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DEPARTMENT OF
ECOLOGY
State of Washington

KITSAP COUNTY

Sea Level Rise Vulnerability and Risk Assessment

This project is being funded under a Shoreline Planning Competitive Grant received by the State of Washington Department of Ecology under Grant Agreement No. SEASPC-2325-KiCoCD-00014



Agenda

-
- Project Team
 - Sea Level Rise Overview
 - Project Overview
 - Community Engagement
 - Project Analyses & Outcomes
 - Next Steps & Questions



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Project Team



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Intro to Sea Level Rise

Sea level rise (SLR) is the overall increase in the level of the world's oceans. It is primarily caused by two factors: added water from melting ice sheets and glaciers caused by a warming climate, and the expansion of ocean water as it warms.



Intro to Sea Level Rise

- Coastal storms and extreme high tides will pose more severe threats than they have in the past.
- Areas higher and further from the coast that were previously untouched by these coastal hazards will be at increased risk of flooding and erosion.
- Some low-lying coastal areas will be permanently inundated, possibly forcing people and wildlife to move out of those areas.



Intro to Sea Level Rise

Sea level rise increases the risk of:

- Degraded or destroyed habitats such as wetlands, estuaries and intertidal zones
- Damage to homes, roads, buildings and other infrastructure
- Hardship for coastal industries, including commercial fisheries and tourism
- Loss of culturally important sites
- Loss of opportunities for recreation



Project Overview

Kitsap County Department of Community Development received a grant from the Washington State Department of Ecology to complete a sea level rise vulnerability and risk assessment to map different projections of sea level rise and identify the potential impacts to natural and built assets.



Project Overview

Identify

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

Complete

Complete risk analysis and vulnerability assessment, based on mapping predictions selected by the Technical Advisory Committee (TAC).

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**

Community Engagement

Community Engagement Plan

Outreach Events

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

Focused Outreach & Coordination

- Public Information Meetings, CACs, etc.
- Technical Advisory Committee

ArcGIS Storymap

Role of the Technical Advisory Committee (TAC)



Establish SLR projections & provide input on mapping priorities (assets)



Identifying specific areas of concern and gaps



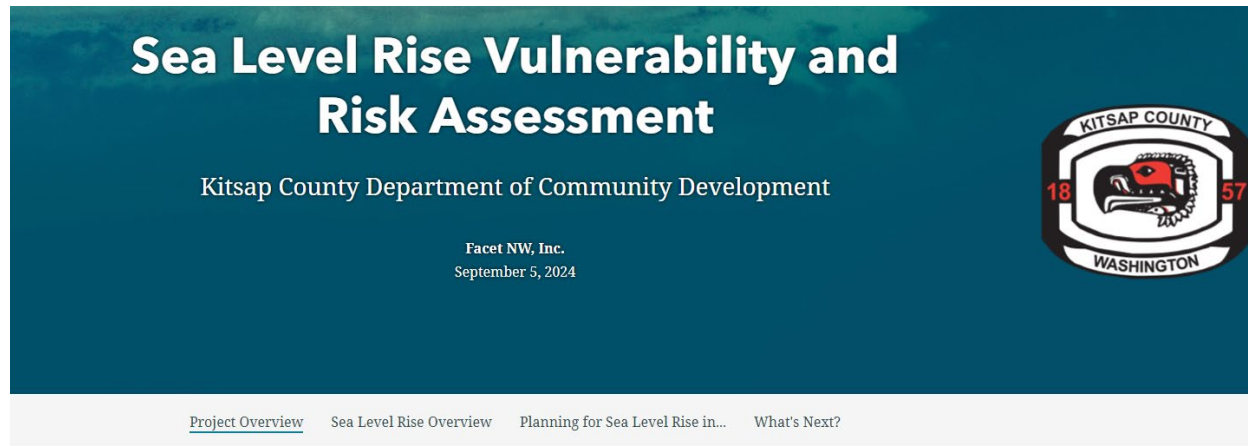
Informing future code and plan amendments



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

Project Story Map

Kitsap County Sea Level Rise Vulnerability and Risk Assessment Story Map



The screenshot shows the title page of a StoryMap. The background is a dark teal color with a subtle wave pattern. The main title "Sea Level Rise Vulnerability and Risk Assessment" is centered in white, bold font. Below the title, it says "Kitsap County Department of Community Development". Further down, it lists "Facet NW, Inc." and the date "September 5, 2024". On the right side, there is the Kitsap County seal, which features a red and white eagle head in the center, with "KITSAP COUNTY" at the top and "WASHINGTON" at the bottom, and the numbers "18" and "57" on either side. At the bottom of the screenshot, there is a navigation bar with four links: "Project Overview", "Sea Level Rise Overview", "Planning for Sea Level Rise in...", and "What's Next?".



Kitsap County Department of Community Development received a grant from the Washington State Department of Ecology to complete a sea level rise vulnerability and risk assessment to map different projections of sea level rise and identify the potential impacts to the county's natural and built assets.

This StoryMap is an interactive tool designed to keep the community informed about the project's progress. It will be periodically updated with new information as data is collected, analyzed, and as coastal vulnerabilities are mapped. Through this StoryMap, you can:

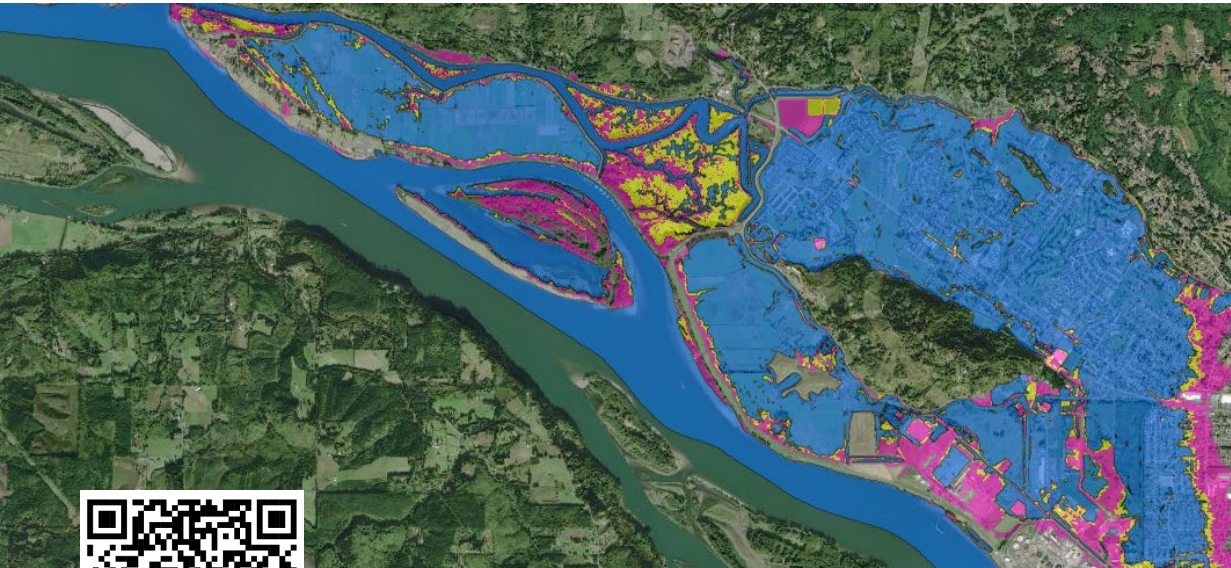


Project StoryMap

- **Sea Level Rise Overview**
 - Impacts of SLR
 - Projections
- **Decisions made for this assessment**
- **Coming Soon:**
 - **Survey Results**
 - **Assessment maps**

Story Map Examples

[Pacific County SLR Story Map](#)



[Port of Port Townsend SLR Web Map](#)

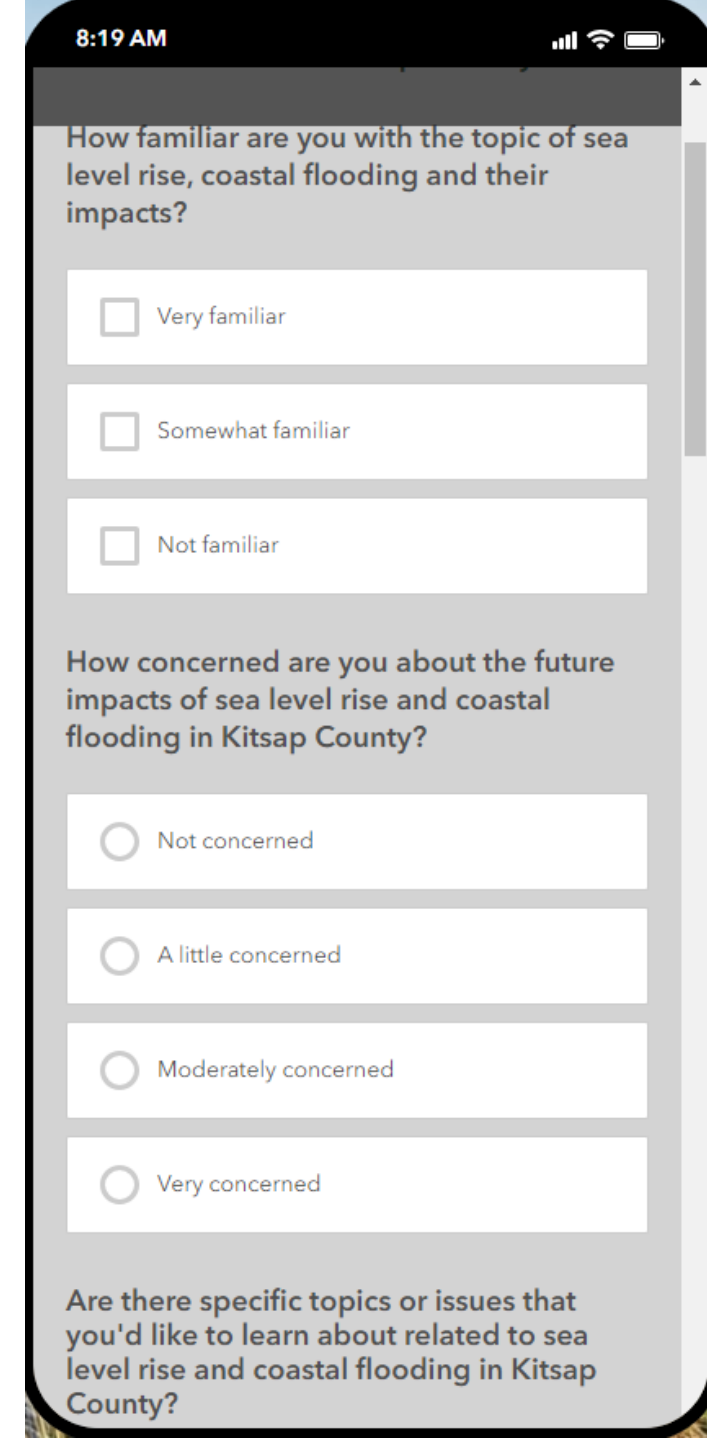
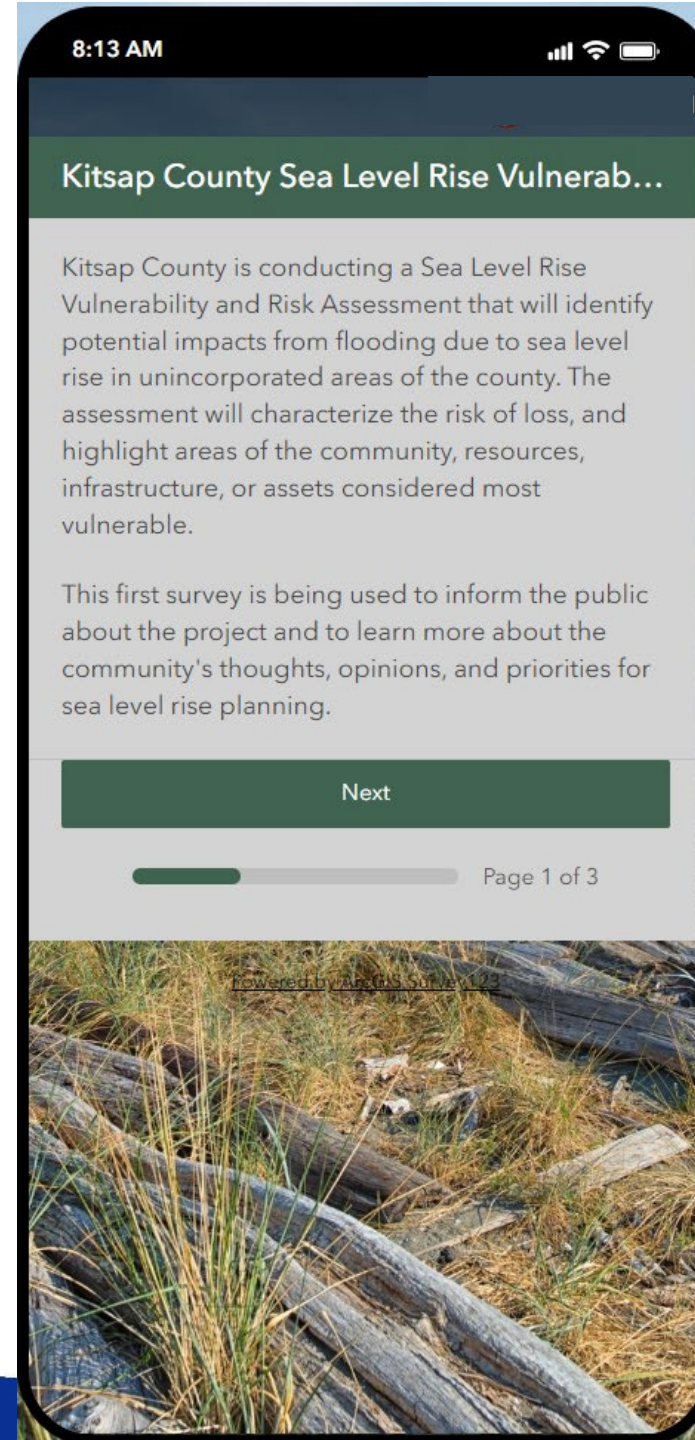


Public Survey #1

Go to the project website to take the online survey!

<http://kcowa.us/KitsapSLR>

Or scan the QR code below:



Project Analyses

Assets for Vulnerability Assessment

- 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

Projections – What are they?

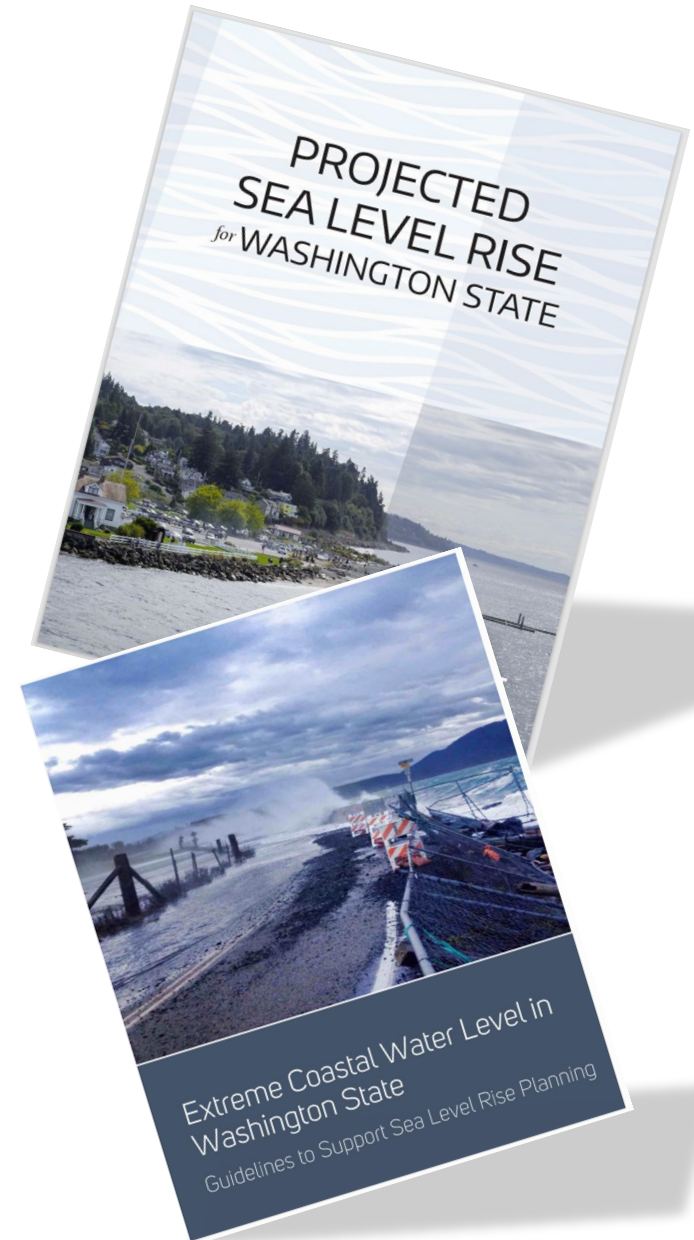
- How are Sea Level Rise (SLR) & flood levels estimated?
 - Probability Confidence
 - International predictions based on GHG emissions
 - Tide gauge trends – Mean Higher High Water (MHHW) and extreme floods
- Relative Sea Level Rise
 - Absolute SLR + Land Movement
- Confidence Intervals by year

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)

[Washington Sea Grant - YouTube](#)

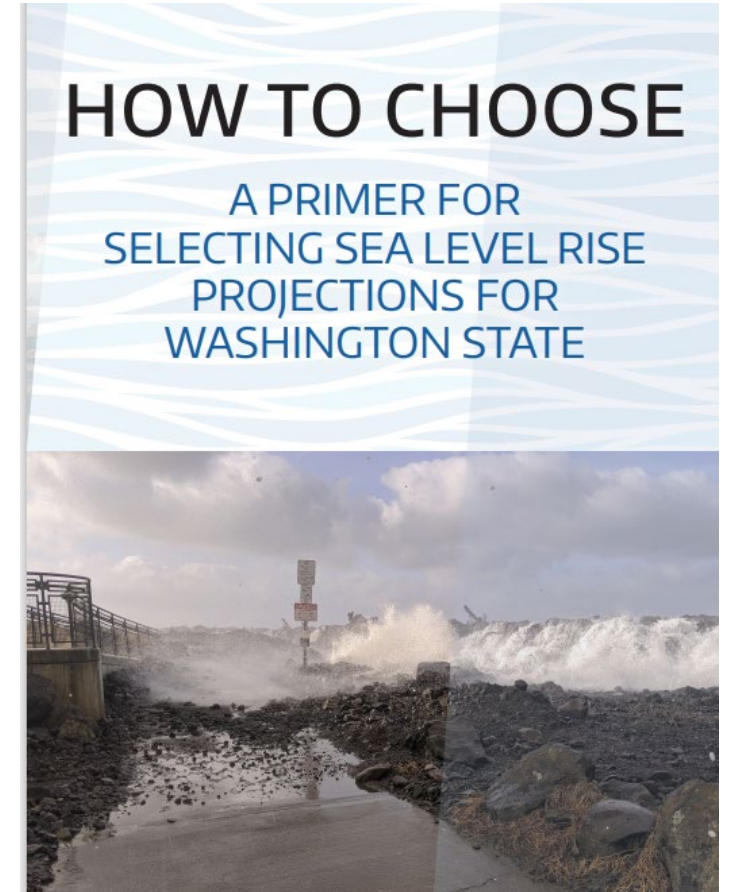


Projections – Selected by Technical Advisory Committee

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)



Modeling

SLR:

1. Projections displayed over a Digital Elevation Model (bare earth),
2. Intersect of mapped resources with projected tidal surfaces,
3. Quantify and rank impacts

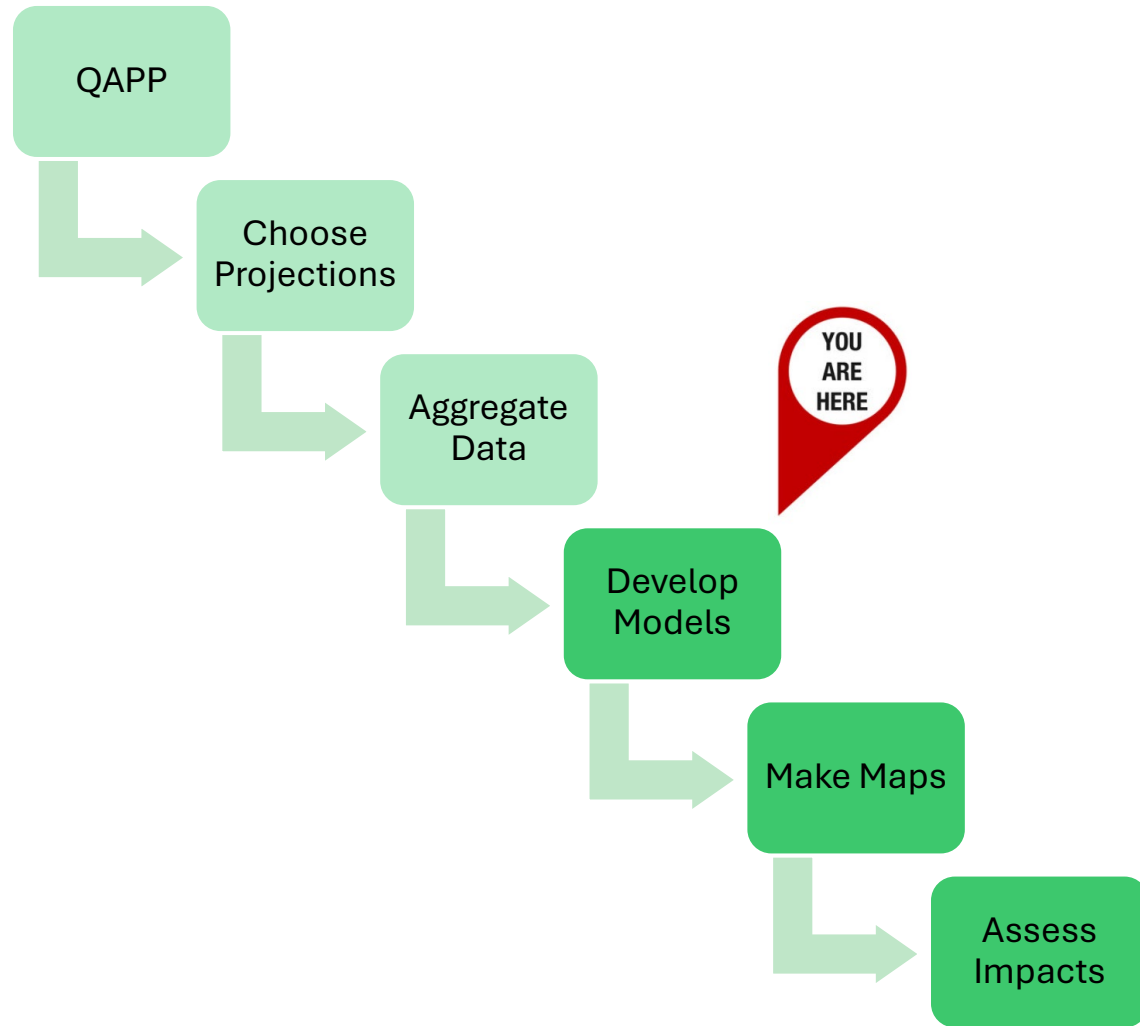
Wind-Wave:

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

What this project does not include:

- Site-specific or property-level scale analyses
- Analysis of tsunami or Cascadia Subduction Zone earthquake risks
- Economic analysis of sea level rise impacts
- Groundwater modeling or saltwater intrusion studies
- Analysis of impacts on riverine systems

Mapping and Analyses Development Overview



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**

Vulnerability and Risk Assessment Report



Summarize the findings from the mapping exercises

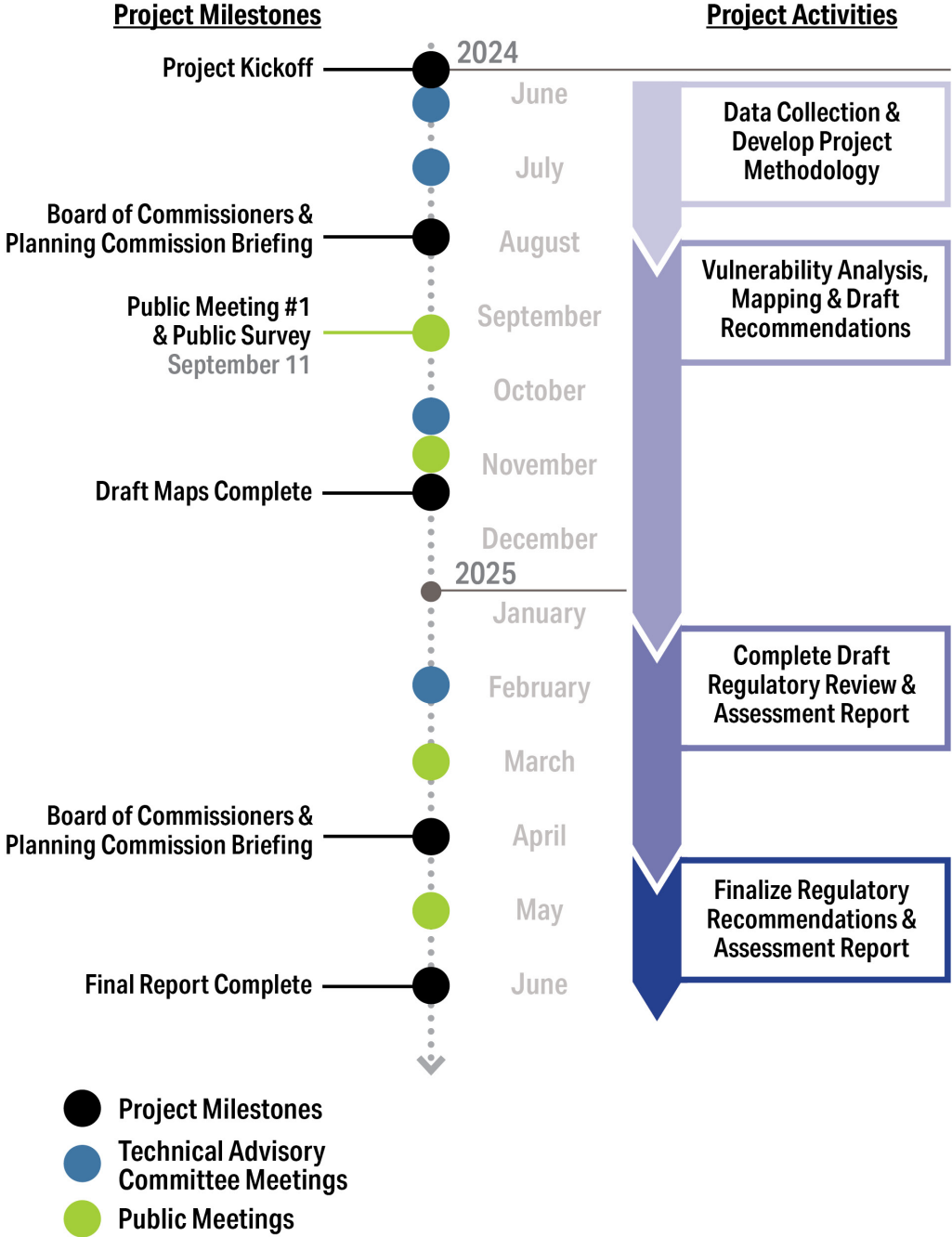


Recommendations for adaptation strategies including near and long-term planning efforts



Identify next steps to address any information gaps

Next Steps



Timeline

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



KITSAP COUNTY

Sea Level Rise Vulnerability and Risk Assessment