

Climate Change Decision Support Tool



Snohomish County Public Works Director Steven Thomsen has said,

“This tool provides our project teams with science and other data to help us design, construct, operate and maintain more resilient infrastructure and habitat restoration projects. We worked with Cascadia Consulting Group and our staff to have the tool customized for our use with best climate information available from sources such as the University of Washington Climate Impact Group, FEMA, NOAA, and others.”

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Public Works partnered with Cascadia Consulting Group and the University of Washington Climate Impacts Group (CIG) to customize a pilot version of a decision support tool that helps employees consider climate change related impacts in project planning. The tool provides climate science and related data to help make projects more resilient during planning, design, maintenance and operations. The Puget Sound Partnership (PSP) 2016 Action Agenda lists “Climate Change Impacts” as a cross-cutting substrategy for all the three core Strategic Initiatives of the Action Agenda (Stormwater, Habitat, and Shellfish). Similarly, consideration of climate change impacts is important in implementing the Executive’s Initiative to expand efforts to protect and restore Puget Sound.

While developing the tool, we used it on different types of projects as an exercise to understand how bridge, road, surface water infrastructure and habitat restoration projects might be impacted and made more resilient. The results have been promising. For example, in looking at our Jim Creek Culvert Replacement Project, which has an estimated 75 year life span, the tool output revealed a shift from a mixed rain-snow dominant watershed to rain dominant by the 2080s, as well as increased wet season precipitation at the project site (up to 13% higher in the 2080s compared to historic baseline period (1970-1999)). These results raise considerations such as addressing the risk of flooding due to larger flows by increasing culvert size and increasing the depth of footings to reduce impacts of streambed scour from anticipated flooding and larger storm events.

Public Works will kick off use of the pilot version of the tool in 2017 on several larger transportation projects. The tool is also available for use by other County departments and, as we get feedback from users, we are evaluating whether to expand the tool to address additional topics, science/data and features.

Deeper bridge footings to accommodate future streambed scour and larger floods

Larger opening to accommodate larger flood events in future

Bridge design life is 60-80 years; long-term climate forecasts helps design a resilient structure

WSDOT's new Mukilteo Ferry Terminal assumed long-term sea level rise of 1'

Jim Creek Culvert Tool Results:
 10.1° F higher in summer
 13% wetter in wet season
 12% drier in dry season