

Building coastal resilience in the Pacific Northwest: Comparing co-produced coastal adaptation strategies in Tillamook County, OR and Grays Harbor County, WA

Janan Evans-Wilent, Peter Ruggiero, John Bolte, Cynthia Schwartz,
Katherine Serafin, John Stevenson, Alexis Mills, Eva Lipiec, Pat Corcoran
Oregon State University

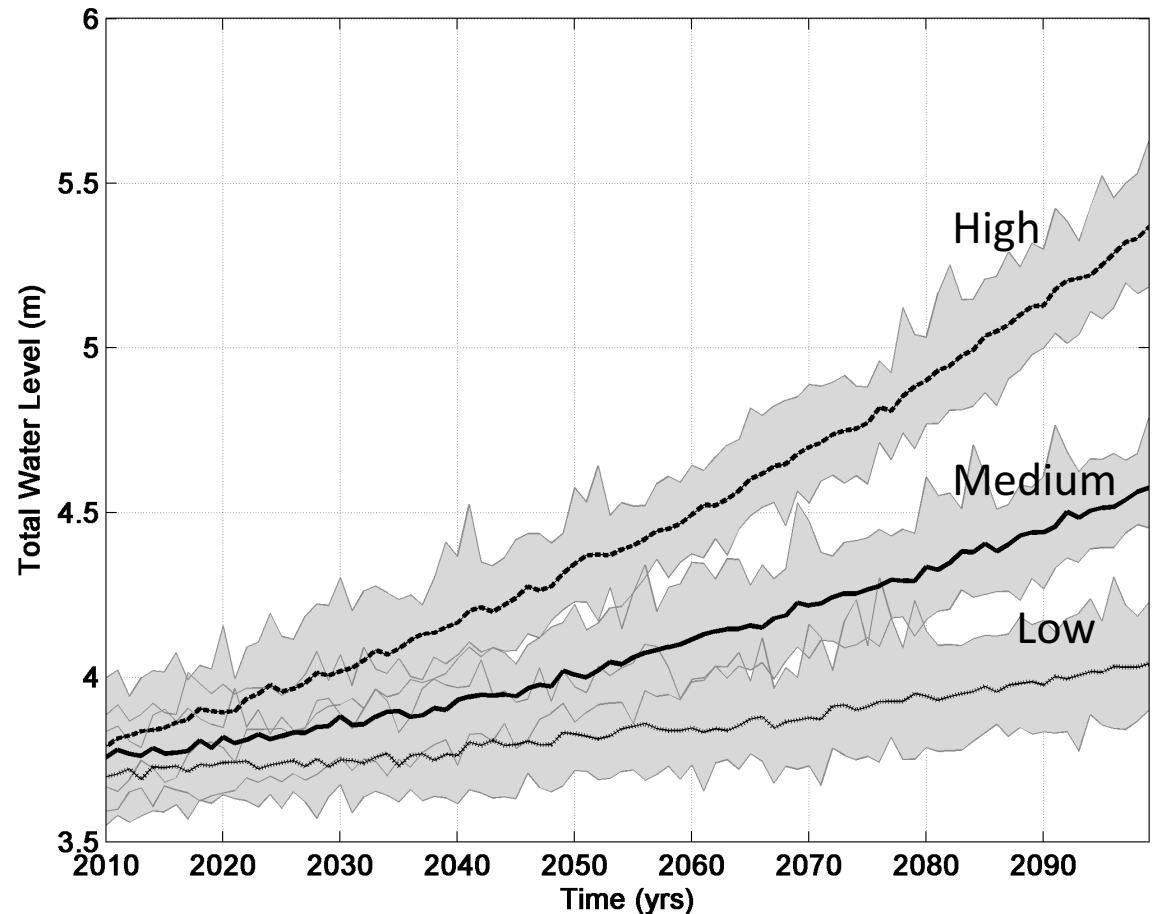


Coastal Hazards in the Pacific Northwest



Climate controls on changing flood and erosion hazards

- Sea level rise
- El Niño Southern Oscillation (ENSO)
- Trends and variability in storminess patterns



How can we explore different coastal policy decisions?

Backshore Protection Structures



Rebuilding Dunes or Nourishing Beaches

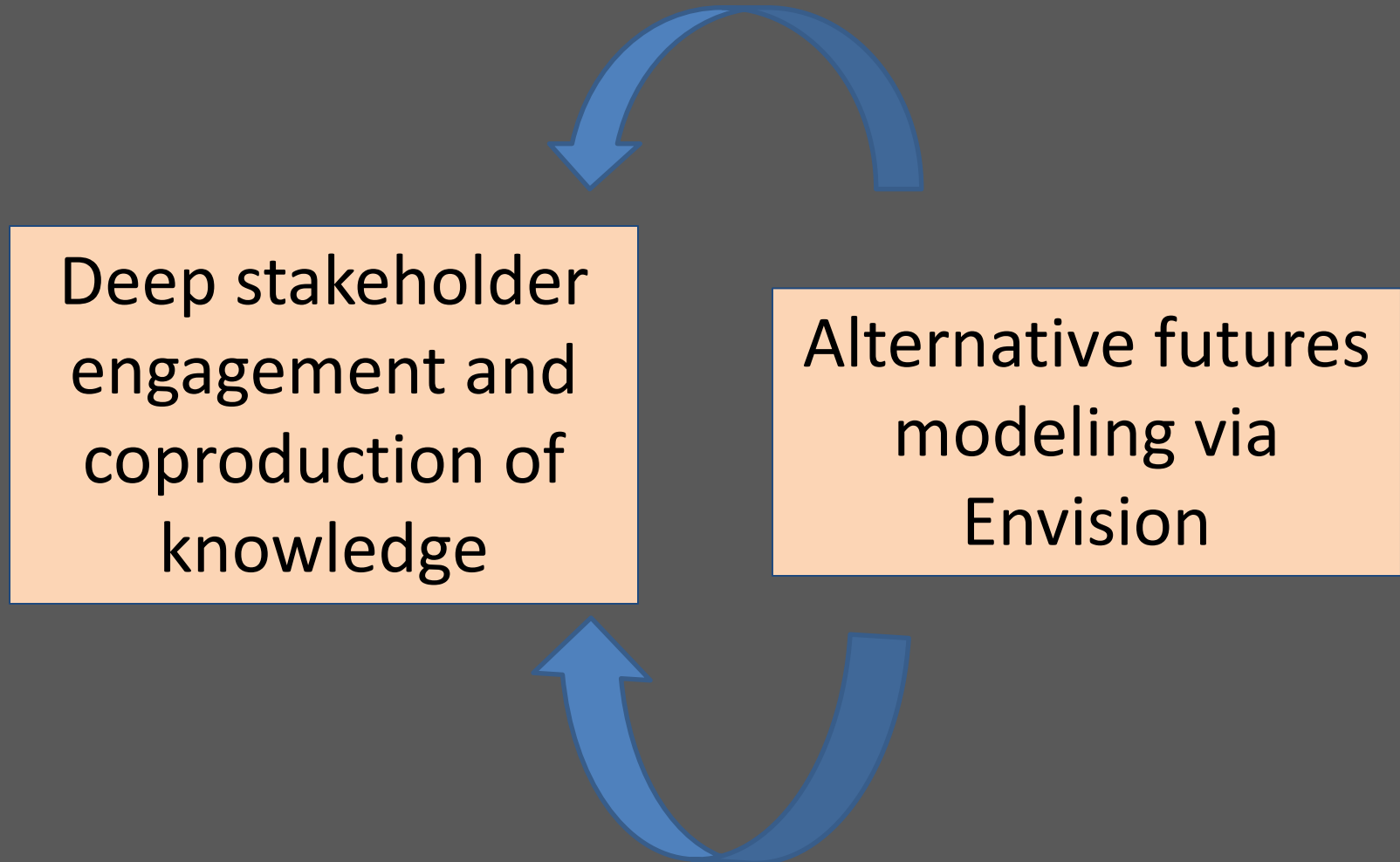


Coastal Setbacks or Limited Development Areas



Building Codes or Best Practices

Envisioning Coastal Futures Approach



Building Knowledge-to-Action-Networks (KTANs)

In each case study location, we build a KTAN consisting of a **collaborative team** of stakeholders, researchers, and outreach specialists who will **co-produce relevant, credible, salient knowledge** to inform regional climate-resilient strategies.

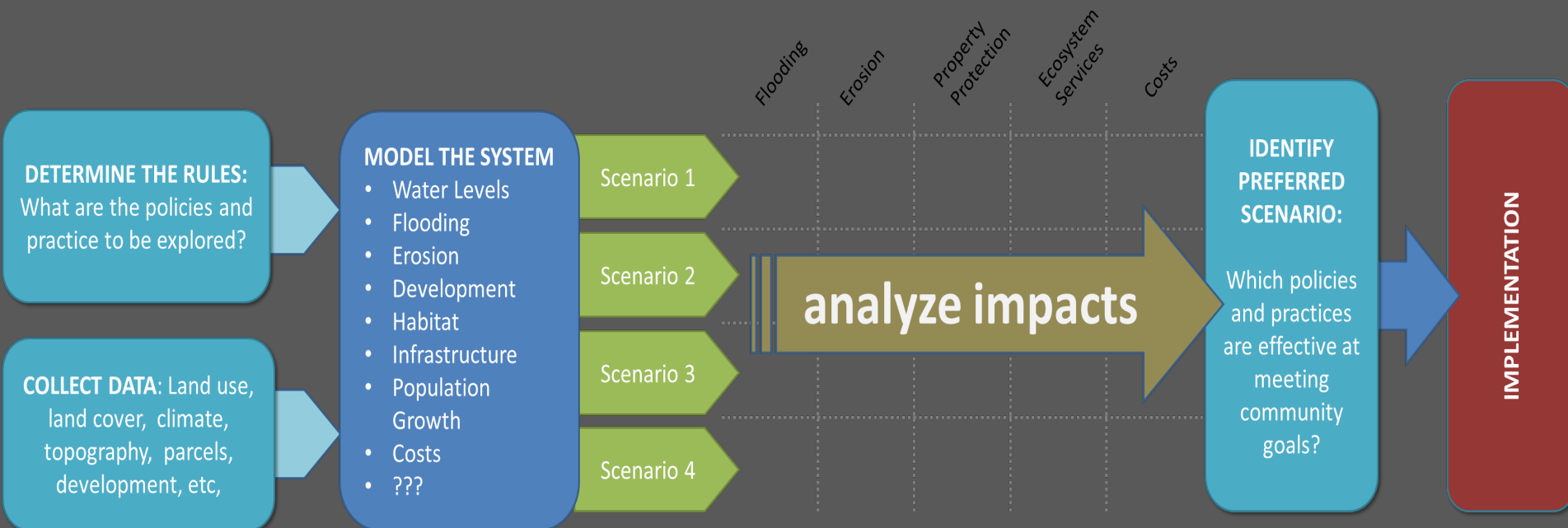
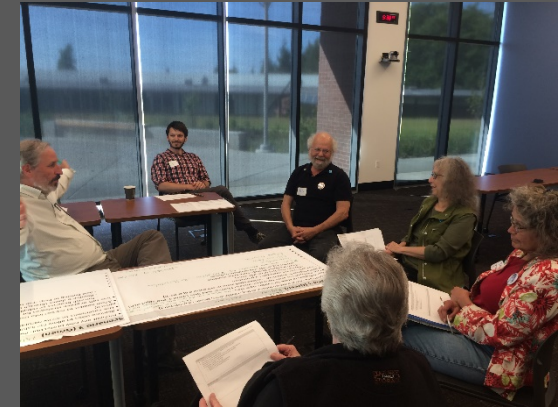
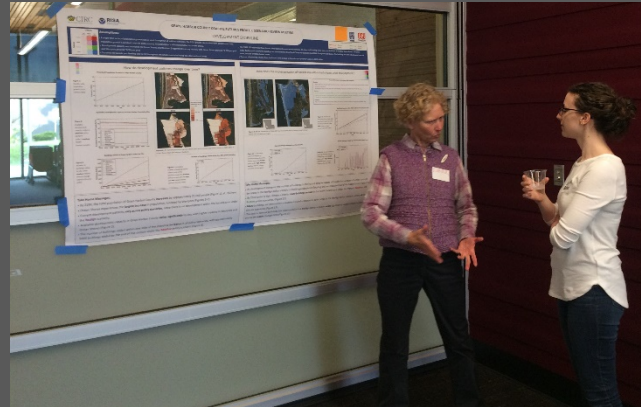
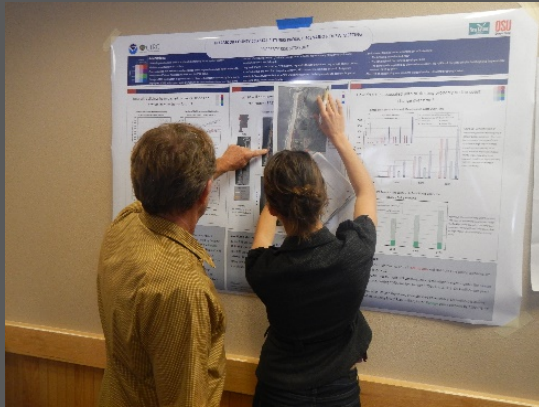


Grays Harbor County, WA

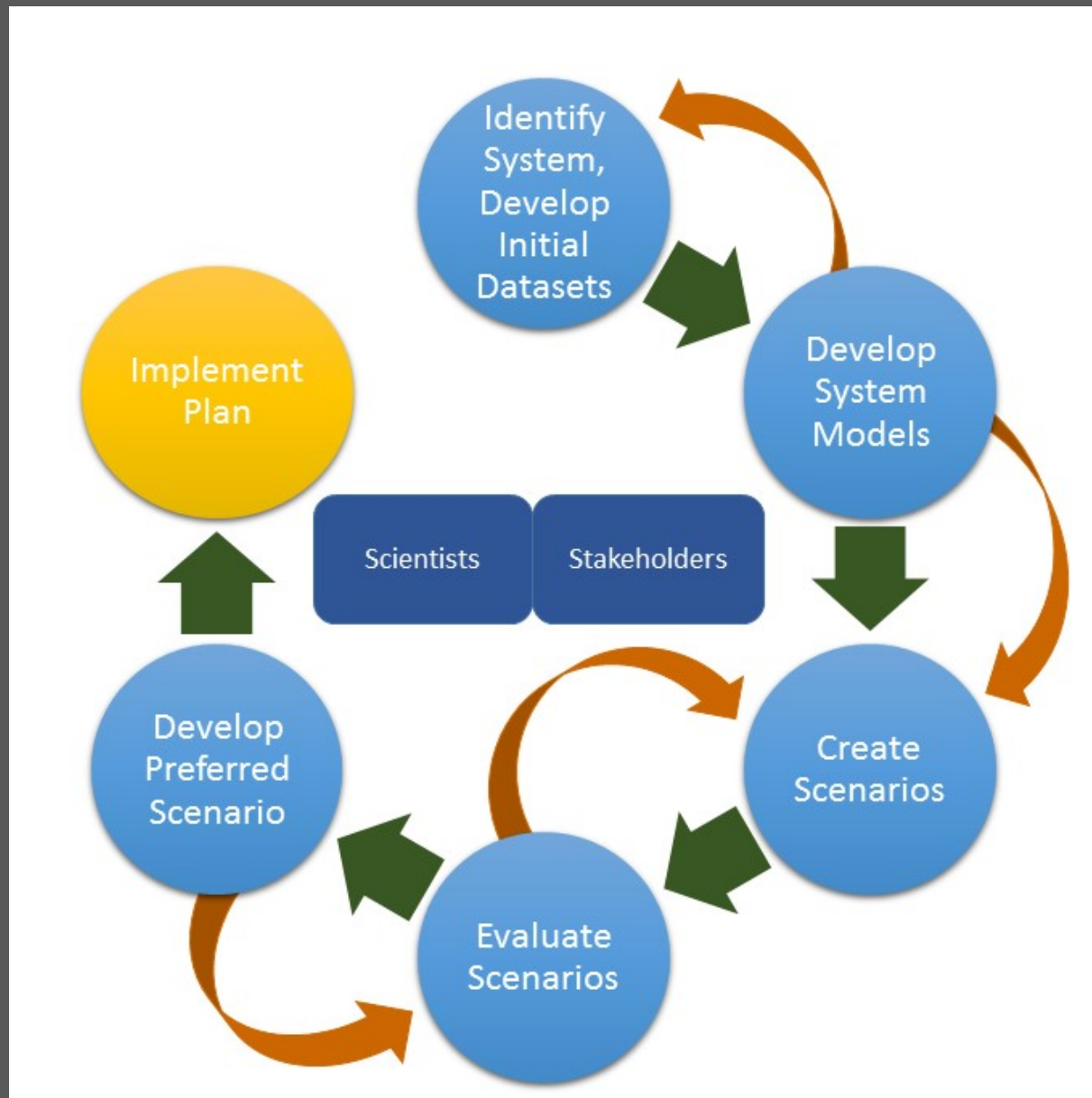


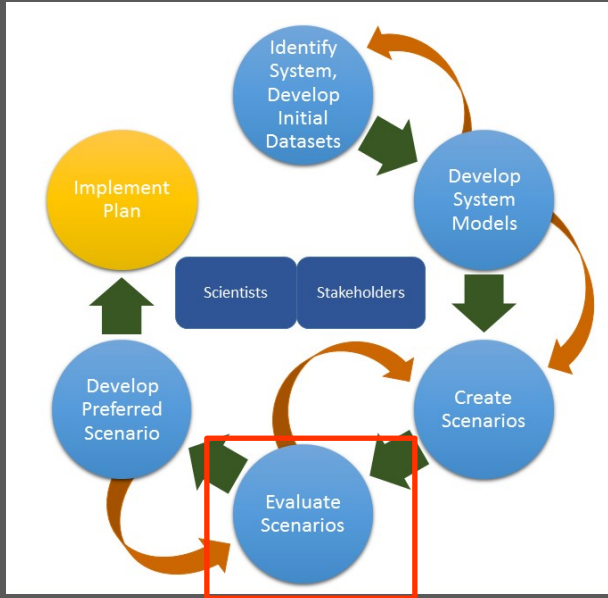
Tillamook County, OR

Alternative Scenarios Analysis

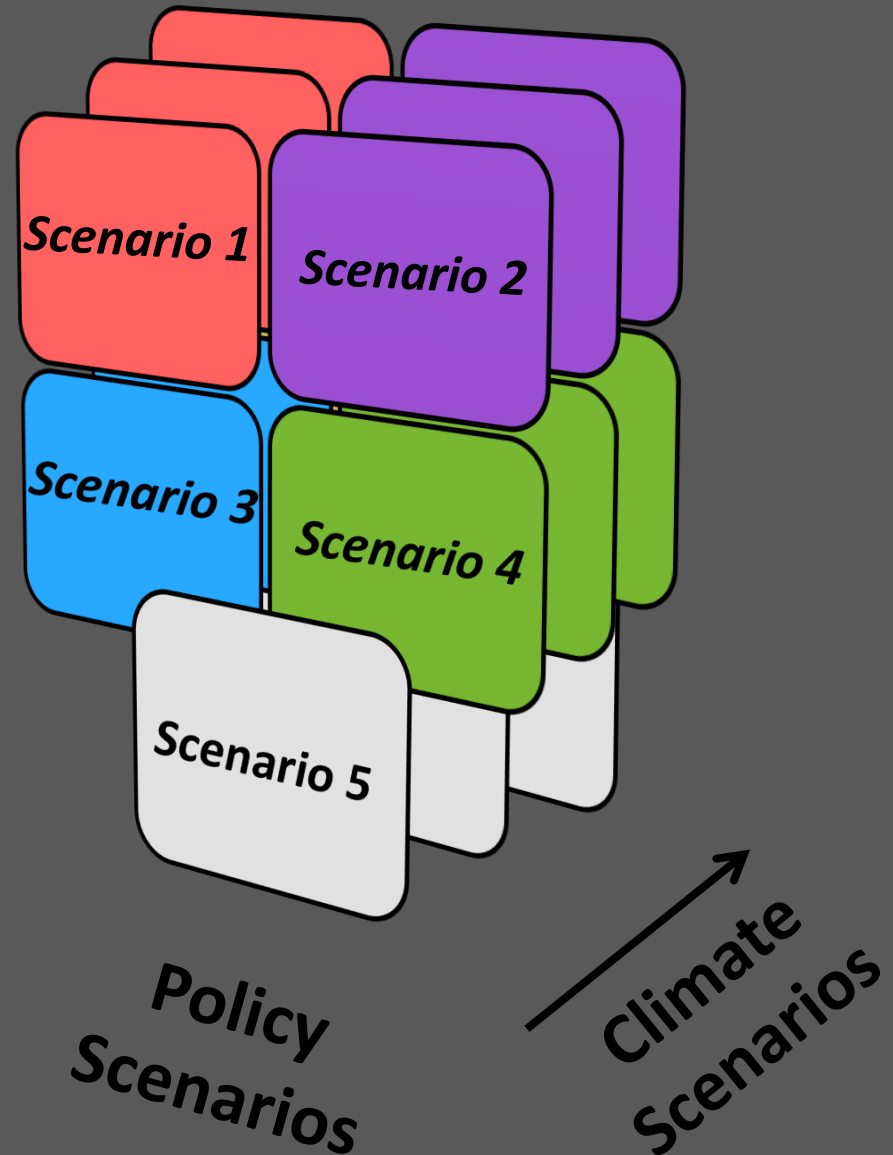


Envisioning Coastal Futures Process





Evaluating Scenarios



**Climate Scenarios
(Physical Drivers)**

X

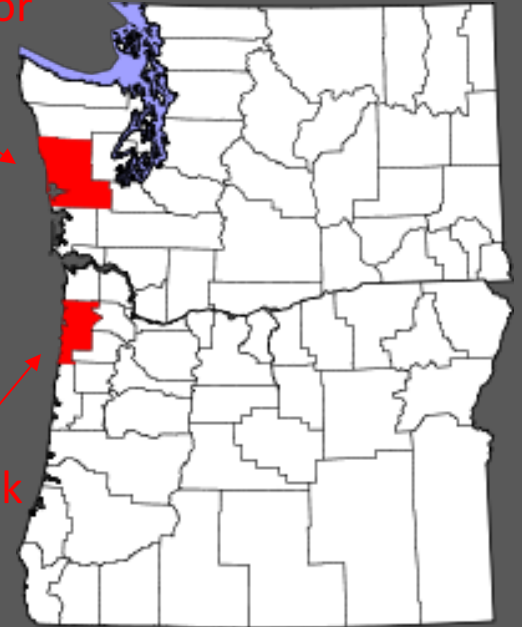
**Policy Scenarios
(Human Drivers)**

Grays Harbor County, WA and Tillamook County, OR



Grays Harbor
County

Tillamook
County



Tillamook County Policy Scenario Narratives

1. Status Quo



2. Hold the Line



3. Laissez-Faire



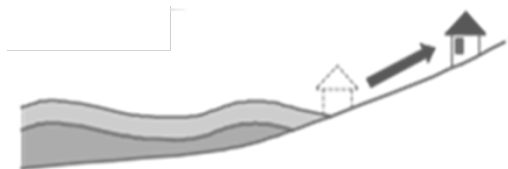
4. ReAlign



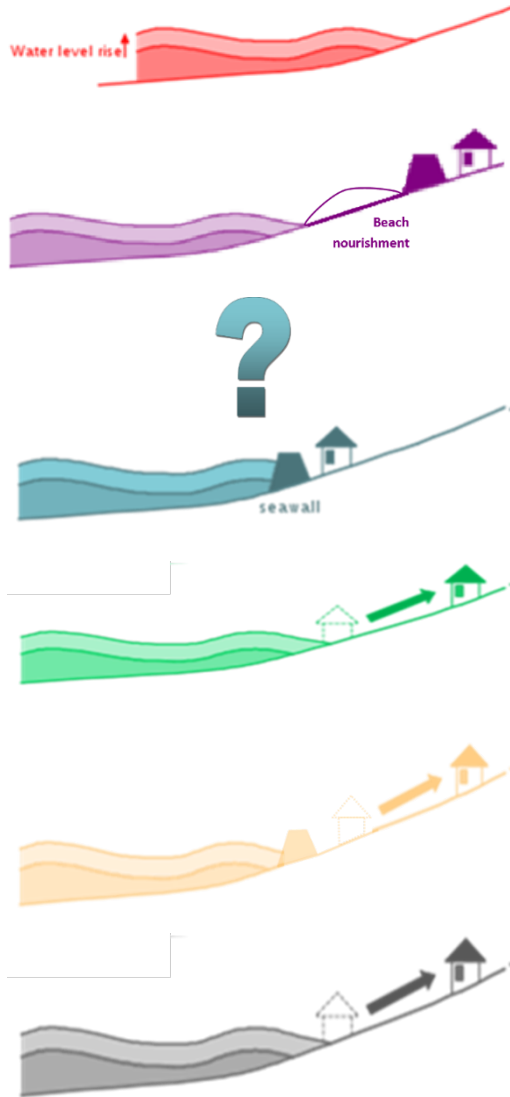
5. Neskowin



6. Hybrid



Tillamook County Policy Scenario Narratives



1. Status Quo

Current laws, goals and trends are continued into the future for comparison with other scenarios.

Example policies:

1. Maintain current Backshore Protection Structures (BPS) and allow more BPS to be built on eligible lots
2. New development is constrained by existing urban growth boundaries

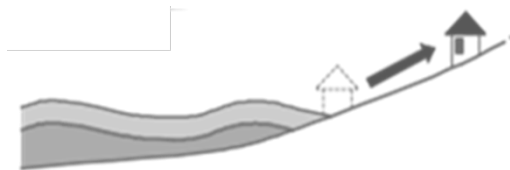
4. ReAlign

5. Neskowin

6. Hybrid

Tillamook County Policy Scenario Narratives

1. Status Quo



2. Hold the Line

Policies or decisions are implemented that involve *resisting* environmental change in order to preserve existing infrastructure and human activities (e.g. beach access).

Example policies:

1. Maintain current BPS and allow more BPS to be built on eligible lots
2. Add beach nourishment for locations where beach access in front of BPS has been lost
3. New homes or developments would be built only on lots with Goal 18 BPS eligibility

6. Hybrid

Tillamook County Policy Scenario Narratives

1. Status Quo



2. Hold the Line

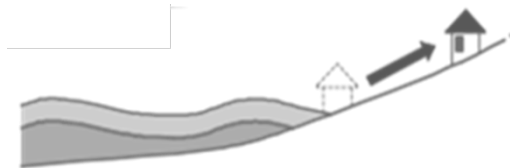


3. Laissez-Faire

Relax current policies such that existing homes, infrastructure and new development are more important than the protection of coastal resources, public rights, recreational use, beach access, scenic views.

Example Policies:

1. Development is permitted outside county urban growth boundaries, allowing towns to grow wherever residential land is available
2. Citizens are allowed to construct and maintain BPS as they see fit, without limitations from Goal 18 and Oregon Parks Department permit regulations



Tillamook County Policy Scenario Narratives



1. Status Quo



2. Hold the Line



3. Laissez-Faire



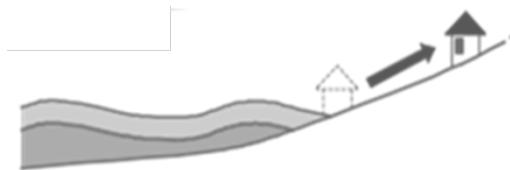
4. ReAlign

Policies or decisions are implemented that involve *changing* human activities to suit the changing environment



Example Policies:

1. No additional properties are allowed to construct BPS
2. Coastal hazard zones are implemented and further development within hazard zones is restricted



5. Hybrid

Tillamook County Policy Scenario Narratives



1. Status Quo



2. Hold the Line



3. Laissez-Faire



4. ReAlign

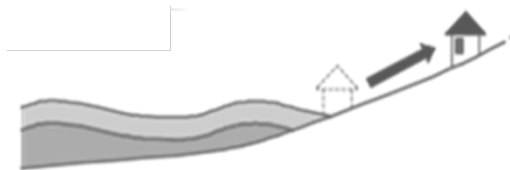


5. Neskowin

Policies or decisions are implemented in accordance with the Neskowin Adaptation Plan that involves both *resisting* environmental change and *changing* human activities

Example Policies:

1. Maintain current BPS and allow more BPS to be built on eligible lots
2. Homes must be constructed above a predetermined elevation and in the safest site on each lot
3. Restrict density and multiple-family dwelling construction in hazard zones



Tillamook County Policy Scenario Narratives



1. Status Quo



2. Hold the Line



3. Laissez-Faire



4. ReAlign

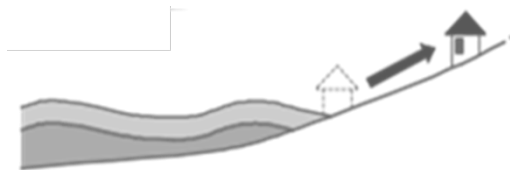


6. Hybrid

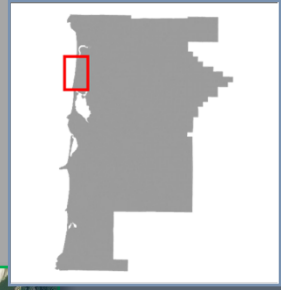
Implement policies in accordance with the preferences established by the KTAN.

Example Policies:

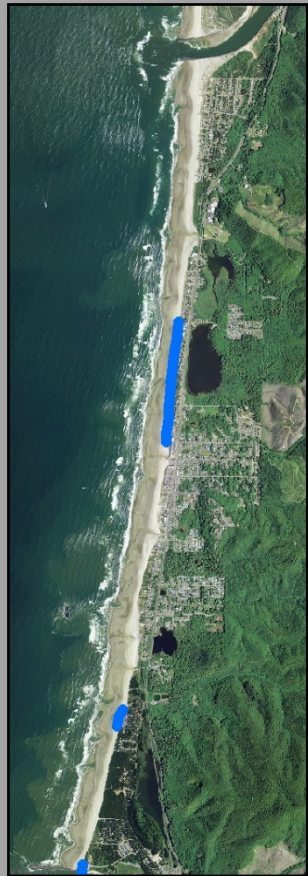
1. Implement DOGAMI coastal hazard zones and restrict further development within the active, high and moderate zones
2. Prohibit construction of BPS on additional properties
3. Construct new buildings 3 feet above the FEMA base-foot-elevation



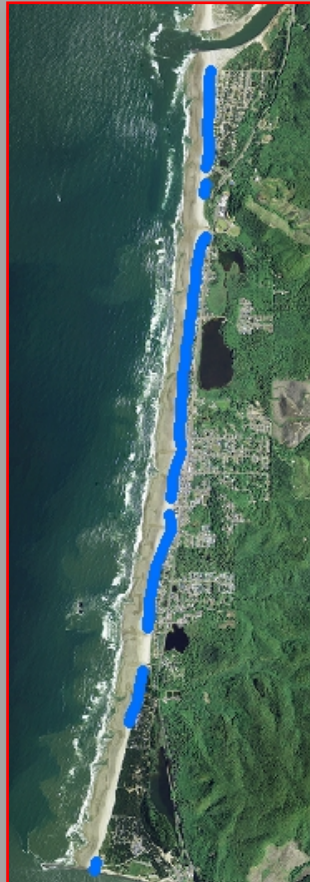
How much BPS will there be in Rockaway Beach, OR by 2100?



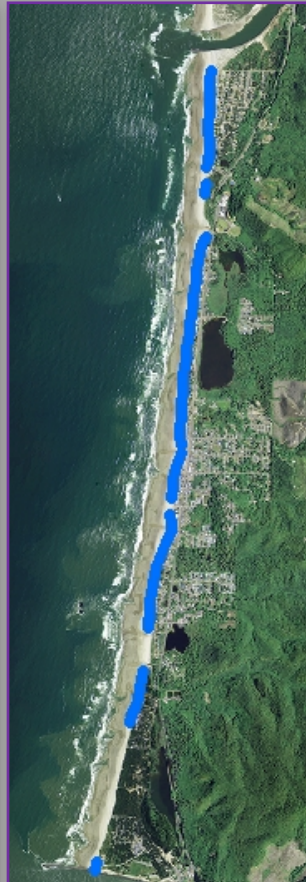
— BPS



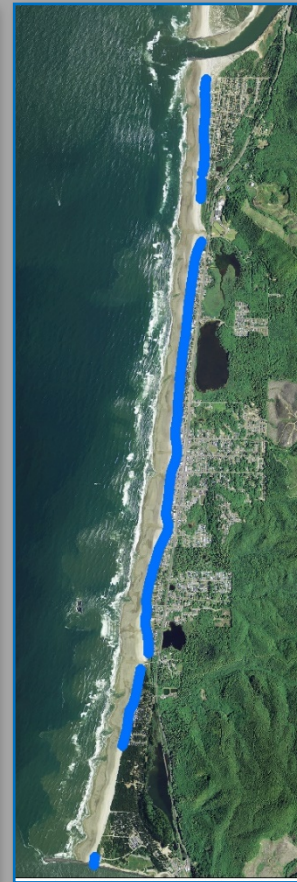
Today



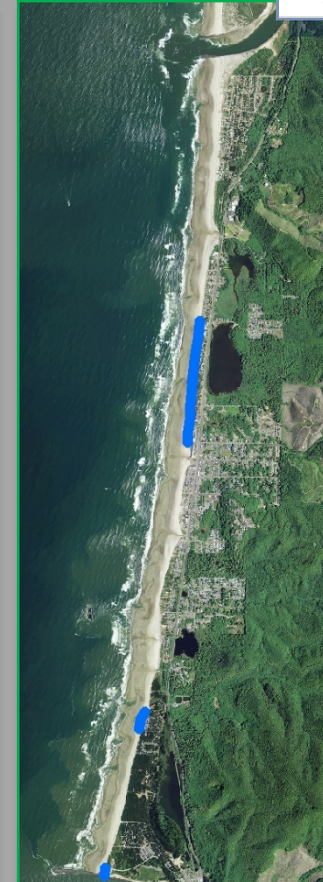
Status Quo



Hold the Line



Laissez-Faire

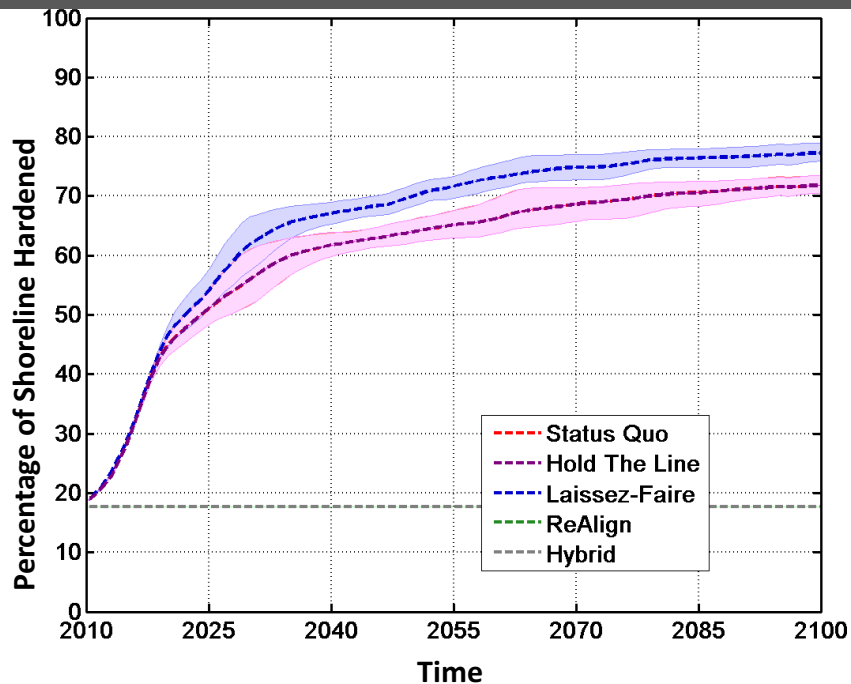


ReAlign

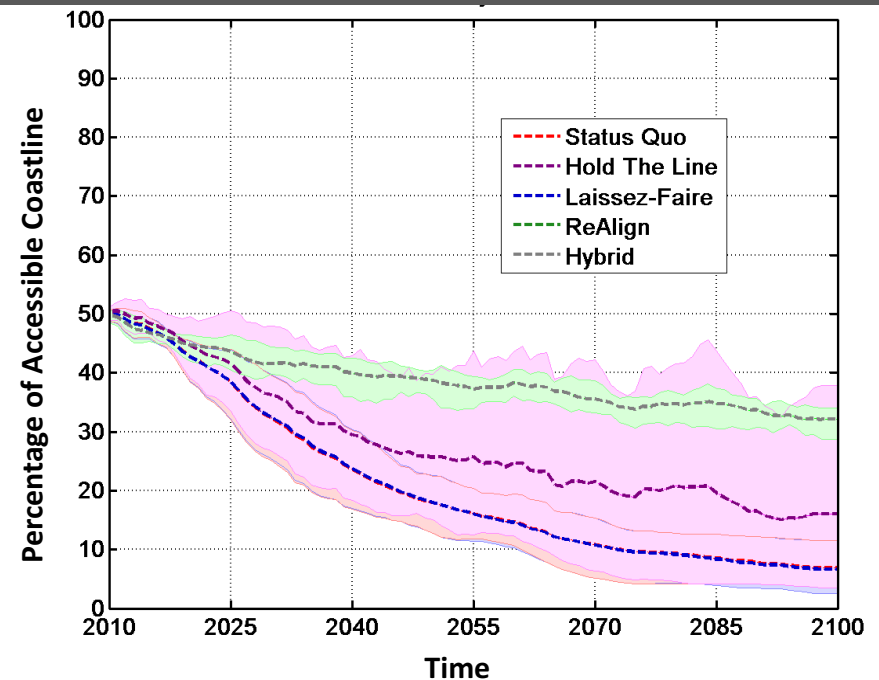
Shoreline Armoring vs. Beach Accessibility



Percent Armored (Rockaway Beach)



Beach Accessibility (Rockaway Beach)



Grays Harbor County Policy Scenario Narratives

Baseline



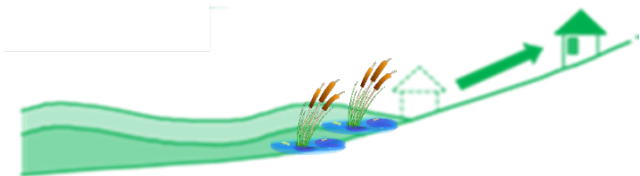
Realign



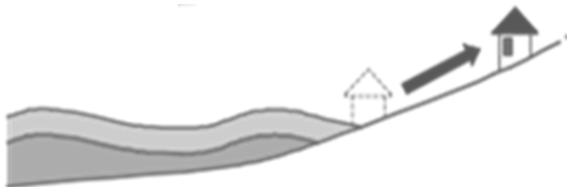
Protect



Restore



Preferred



Grays Harbor County Policy Scenario Narratives

Baseline

Continuation of present-day policies. Adaptive measures are responsive rather than proactive, and provide a baseline to compare with other scenarios.

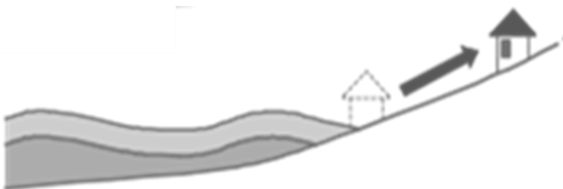
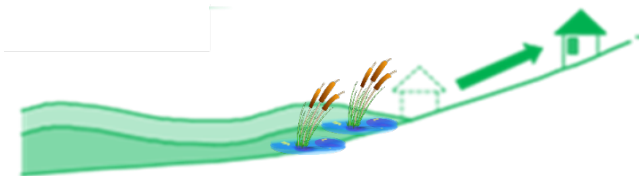
Example Policies:

1. Implement community-based development patterns
2. Bay flood protection will be held consistent with present day
3. Outer coast protection will be consistent county-wide

Protect

Restore

Preferred



Grays Harbor County Policy Scenario Narratives

Baseline



Realign

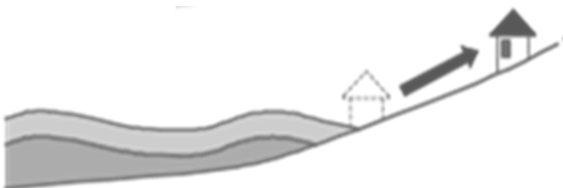
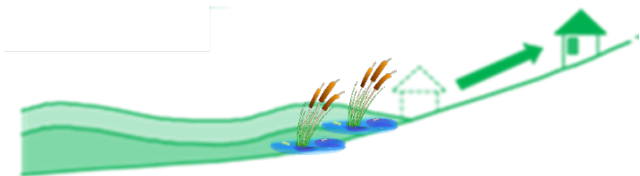
Policies or decisions are implemented that involve *changing* human activities to suit the changing environment

Example Policies:

1. Implement FEMA 100-year flood zone as hazard zones and restrict further development within zones
2. Relocate buildings to safest site on lot once impacted by hazards (flooding or erosion)
3. Prohibit new hard or soft protection measures

Restore

Preferred



Grays Harbor County Policy Scenario Narratives

Baseline



Realign

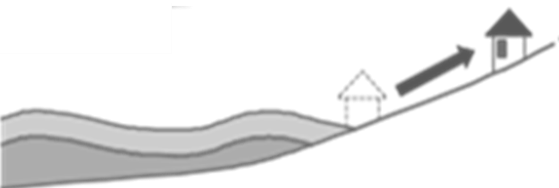
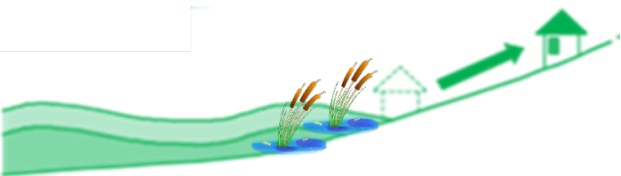


Protect

Policies or decisions are implemented that involve *resisting* environmental change in order to protect existing infrastructure and human activities

Example Policies:

1. Maintain current BPS and allow more BPS to be built for protection
2. Add beach nourishment for locations where beach access in front of BPS has been lost
3. Raise critical infrastructure to FEMA base flood elevation once impacted by hazards



Grays Harbor County Policy Scenario Narratives

Baseline



Realign



Protect

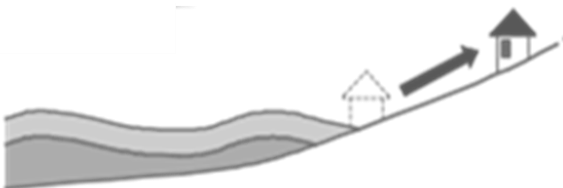
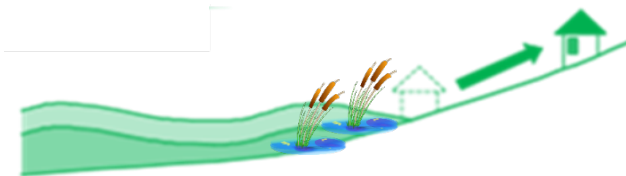


Restore

Policies or decisions are implemented that *accommodate* environmental change and prioritize habitat protection and conservation

Example Policies:

1. Prohibit new hard protection measures
2. Construct dune restoration projects instead of BPS
3. Protect, restore and expand priority habitat areas, restricting development



Grays Harbor County Policy Scenario Narratives

Baseline



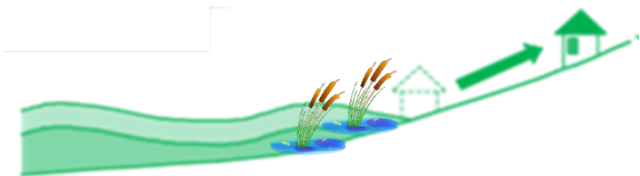
Realign



Protect

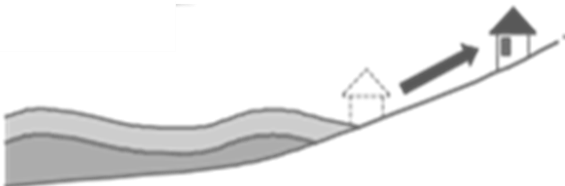


Restore

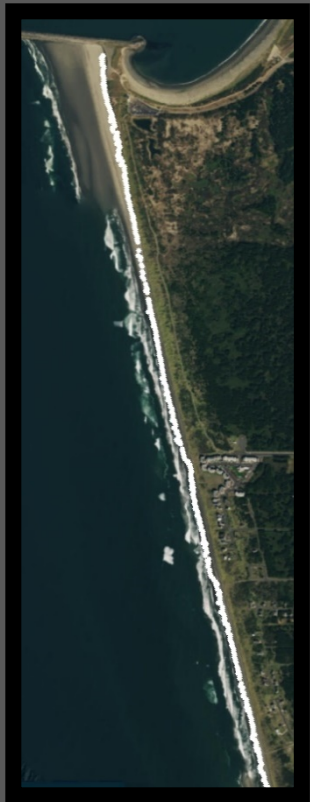
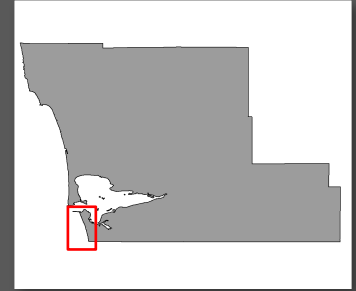


Preferred

Policies are implemented in accordance with the preferences established by the KTAN – currently being determined



How much BPS will there be in Westport, WA over the next century?



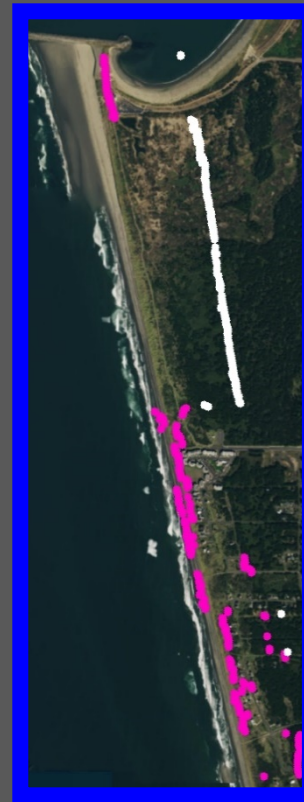
Today (no BPS)



2030



2060



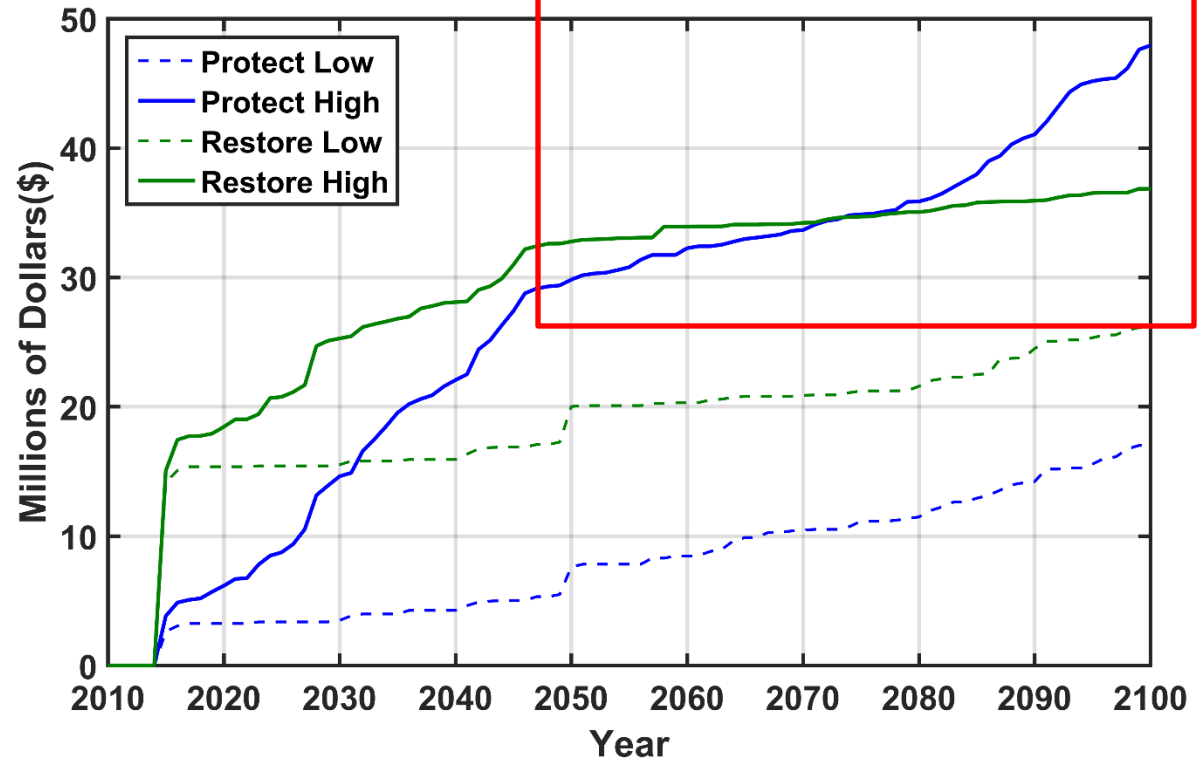
2090

BPS Legend

 Dune Toe

 New BPS

How much will it cost to protect the beach with dunes or BPS?

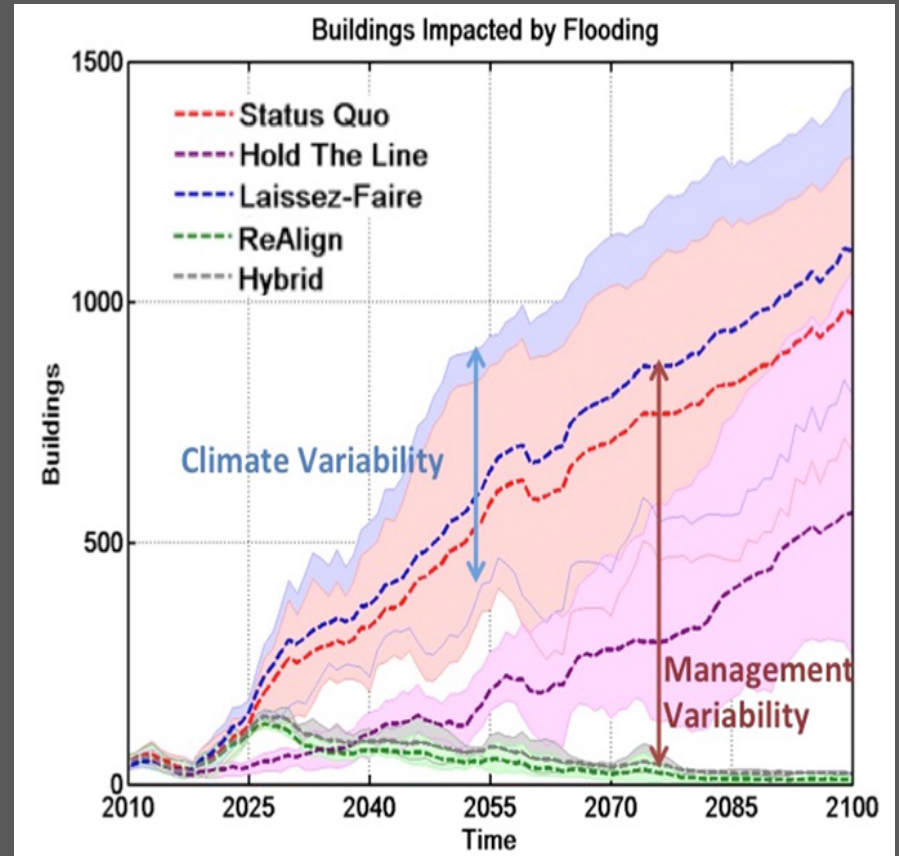


Policy Comparisons

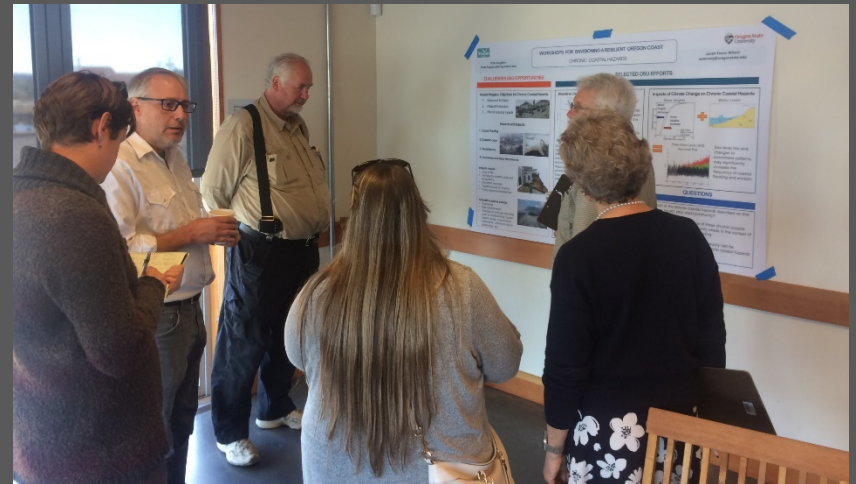
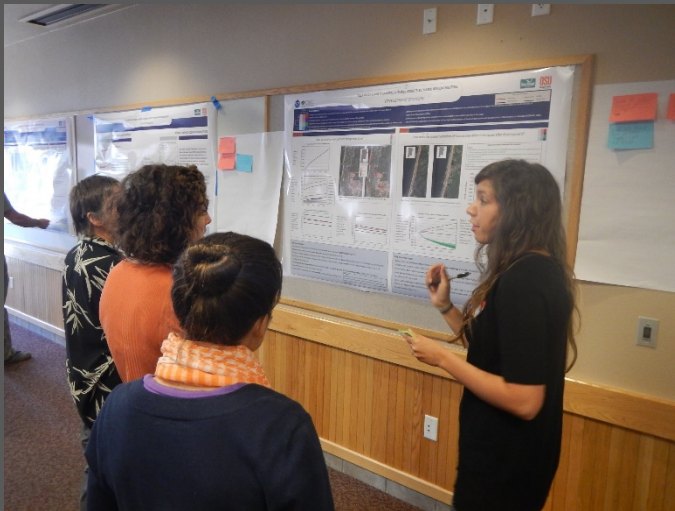
| | Tillamook County | Grays Harbor County |
|-----------------------------|---|--|
| Example Similarities | <p>Status Quo – Maintain BPS</p> <p>Hold the Line – Allow BPS construction with beach nourishment</p> <p>ReAlign – Restrict additional BPS, Prohibit new development in hazard zones</p> | <p>Baseline – Maintain BPS</p> <p>Protect– Allow BPS construction with beach nourishment</p> <p>Realign - Restrict additional BPS, Prohibit new development in hazard zones</p> |
| Example Differences | <p>Laissez-Faire – All policies unique to Tillamook</p> <p>Neskowin – Scenario unique to Tillamook with some individual policy overlap</p> | <p>Restore – All policies unique to Grays Harbor</p> |

Importance of Adaptation Action

Adaptation strategies can have a greater impact than the influence of climate change



Ultimately we're working to develop a collaborative coastal adaptation process that can be scaled to additional coastal communities in the Pacific Northwest and beyond.



Questions?

Janan Evans-Wilent

evanswij@oregonstate.edu

Grays Harbor Project:

<http://explorer.bee.oregonstate.edu/Topic/GraysHarbor/ProjectOverview.aspx>

Tillamook Project:

<http://envision.bioe.orst.edu/StudyAreas/Tillamook/>