

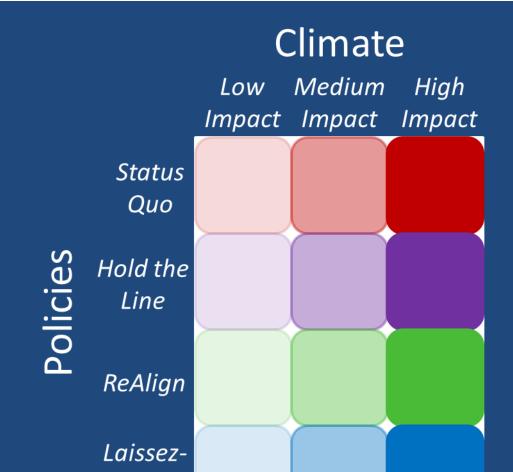
TILLAMOOK COUNTY COASTAL FUTURES PROJECT: SCENARIO REVIEW MEETING

PUBLIC GOOD STORYLINE



Policy Scenario Legend

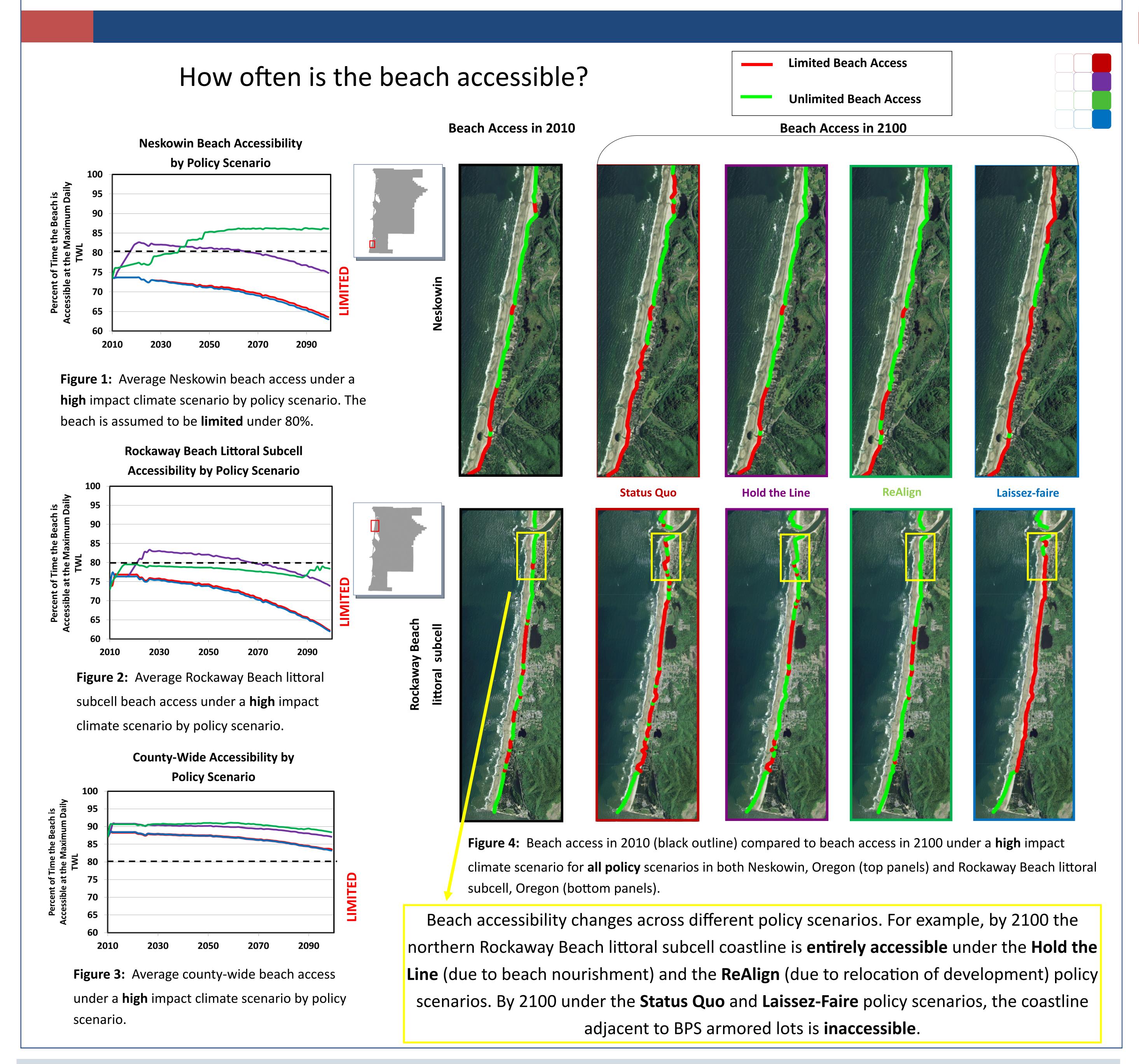




Assumptions

- All dollar amounts are in 2012 dollars
- Beach access is considered **unlimited** if it is walkable more than 80% of the year. This is measured by the number of times in a year the daily maximum total water level (TWL) impacts the toe of the feature backing the beach (dune or BPS).
- Beach nourishment only occurs in the Hold the Line policy scenario, in front of BPS and costs less than \$1.00 per ft³
 (ESA 2013).
- During beach nourishment projects, beaches are widened at 5x the yearly shoreline change rate. This is based on the assumption that the nourished sediment will last for approximately 5 years before needing to be replenished.
- Underlying development patterns are handled differently for each policy scenario.

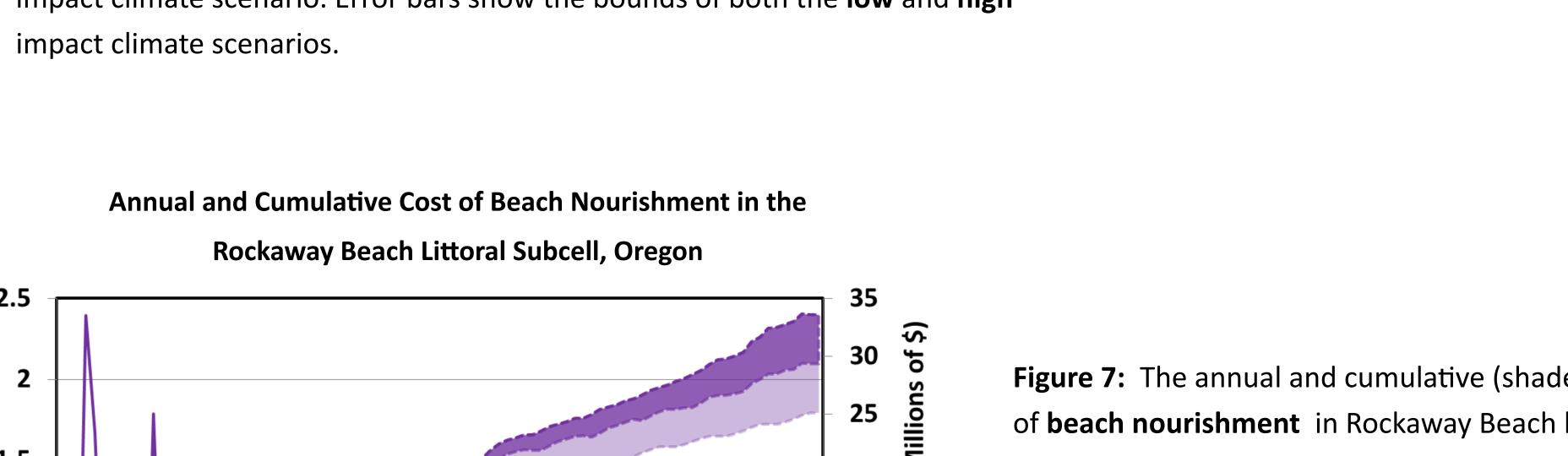
- In the ReAlign policy scenario, buildings are removed if they are impacted >5x over 10 years. The buildings are then rebuilt away from the coast, outside of DOGAMI hazard zones.
- The cost of removing a BPS is 2/3 the price of constructing it, approximately \$83 per vertical foot per length of beach.
- The cost of establishing an easement is equal to the relocated property's value.



County-wide Cumulative Cost of Maintaining Beach Access under the Hold the Line and ReAlign Policy Scenarios Nourishment Property converted into easements Poperty converted into easements Poperty converted into easements Property converted int

Figure 5: The cumulative cost of beach nourishment for the Hold The Line policy scenario compared to the cumulative cost of establishing easements combined with BPS removal for the ReAlign policy scenario under a medium impact climate scenario. Error bars show the bounds of both the low and high impact climate scenarios

2050



2100

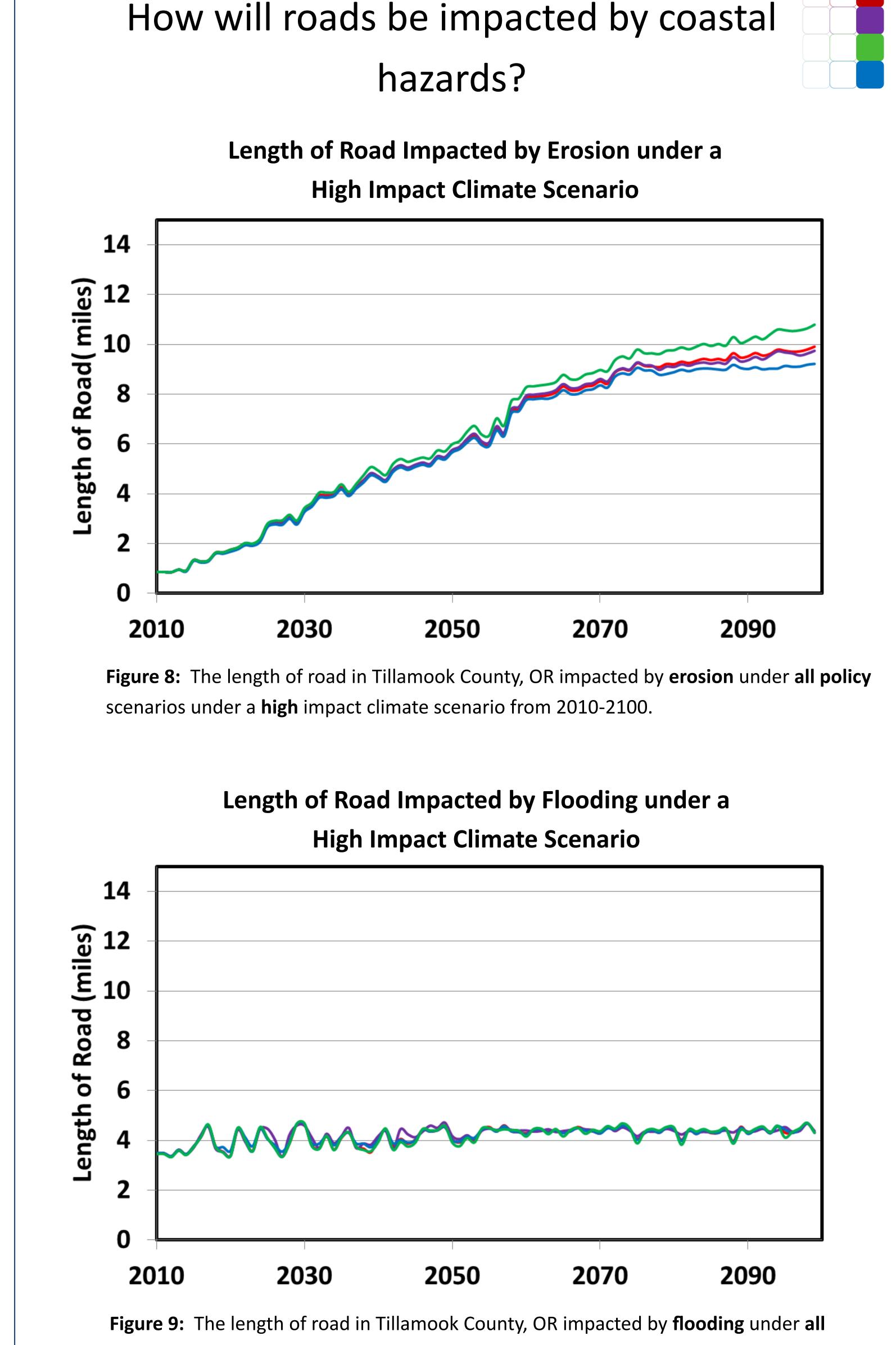
Figure 7: The annual and cumulative (shaded) cost of beach nourishment in Rockaway Beach littoral subcell, OR. Annual cost is for the Hold the Line policy scenario under a high impact climate scenario, while the cumulative cost shows high, medium, and low impact climate scenarios.

Figure 6: The breakdown of cost of beach

nourishment by community for the **Hold the**

Line policy scenario in 2100 under a medium

impact climate scenario.



policy scenarios under a high impact climate scenario from 2010-2100.

Take Home Messages:

- Beach nourishment in both Neskowin and the Rockaway Beach littoral subcell allows for the improvement of beach access for ~10 years under the Hold the Line policy scenario and high impact climate scenario. After this point, climate impacts reduce accessibility (Figures 1 and 2).
- There is a relatively **high amount of beach access across Tillamook County** under **all policy** scenarios. However, by 2100, climate impacts begin to reduce that accessibility (Figure 3).
- Different policies affect beach access differently, with the **most accessibility** under the **ReAlign** and **Hold the Line** policy scenarios, while the **most limited access** occurs under the **Status Quo** and **Laissez-Faire** scenarios (Figure 4).

REFERENCES

Environmental Science Associates (ESA) (2013), Neskowin Shoreline Assessment: Coastal Engineering Analysis of Existing and Proposed Shoreline Protective Structures.

Take Home Messages:

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- By 2100, the cost of converting beachfront property into easements and **removing BPS** from the coastline in the **ReAlign** policy scenario is approximately **\$22 million more** than **nourishing** beaches in the **Hold the Line** policy scenario across the county under all climate impact scenarios (Figure 5).
- The communities of **Neskowin** and the **Rockaway Beach** littoral subcell **spend approximately 80**% of the total nourishment costs across all major communities in Tillamook County by 2100 (Figure 6).
- The **annual cost** of **beach nourishment** varies due to a combination of the assumption of when to nourish (every 5 years if needed) and storminess (Figure 7). The largest amount spent in a year is \sim \$2.3 million. The cumulative cost varies by \sim \$10 million between **low** and **high** impact climate scenarios.

Take Home Messages:

- There is **not a large difference** in coastal hazard impacts to roads across the policy scenarios (Figures 8 and 9).
- Over the 90 year model simulation length, the length of road impacted by **flooding** stays **relatively constant**, while the length of roads impacted by **erosion** gradually **increases** over time for a **high** impact climate scenario (Figures 8 and 9).
- By 2100, erosion impacts roads more than flooding under all policy scenarios due to SLR induced erosion (Figures 8 and 9).