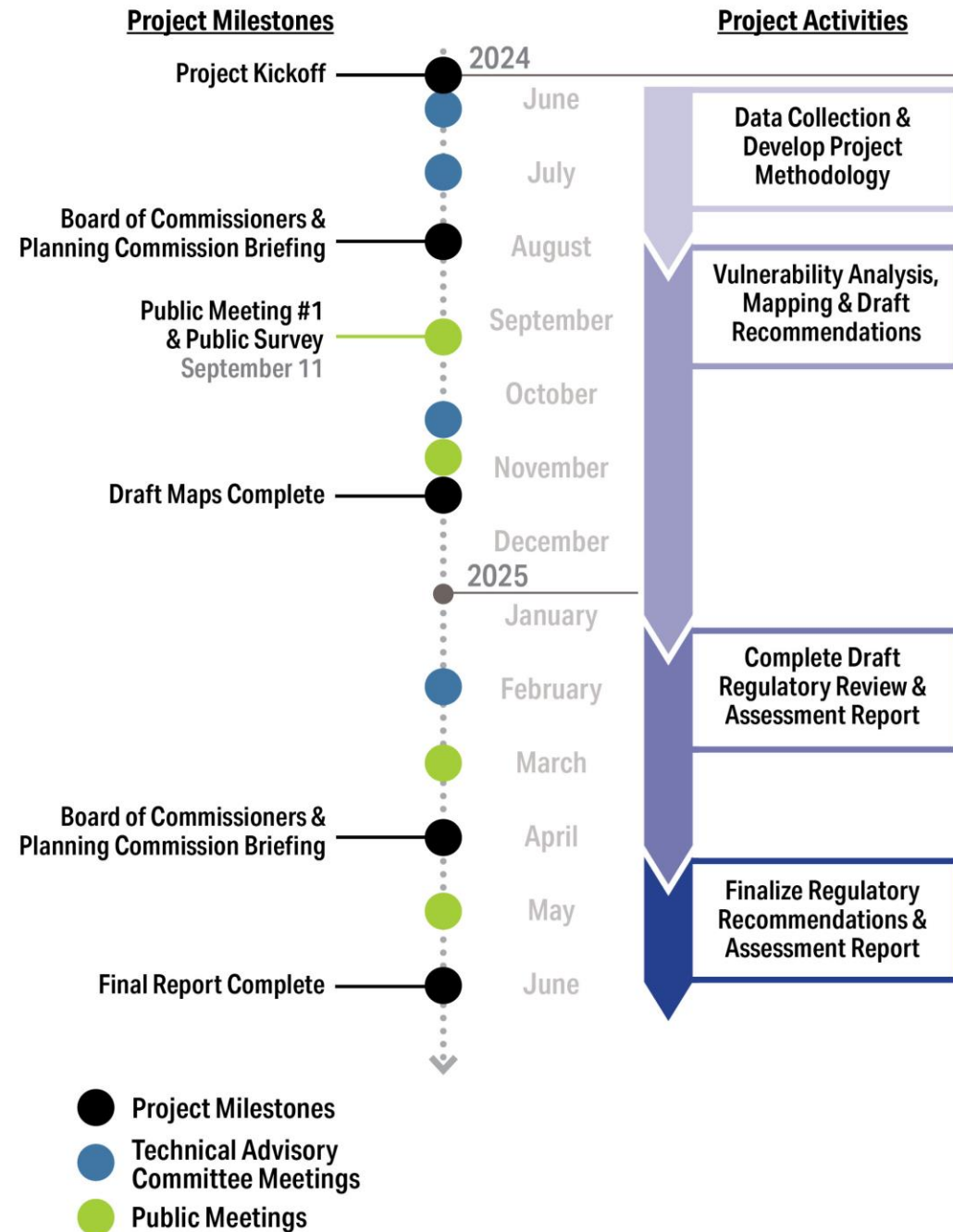
**Please share this survey with family, friends, and neighbors.**

You can learn more about the project, track progress, and join the project email list on the project website here:  
[Sea Level Rise Vulnerability and Risk Assessment](#)

Thank you for your time!

Back Submit

# Next Steps





A photograph of a harbor at sunset. The sky is a mix of orange, yellow, and blue. The water is calm, reflecting the sky and the boats. Several boats are docked at a wooden pier. In the foreground, a small, white, single-story building with a dark roof sits on a wooden platform over the water. The building has a sign that says "PARKING" and a small "no smoking" symbol. The building is lit up from within, and its reflection is visible in the water. The background shows a dark forested hill and a distant mountain peak.

# Questions

# Examples from other projects

	RCP	Dates	Certainties
KC CC Risk Assessment (2020)	4.5, 8.5	2030, 2050, 2100	<b>50,90,95,99%</b>
KC SW (Task 700) CC Assessment (2019)	4.5, 8.5	2030, 2100	90%
BI SLR Risk Assessment (2019)	8.5	2060, 2100, 2150	1% (Rapid Ice Melt), 50%
BI Adaptation Cert Tool (2023)	8.5	2100	50% (also 1%, 99%)
PGST Climate Proj, SLR, Ex Precip (2018)	4.5, 8.5	2050, 2100, 2150	50% (Central), 17-83% range (Likely), 10%, 1%, 0.1%
Seattle's mapping site (current)	8.5	2050, 2100	50%, also uses a range to estimate then map 1ft intervals
Pacific County (2023)	8.5	2050, 2100	87%
Island County (2017)	8.4	2030, 2050, 2100	50%, 25%, 5%, 1%