

NORTH OLYMPIC PENINSULA RESOURCE
CONSERVATION & DEVELOPMENT COUNCIL

Climate and Resiliency Planning on the North Olympic Peninsula

Regional Meetings Summary Report





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INTRODUCTION

In 2015, the North Olympic Peninsula Resource Conversation & Development Council (NODC) partnered with Adaptation International and Washington Sea Grant to develop the 2015 Climate Change Preparedness Plan for the North Olympic Peninsula to **serve as climate change adaptation planning guide for the North Olympic Peninsula**. To continue building off this effort, NODC began working with Cascadia Consulting Group (Cascadia) in summer 2021 to support local governments, Tribes, and NGOs across the North Olympic Peninsula **in integrating and centering climate change adaptation and mitigation strategies throughout their decision-making processes**. These efforts seek to support the jurisdictions and communities across the North Olympic Peninsula (NOP) to better prepare for future climate change.

Cascadia worked with NODC and the project steering committee to identify and recruit key partners across the NOP to participate in a three-meeting series starting in February and concluding in May of 2022. The overarching goals of the meeting series included:

- Identify pressing regional **climate change priorities and impacts**
- Identify **strategies to address climate change priorities and impacts**, with a focus on identifying opportunities for regional coordination and action
- Build capacity for government jurisdictions **to coordinate and implement climate change adaptation and mitigation strategies** for regional climate resilience
- Inform the development of the **Climate Action Toolkit**, which will serve as a **climate change planning resource for any government or organization** at any step of their process

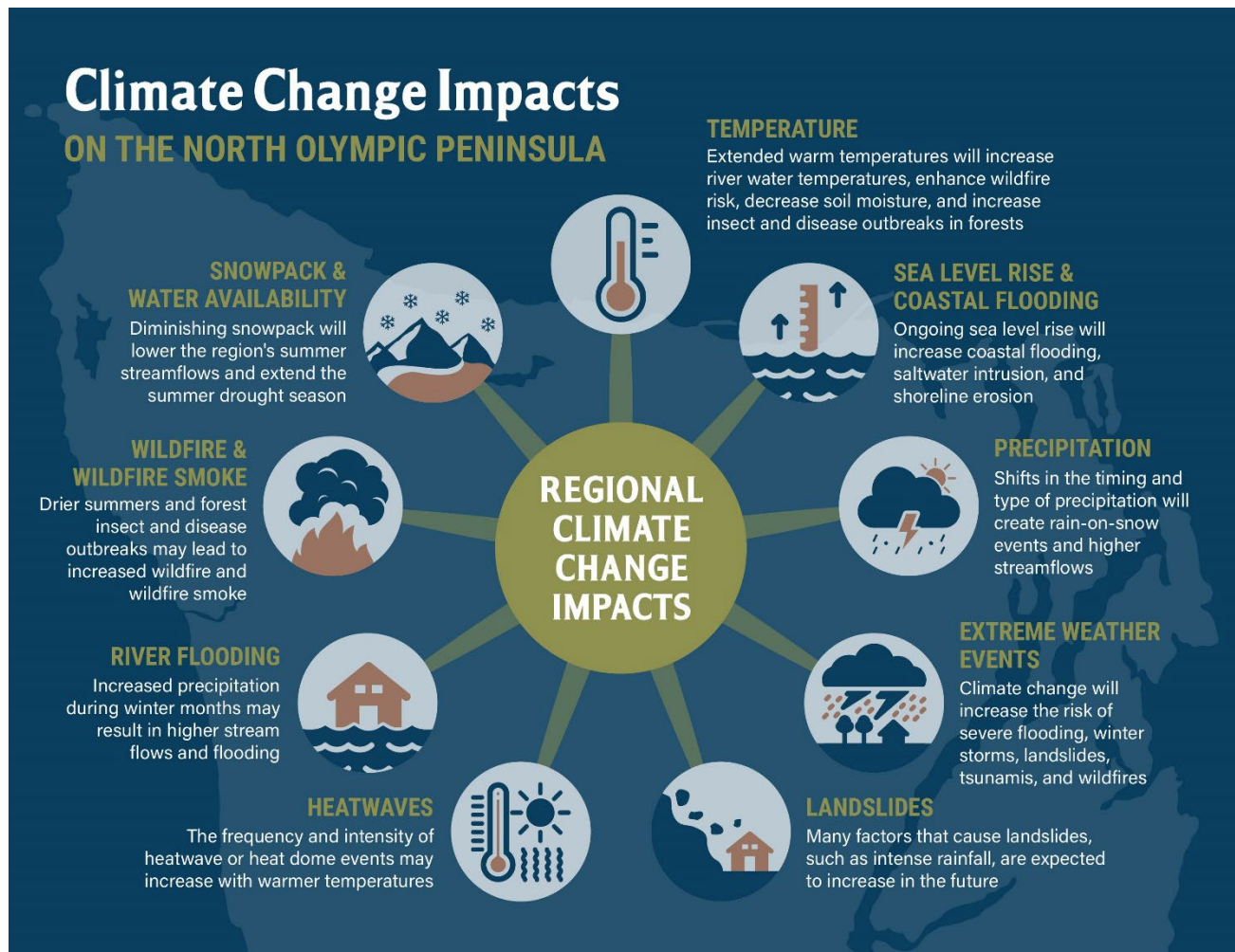
This report summarizes the approach and structure of the meeting series and presents the regional climate impact priority areas and associated strategies and implementation considerations that were identified and iteratively refined by meeting participants, the project steering committee, and the tribal steering committee throughout the course of the series.

Background

The 2015 Climate Change Preparedness Plan for the North Olympic Peninsula leveraged existing regional climate change research and offered a summary of observed changes and projections for future climate change on the peninsula across three primary climate change categories: **changing temperatures, changing precipitation, and changing ocean conditions** (Peterson, et al., 2015). To develop the Plan, the project team conducted a two-year, collaborative, multi-stakeholder process to compile the best available climate data and input from cities, counties, tribes, utilities, ports, and local experts to assess regional vulnerabilities and priorities for climate change preparedness. The Plan explored how climate change will impact three key focus areas – **ecosystems, water supplies, and critical infrastructure** throughout the region. Climate change projections and local expertise were ultimately used to identify and prioritize **adaptation strategies to address the region’s most vulnerable sectors and assets**.

New Climate Research

Since 2015, new regional climate change research and science has emerged and allowed the region to improve the accuracy and resolution of future climate change projections, assess compounding interactions among climate change variables, and better understand how climate change affects extreme events. This section summarizes new climate data and projections for the NOP in relation to greenhouse gas (GHG) emissions, temperature and precipitation patterns, sea level rise, and other emerging climate trends. The graphic below provides a visual summary of the region's observed and anticipated climate impacts.



Greenhouse Gas Emissions in the North Olympic Peninsula

Climate change is driven by anthropogenic GHG emissions in our atmosphere. Over the past decade, many jurisdictions within the NOP have conducted inventories of their GHG emissions from community-wide sectors. The figures below indicate that transportation-related emissions constitute by far the largest percentage of GHG emissions within the inventoried jurisdictions,



including the City of Port Angeles (68%) (Figure 1), Jefferson County (66%) (Figure 2), Clallam County (73%) (Figure 3).

Figure 1. City of Port Angeles Communitywide GHG Emissions (City of Port Angeles, 2022)

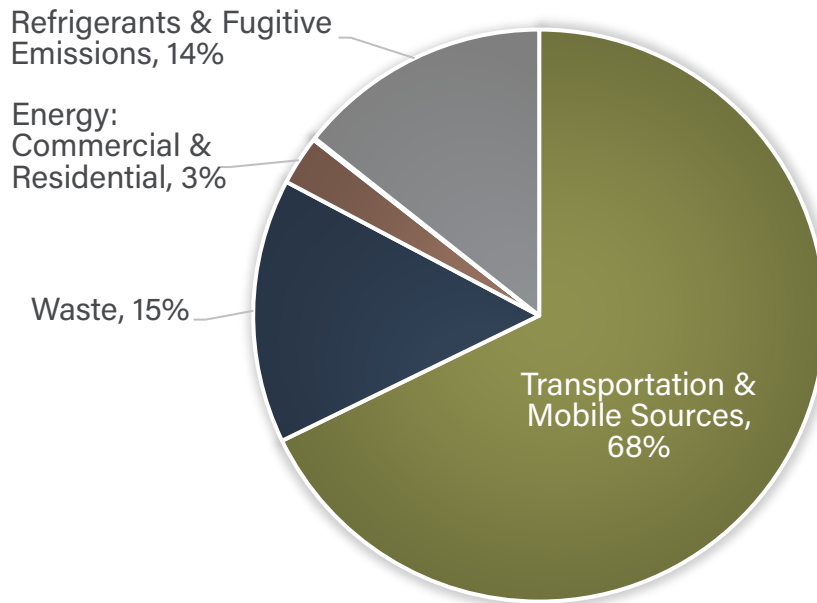


Figure 2. GHG emissions from Jefferson County for baseline year 2018 (Jefferson County and City of Port Townsend, 2018)

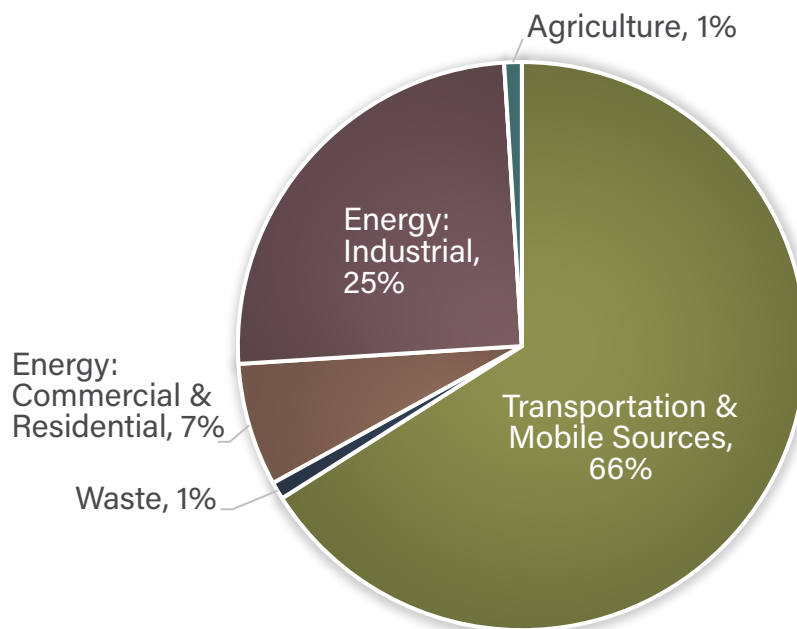
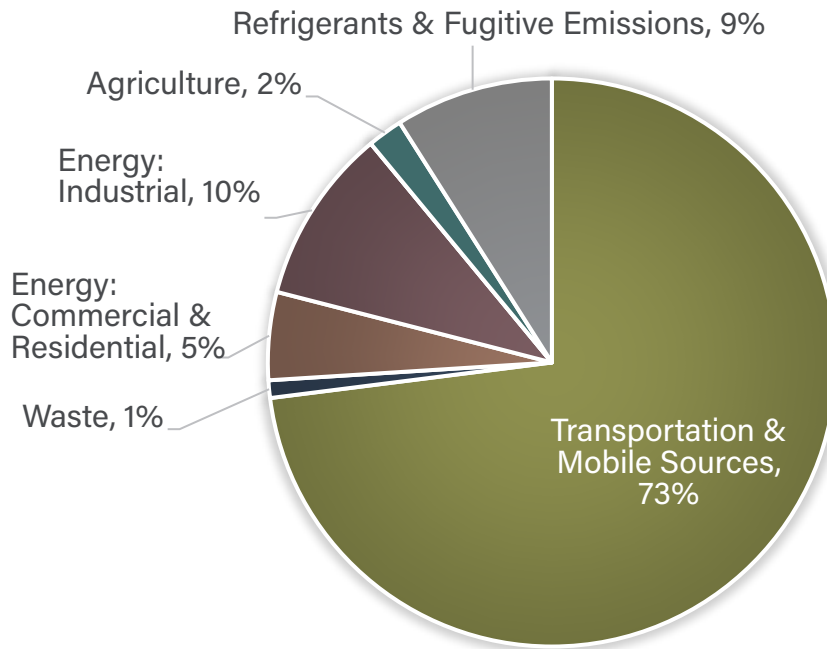
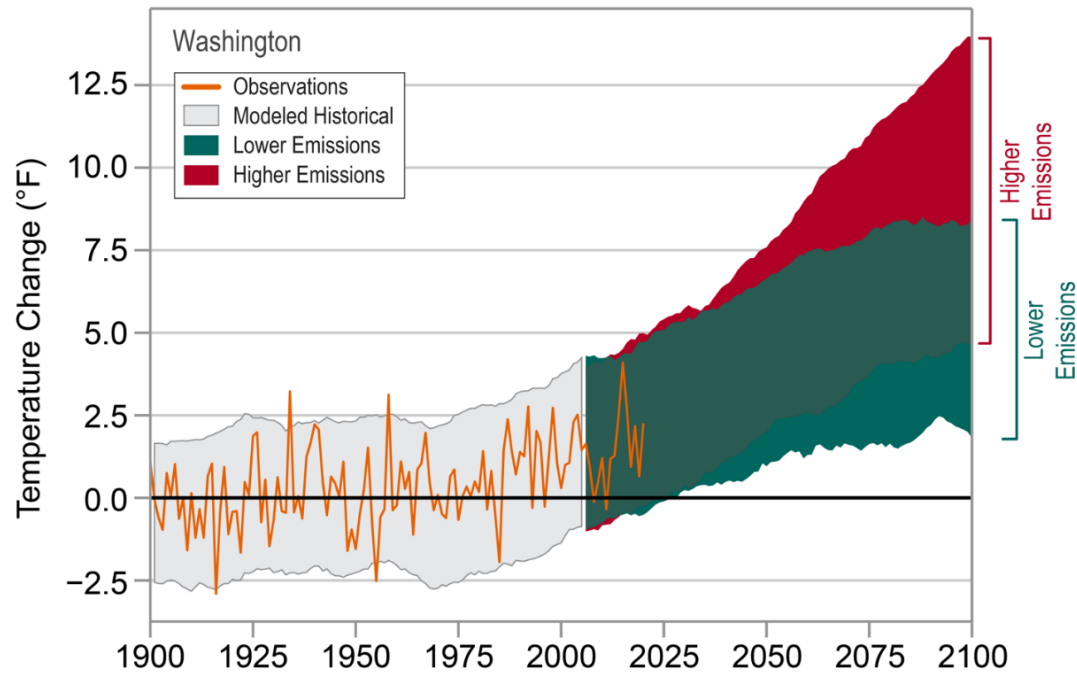


Figure 3. GHG emissions from Clallam County for baseline year 2019.

Temperatures

Average temperatures in Washington state have already risen nearly 2°F since 1900 (see Figure 4 below). This warming trend extends to Washington state's western region – over the course of the last three decades, the number of freezing days (32°F or lower) have been below average, the number of warm nights have been above average, and the number of days over 90°F have been generally above average, particularly between the years of 2015–2020 (Frankson, et al., 2022). Annual temperatures in Washington state are projected to increase across all GHG scenarios (Figure 4). Under a low-emissions scenario, the area west of the Cascades is projected to increase by 4.5°F (range of 2.2–7.2°F) under the RCP 4.5 scenario and projected to increase 5.4°F (range of 2.5°F to 8.3°F) under the SSP 245 scenario by end of the century. Under a high-emissions scenario, the area west of the Cascades is projected to increase by 7.5°F (range of 4.2°F to 10.7°F) under the RCP 8.5 scenario and projected to increase by 8.5°F (range of 3.9°F to 13.1°F) under the SSP 585 scenario by end of the century (Rogers & Mauger, 2021)

Figure 4. Observed and Projected Temperature Changes in Washington State (Frankson, et al., 2022)



Higher annual temperatures and an increase of extremely hot days will have broad implications on the region, including shifts in precipitation regimes from less snowfall to more rainfall in winter months, increased risk of relative wildfire risk, increases in heat-related illnesses and vector-borne diseases, water scarcity, and ecosystem degradation (May, et al., 2018). Table 1 offers a summary of projected temperature changes on tribal lands across the NOP.

Table 1. Projected Temperature Changes Across North Olympic Peninsula Tribal Lands

Climate Impact (Source: CIG Tribal Climate Tool*)	2040-2069				2070-2099			
	Makah Indian Tribe (Clallam)	Lower Elwha Tribal Community	Port Gamble Band of S'Klallam Indians	Jamestown S'Klallam Tribe	Makah Indian Tribe (Clallam)	Lower Elwha Tribal Community	Port Gamble Band of S'Klallam Indians	Jamestown S'Klallam Tribe
Annual Average Temperature (Historical 1990 48.9°F)	+4.8°F	+5°F	+5°F	+5.1°F	+7.9°F	+8.3°F	+8.3°F	+8.4°F
Average Daily Summer Max Temperature (Historical 67.9°F)	+5.7°F	+6.1°F	+6.3°F	+6.3°F	+9.3°F	+10.0°F	+10.1°F	+10.1°F
Average number of days with daily max temp above 86°F (Historical 1.4 days)	+4.8 days	+4.1 days	+5.7 days	+4.9 days	+13.8 days	+11.6 days	+13.8 days	+13.2 days
Freeze Free Days (Historical 323.7)	+29.8 days	+23.4 days	+58.0 days	+56.0 days	+36.3 days	+28.4 days	+89.3 days	+88.6 days

* The projections on this table come from the Climate Toolbox and Climate Impacts Group Tribal Climate Tool and use the RCP 8.5 high emissions scenario, accessed on July 6, 2022.

Precipitation

Projections for precipitation indicate annual rainfall will continue to vary from year to year; however, most projections show that extreme rainfall events will become more frequent and intense. Most models, as shown in Figure 5, also show that on average summer months will become drier while, fall, winter, and spring will see more rainfall (Climate Impacts Group, n.d.). Extreme rainfall and atmospheric river events are projected to increase the incidence of disastrous flooding and debris flow events, jeopardizing infrastructure such as roads, buildings, and bridges and fragmenting natural habitat.¹ Flooding has also been linked to an increased incidence of landslides, which poses a similar threat to the built environment, human health and safety, and aquatic species (May, et al., 2018).

Figure 5. Projected Precipitation Changes for Areas West of the Cascades

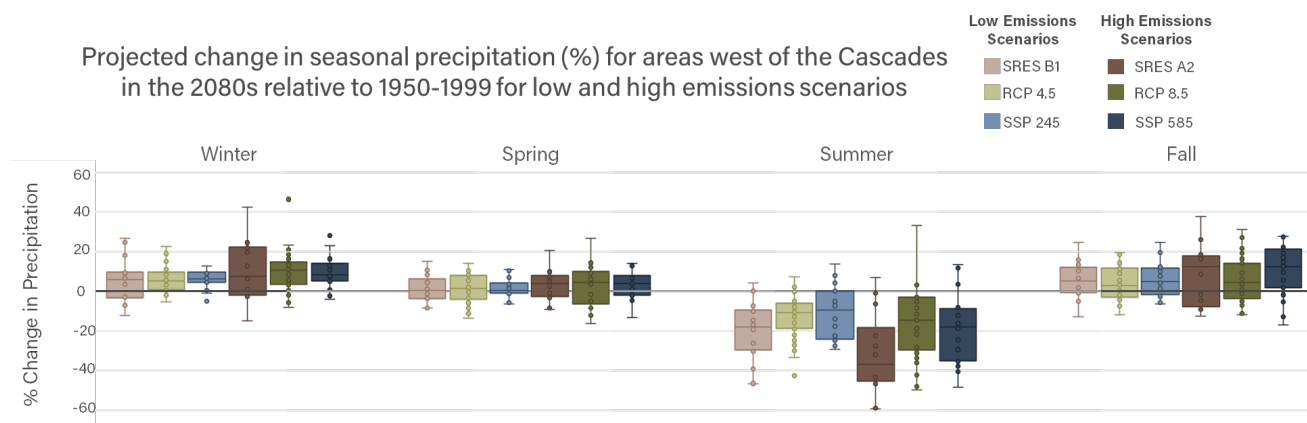


Figure Notes: Projected changes in seasonal precipitation for the areas in Washington state that are west of the Cascades for the 2080s relative to 1950-1999 for winter (Dec-Feb), spring (Mar-May), summer (Jun-Aug), and fall (Sep-Nov). Projections are shown for CMIP3, CMIP5, and CMIP6 models and include low emissions scenarios (SRES B1, RCP 4.5, and SSP 245) and high emissions scenario (SRES A2, RCP 8.5, and SSP 585). Individual climate model projections for each scenario are shown using colored dots. Boxes show the average projected change (expressed as percent change), along with the 10th, 25th, 75th, and 90th percentile values among all climate model projections. The black horizontal line denotes zero changes. Figure source: adapted from Pacific Northwest Climate Projection Tool and created by Cascadia Consulting Group (Rogers & Mauger, 2021).

Warmer winter temperatures will continue to reduce snowpack accumulation and glaciers on the Olympic Peninsula will effectively vanish by 2070 (Fountain, Gary, Menounos, Pflug, & Jon, 2022). Declines in snowmelt will impact spring and summer streamflows and are anticipated to lead to impaired habitat conditions for fish and other aquatic species as well as water scarcity issues for

¹ Atmospheric rivers are narrow regions of large water vapor transport that extend from the tropics or subtropics into the extra-tropics and are associated with the most extreme winter rainfall events (Warner, Mass, & Salathe, 2022).



agricultural and human consumption needs (May, et al., 2018). Table 2 offers a summary of projected changes in precipitation across Tribal lands on the NOP.

Table 2. Projected Precipitation Changes Across North Olympic Peninsula Tribal Lands

Climate Impact (Source: CIG Tribal Climate Tool*)	2040-2069				2070-2099			
	Makah Indian Tribe (Clallam)	Lower Elwha Tribal Community	Port Gamble Band of S'Klallam Indians	Jamestown S'Klallam Tribe	Makah Indian Tribe (Clallam)	Lower Elwha Tribal Community	Port Gamble Band of S'Klallam Indians	Jamestown S'Klallam Tribe
Annual Precipitation (Historical 95.3 in)	+5.4 inches	+1.4 inches	+4.9 inches	+3.3 inches	+8.5 inches	+2.3 inches	+8.2 inches	+5.7 inches
Total precipitation from October to March (Historical 74.5 in)	+5.7 inches	+1.5 inches	+5.3 inches	+3.7 inches	+9.9 inches	+2.7 inches	+9.4 inches	+6.7 inches
Total precipitation from April to September (Historical 20.8)	-0.5 inches	-0.2 inches	-0.6 inches	-0.5 inches	-1.4 inches	-0.4 inches	-1.2 inches	-1.0 inches

* The projections on this table come from the Climate Toolbox and Climate Impacts Group Tribal Climate Tool and use the RCP 8.5 high emissions scenario, accessed on July 6, 2022.



Oceans

Sea level rise is projected to change across Washington state (Miller, et al., 2018). Variation is partially associated with regional variations in vertical land movement. Table 3 shows projections of sea level rise across four locations within the NOP. Sea levels are projected to rise by 1.8 feet by 2100 in Port Angeles (high scenario, 50% likelihood) and 1.3 feet by 2100 in Neah Bay (high scenario, 50% likelihood).

Table 3. Sea Level Rise Projections Across the North Olympic Peninsula

SEA LEVEL RISE* <i>Probability that mean sea level will reach or exceed feet at a given year</i>	Neah Bay <i>Clallam County</i>	Clallam Bay/Seki <i>Clallam County</i>	Port Angeles <i>Clallam County</i>	Port Townsend <i>Jefferson County</i>
50% chance of \geq 0.3 feet (2050) and \geq 1.3 feet (2100)	50% chance of \geq 0.3 feet (2050) and \geq 1.3 feet (2100)	50% chance of \geq 0.6 feet (2050) and \geq 1.8 feet (2100)	50% chance of \geq 0.9 feet (2050) and \geq 2.4 feet (2100)	
5% chance of \geq 0.7 feet (2050) and \geq 2.7 feet (2100)	5% chance of \geq 0.7 feet (2050) and \geq 2.7 feet (2100)	5% chance of \geq 0.9 feet (2050) and \geq 3.3 feet (2100)	5% chance of \geq 1.2 feet (2050) and \geq 3.9 feet (2100)	

* The projections on this table come from the Sea Level Rise Data Visualizations tool which draws on data from the Sea Level Rise in Washington State – A 2018 Assessment (Miller, et al., 2018)

Low-lying coastal areas like Port Angeles, Port Townsend, Neah Bay, and many other areas on the Peninsula are particularly susceptible to infrastructure damage and coastal bluff erosion during high storm surge events, which can be amplified by sea level rise and high tide events (May, et al., 2018). In addition to threatening critical infrastructure like roads, building, and wastewater systems, sea level rise and coastal flooding will have negative impacts on coastal ecosystems and commercial and tribal fisheries (May, et al., 2018).

Anthropogenic carbon emissions are known to increase ocean temperatures which in turn drive acidification of ocean waters. This trend is projected to adversely impact ocean ecosystems and aquatic species. The impacts associated with ocean warming and acidification are projected to increase and will have economic and cultural implications for the region's coastal fisheries, including commercial and Tribal fishing and shellfish industries and access to First Foods (May, et al., 2018).

Other emerging trends

In addition to existing knowledge of current and future climate change impacts, climate change will likely lead to new emerging impacts and "surprises" (Kopp, et al., 2017). Extreme events are intensifying, partially due to climate change, across the NOP. For example, atmospheric rivers are continuing to drive extreme rain events in fall, winter, and early spring, and can be extremely



destructive, as seen in the fall and winter of 2021 in the NOP.² The 2021 heat dome event in the Pacific Northwest, which is partially attributable to climate change, led to communities in the NOP experiencing maximum temperatures ranging from 95°F to 110°F.³ Furthermore, the NOP is experiencing more wildfire smoke days over the past decade relative to prior decades (Lui, et al., 2026). All these impacts and extreme events generally disproportionately affect overburdened frontline communities – such as communities of color, low-income communities, outdoor laborers, young children, and elderly people (Washington Department of Health, n.d.). Additionally, acute climate-related impacts and extreme events can lead to compounding and cascading impacts across interconnected and complex systems that will affect the long-term resilience of the NOP. For example, projected increases in cooling demand during summer months and expected increases in electric vehicle (EV)-charging capacity will place additional stress on regional energy supply from hydropower (May, et al., 2018).

² Peninsula Daily News article: <https://www.peninsuladailynews.com/news/some-flooding-reported-on-peninsula-rain-in-forecast/>

³ World Weather Attribution article: <https://www.worldweatherattribution.org/western-north-american-extreme-heat-virtually-impossible-without-human-caused-climate-change/>



REGIONAL MEETING APPROACH

Participant Recruitment

A foundational step of the climate planning and preparedness project was to identify and recruit regional partners and stakeholders to participate in the meeting series. Cascadia worked with NODC and the project steering committee to leverage existing relationships and networks to identify and reach out to key regional players and potential new partners. Recruitment strategies included:

- Drafting and distributing tailored invitations to new potential partners
- Meeting with new partners to provide project context and goals
- Coordinating existing and new partners in a central location that included contact information, affiliation and/or area of work, and other relevant information

Meeting Series Overview

The meeting series consisted of three meetings and occurred between **February and May of 2022**. Meeting agendas were designed to iteratively build on the outcomes of one another. The objectives of the meeting series were as follows:

Meeting	Date	Objectives
#1	February 18, 2022	<ul style="list-style-type: none"> • Identify key climate change priorities and strategies for the North Olympic Peninsula • Build capacity for government jurisdictions to coordinate and implement climate change adaptation and mitigation strategies for regional climate resilience
#2	April 1, 2022	<ul style="list-style-type: none"> • Build on outcomes from meeting #1 to refine and finalize a set of climate adaptation and mitigation priorities for the region • Begin to identify key coordination details, capacity needs, and near- and long-term implementation considerations for government jurisdictions and associated strategies
#3	May 25, 2022	<ul style="list-style-type: none"> • Confirm final climate change priorities, goals, and objectives for the North Olympic Peninsula • Build on and refine key coordination details, capacity needs, and near- and long-term implementation considerations for governments jurisdictions and associated strategies

Overall, 43 regional partners, stakeholders, and local, state, tribal, and federal representatives attended the meeting series. Below is a full list of all meeting participants:



- Aislinn Diamanti, *City of Port Townsend*
- Amber Brazil, *Olympic Nation Forest*
- Amy Nash, *North Olympic Peninsula Resource Conservation & Development Council*
- Ann Soule, *City of Sequim*
- Ben Braudrick, *City of Port Angeles*
- Bob Vreeland, *Clallam County Marine Resources Committee*
- Brent Butler, *Jefferson County*
- Carol Hasse, *Port of Port Townsend*
- Cindy Jayne, *Port Townsend Climate Action Committee and Local 20/20*
- Clea Rome, *Washington State University Clallam County Extension*
- Craig Nolte, *Federal Reserve Bank of San Francisco*
- David Seabrook, *East Jefferson County Board of Fire Commissioners*
- Deb Wallace, *City of Sequim*
- Diane Harvey, *Clallam County*
- Ed Bowlby, *Olympic Climate Action*
- Elise Rasmussen, *Washington Department of Health*
- Geoffrey James, *Port of Port Angeles*
- George Yount, *Jefferson County*
- Haley Harguth, *Hood Canal Coordinating Council*
- Haley Kennard, *Makah Tribe*
- Heidi Eisenhour, *Jefferson County*
- Janis Burger, *Olympic Climate Action*
- Joe Holtrop, *Jefferson County*
- John Mauro, *City of Port Townsend*
- John Purvis, *Clallam County Public Utilities District*
- Judy Surber, *City of Port Townsend*
- Kara Cardinal, *Strait Ecosystem Recovery Network*
- Kevin Gallacci, *Clallam Transit*
- Kim Williams, *Clallam Conservation District*
- Lara Aston, *Pacific Northwest National Laboratory*
- Lara Gaasland-Tatro, *Jefferson County*
- LaTrisha Suggs, *Jamestown S'Klallam Tribe*
- Laura Tucker, *Jefferson County*
- Lindsey Schromen-Wawrin, *City of Port Angeles*
- Lowell Rathbun, *City of Sequim*
- Mark Ozias, *Clallam County*
- Marnie Boardman, *Washington Department of Health*
- Melanie Roberts, *Pacific Northwest National Laboratory*
- Monica MickHager, *City of Port Townsend*
- Navarra Carr, *City Councilmember at the City of Port Angeles*
- Owen Rowe, *City of Port Townsend*
- Pam Petranek, *Port of Port Townsend*
- Paul McCollum, *Port Gamble S'Klallam Tribe*
- Ray Colby, *Makah Tribe*
- Robert Knapp, *Jamestown S'Klallam Tribe*
- Rod Fleck, *City of Forks*
- Ryan Erhart, *Makah Tribe*
- Sissi Bruch, *Jamestown S'Klallam Tribe*
- Steve King, *City of Port Townsend*
- Tom Sanford, *North Olympic Land Trust*
- Tyler King, *Clallam County Public Utilities District*
- Willie Bence, *Jefferson County*



REGIONAL MEETING OUTCOMES

Climate Impact Priorities

During the first regional meeting, participants identified an initial list of climate change priorities for their organization, agency, and/or community that address regional climate impacts, and to share which impacts may require or are amenable to regional coordination efforts. Participants identified over 30 priority impacts (see **Appendix A: Meeting #1 Summary**).

To narrow down the list of impacts participants and stakeholders unable to attend the meeting responded to a post-meeting survey to confirm the proposed climate change priority areas identified during the meeting. As shown in Figure 6, the survey allowed for a range of consensus options. This variation in consensus options allowed people to express concerns with or desire to amend aspects of these priorities. Detailed survey responses can be found in **Appendix B: Meeting #1 Survey Results**.

Figure 6. Consensus Range Options for Survey

0: No way, I'll block this	1: I see major issues we need to resolve now.	2: I see minor issues we need to resolve now.	3: I see minor issues we can resolve later.	4: I'm fine with this as it is.	5: I'm fine with this as it is.
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Survey results revealed broad consensus across all priority areas; however, because some respondents reported concerns within each priority area, Meeting #2 discussions focused on addressing these concerns and achieving consensus around a final list of priority areas. During this meeting, consensus was reached to move forward with all proposed priority areas, with the exception that the two transportation-related focus areas are consolidated into one combined focus area: "Transportation: Emissions Mitigation, Adaption, and Resiliency."

The visual below represents the finalized list of regional climate change impacts identified during the meeting series. These climate impacts are closely aligned with the most up to date climate change projections and anticipated impacts for the North Olympic Peninsula detailed in the [New Climate Research](#) section of the report. These regional priorities were used to inform the development of the Climate Action Toolkit, which aims to support local governments, Tribes, and Nongovernmental Organizations (NGOs) across the NOP in (1) integrating climate change adaptation and mitigation strategies throughout their decision-making processes and (2) helping jurisdictions plan for climate action implementation. It includes strategies and actions, decision-making tools and checklists, sample codes and regulations, and local resources for implementation.

Regional Climate Change Priorities

Through a series of three region-wide strategy meetings with key partners including local governments, Tribes, and NGOs, participants agreed on the following priorities for climate change adaptation and mitigation across the North Olympic Peninsula.

Water Supply, Availability, and Quality



Water Infrastructure



Energy Resiliency, Redundancy, and Independence



Transportation Resiliency, Adaptation, and Mitigation



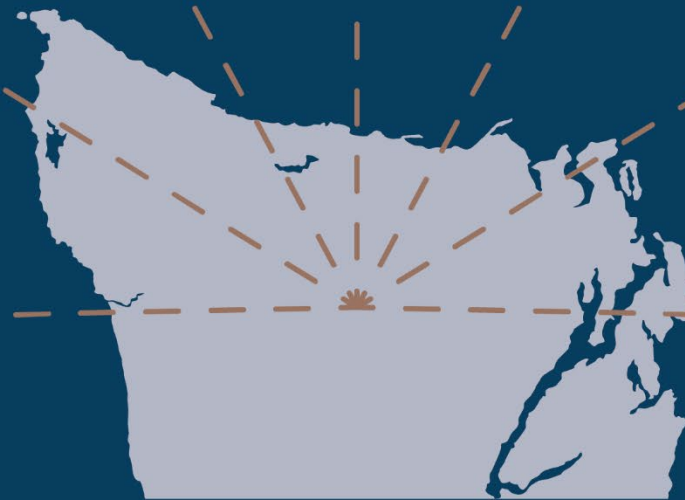
Local Food and Agriculture



Wildfires and Wildfire Smoke



Shoreline Management and Land Use





Priority Area Strategies and Considerations

Meeting #2 was also used to generate deeper discussions around each priority area. Discussions centered around the following topics and considerations (See **Appendix C: Meeting #2 Summary** for detailed meeting discussion notes):

- Goals
- Objectives
- Challenges & needs
- Strategies & considerations
- Case studies or funding options

Following Meeting #2, a survey including all priority area goals and objectives identified at the meeting was sent to meeting participants and stakeholders unable to join the meeting. The survey asked respondents to confirm moving forward with the goals and objectives identified for each priority area, using the same range of consensus options as used for the previous survey. Additionally, the Tribal Steering Committee met multiple times to carefully vet and refine each objective to ensure that these regional priorities and objectives complemented tribal climate change priorities and did not conflict with tribal treaties, cultures, and operations. From this survey, each priority and associated objective had a consensus score developed, where a score of 0 indicated less consensus and a score of 5 indicated higher consensus.

Overall, consensus across all priority area and goals was high. Most goals received an average score of 4.0 or higher while a few of the lowest consensus scores ranged from 3.8 to 3.3 (See Figure 8 for the range of consensus options). A detailed summary of these survey results can be found in **Appendix D: Meeting #2 Survey Results**.

As a culminating step to the meeting series, the third and final regional meeting was focused on making an additional round of edits to achieve consensus to move forward with the finalized priority impact areas, goals, and objectives. Additionally, Meeting #3 was used to collaboratively review, refine, and add to the strategies and implementation details collected through meeting discussions and survey results thus far. A detailed summary can be found in **Appendix E: Meeting #3 Summary**.



Regional Climate Change Priority Areas, Objectives, and Strategies

The following tables are organized by climate impact priority area and show the final iterations of all input captured throughout the meeting series, which include goals and objectives and associated challenges and needs, funding opportunities, and case studies or examples of effective implementation.

Water Supply, Availability, and Quality

Climate change related shifts in precipitation, snowpack, and streamflow will alter the future supply and availability of water resources across the NOP. This will have broad implications for public health, agricultural production, and aquatic habitat quality. Overarching goals and objectives in this priority area are geared towards creating a more sustainable and resilient water supply. Strategies and implementation considerations to reach those goals center on water conservation and storage, water quality and monitoring, and pollution prevention.

Goal #1: Ensure there is sufficient capacity to capture and store rain/snow via built and natural systems.			
Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Promote aquifer recharge and reservoir storage via strategic investments in habitat restoration and conservation.	<ul style="list-style-type: none"> Working on aquifer recharge at the regional scale will require planning and decision making around how to prioritize local aquifers. Water rights may be a limiting factor. 	<ul style="list-style-type: none"> Increasing forest cover and wetlands can help facilitate water interception to achieve recharge objectives. Capture and infiltrate stormwater runoff into the ground instead of sewers. 	<ul style="list-style-type: none"> Nine facilities built in the Dungeness basin have increased capacity to infiltrate. Explore the potential to do more with this.
Continue to study how reduced snowpack in the Olympics will affect regional water supply.	<ul style="list-style-type: none"> There is a timing challenge around water release and flows. Earlier snowmelt and increased winter rain will shift seasonal timing of precipitation. 	<ul style="list-style-type: none"> Better understand how shrinking snowpack affects aquifer recharge. 	
Increase capacity to capture and store rainfall.	<ul style="list-style-type: none"> This is a local scale strategy. Consider applicability, as this might be more relevant for rain-dominant basins. 	<ul style="list-style-type: none"> Invest in large rain cisterns, especially for rain-dominant basins. Offer water collection options on roofs and for using large cisterns for non-potable water use (e.g., watering gardens). 	

Monitor water supply and collect water quality data.			<ul style="list-style-type: none"> Streamkeepers has a data set from ongoing water quality monitoring in a variety of places around Clallam. Clallam and Jefferson Counties have existing water quality monitoring data and future monitoring plans. Monitoring network from USGS.
Build systems for water supply.		<ul style="list-style-type: none"> Desalinization feasibility or pilot projects. Grey water reuse and recharge. Monitor built infrastructure for water supply, especially older buildings. 	<ul style="list-style-type: none"> Dungeness Off-channel Reservoir project.
Goal #2: Promote water usage conservation and efficiency to prepare for future water shortages and droughts.			
Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Implement water reuse systems.	<ul style="list-style-type: none"> A big barrier for achieving this objective is water treatment capacity and technology. High costs present a barrier. 		<ul style="list-style-type: none"> Explore Southwest regional examples.
Promote water conservation behavior change measures.	<ul style="list-style-type: none"> Need to define the unit of analysis (e.g., households, industries, watersheds) 	<ul style="list-style-type: none"> Promote household behavior change (e.g., fixing leaky faucets and changing water usage habits). Utilize local ordinances and declarations to promote water conservation. Utilize education and public outreach activities to address water supply and conservation usages. 	<ul style="list-style-type: none"> Conservation Districts are promoting water conservation strategies to farmers.



<p>Ensure sufficient potable water.</p>	<ul style="list-style-type: none"> • Need to ensure that there is an alignment between water supply and demand. • Need to accommodate for future growth projections and influx of climate migrants and refugees. • Ensure accessible water supply, particularly for those more vulnerable to water supply shortages (e.g., homeless, transient populations, low-income communities). 	<ul style="list-style-type: none"> • Check in with water providers across the county (e.g., PUD, City of Port Angeles, Dry Creek Water, etc.) and within the region (e.g., City of Sequim) to collect existing potable water strategies. • Establish prioritization for water use (e.g., prioritizing potable water over agricultural water use, water for fish over agricultural water use). • Consider potential to treat water collected in rain cisterns to make potable water. • Explore the option of a large-scale desalinization plant for potable water and irrigation. 	<ul style="list-style-type: none"> • Dungeness River Management team.
<p>Ensure adequate water for farming, agriculture, and wildlife.</p>	<ul style="list-style-type: none"> • Irrigation is largest consumptive use of water, particularly for agricultural purposes. • Need to ensure that there is an alignment between water supply and demand. • Consider impacts on instream flows for fish. 	<ul style="list-style-type: none"> • Use non-potable water for irrigation. • Require or promote more water conservation and efficiency for irrigation. • Consider projections around future farming water use and needs in planning. 	
<p>Goal #3: Ensure that there is good water quality.</p>			
<p>Objective</p>	<p>Challenges & Needs</p>	<p>Potential Strategies & Considerations</p>	<p>Case Studies or Funding Options</p>
<p>Continue to invest and collect water quality data (e.g., pollutants, temperature).</p>	<ul style="list-style-type: none"> • With increased sediment in the water, erosion may could be an issue. 	<ul style="list-style-type: none"> • Identify pollution sources. 	<ul style="list-style-type: none"> • NWIFC State of Watershed reports.



<p>Address and implement pollution reduction measures.</p>	<ul style="list-style-type: none"> Nitrate pollution in groundwater and marine waters due to climate change and runoff is a concern. This could be exacerbated by influx of climate migrants and refugees. There are so many pollutants and chemicals of concern that must be considered. Need an a holistic plan to reduce all pollutants, set standards, and work with discharge permits to change current limits. The Washington State Water Quality Standards are an extension of the Clean Water Act, but a lot of pollutants don't have limits to them, and the EPA takes a long time to establish those limits. 	<ul style="list-style-type: none"> Increase coordination between local and county jurisdictions regarding stormwater regulations. Establish regional pollutant discharge limits and water quality standards. 	<ul style="list-style-type: none"> Clallam County is working with Clallam PUD on nitrate pollution. Sequim has specific stormwater regulations. Makah Tribe has their own water quality standards. Local water quality plans.
<p>Work towards ensuring septic systems do not flood and impair water quality.</p>	<ul style="list-style-type: none"> Usually located in low-lying areas and subject to flooding. Needs to be led by local jurisdictions. 	<ul style="list-style-type: none"> The Growth Management Act should allow for sewer connections with modified rules when environmentally responsible, without authorizing density increases. Ensure septic systems are not flooded. 	<ul style="list-style-type: none"> Clallam works with partners including Conservation District and Craft3 to locate and address failing septic systems that directly impact water quality in Dungeness Bay.

Water Infrastructure – Sewer and Stormwater

Many jurisdictions within the NOP have identified vulnerabilities and retrofit needs across current wastewater systems and stormwater facilities. Climate change related extreme weather events like atmospheric rivers, debris flow, and landslides will increase disastrous flooding and stormwater runoff, putting an additional strain on these vulnerable systems. The goals and strategies of this priority area are aimed at improving stormwater infrastructure, and wastewater and sewer systems to prevent water pollution.



Goal #1: Increase resiliency of stormwater and wastewater systems.			
Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Protect wastewater treatment systems and sewer lift stations along coastline (see: Move facilities – especially critical facilities – out of vulnerable areas goal in Shoreline Management priority area).	<ul style="list-style-type: none"> High costs associated with this goal. 		
Capture and infiltrate stormwater runoff into the ground (see: Ensure there is sufficient capacity to capture and store rain/snow via built and natural systems goal of Water Supply and Availability priority area).	<ul style="list-style-type: none"> Many local governments have these plans in place, but are lacking capacity support. 	<ul style="list-style-type: none"> Encourage local homeowners to adopt rain gardens. Track and report number of people taking advantage of incentive programs and rebates. Develop guidelines/policies on reducing/minimizing impervious surfaces in new construction and evaluating building materials. Build capacity at the local government level to implement existing plans and codes. 	<ul style="list-style-type: none"> City of Seattle, King County, and Port Angeles provide rebates for rain gardens and associated materials.
Address nitrate pollution (see: Ensure that there is good water quality goal of Water Supply and Availability priority area).			
Ensure septic systems aren't flooded, presenting water quality issues (see: Ensure that there is good water quality goal of Water Supply and Availability priority area).	<ul style="list-style-type: none"> Usually located in low-lying areas and subject to flooding. 	<ul style="list-style-type: none"> The Growth Management Act should allow for sewer connections with modified rules when environmentally responsible, without authorizing density increases. 	
Ensure stormwater systems and wastewater management can accommodate increased rainfall and population increases.	<ul style="list-style-type: none"> Low staff capacity to address this. This can be expensive, especially for small cities. Stormwater and sewage systems are a major impediment to growth. 		<ul style="list-style-type: none"> Climate Impacts Group Stormwater and Climate Change tool.



Transportation Resiliency, Adaptation, and Mitigation Focus Areas

Transportation is by far the largest source of GHG emissions for the NOP. As such, governments across the NOP are looking to develop and implement strategies that mitigate transportation related emissions by reducing vehicle miles traveled, promoting electric vehicle (EV) usage, and creating accessible multimodal transit options. The mitigation-focused goals and strategies of this priority area include important implementation considerations that address the particular needs and challenges of this region.

Mitigation Focus

Goal #1: Reduce regional transportation emissions in an equitable way.			
Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Evaluate vehicle miles traveled (VMT) across the region.	<ul style="list-style-type: none"> As EV adoption increases, need to decouple data on VMT and EV ownership to get a more accurate picture of VMT associated with gas-powered vehicles. 		<ul style="list-style-type: none"> Port Angeles tracking system.
Evaluate and track the number of EVs purchased across the region.	<ul style="list-style-type: none"> EVs are not always feasible for rural communities. Four-wheel drive vehicles are needed. EVs are more expensive relative to gas-powered vehicles. 	<ul style="list-style-type: none"> Incentivize EV deployment by local governments. Connect with local auto dealers about availability and desire for electric vehicles. Municipalities could require a "lifetime cost" comparison for gas vs electric vehicles through various financial tools and programs. 	<ul style="list-style-type: none"> EV Readiness Resources for the Olympic Peninsula
Increase alternative modes of transportation routes. (See: <i>Increase inter-community transportation accessibility goal in Transportation Resiliency & Adaptation</i>).	<ul style="list-style-type: none"> Finding a balance between building more roads and increased negative impacts on ecosystems. Need more stringent air quality/emissions regulations across the Peninsula. Passenger ferries are efficient if they have very high passenger capacity, so their efficiency depends on. Unlikely that demand exists in Port Angeles. 	<ul style="list-style-type: none"> Commuter trips in single occupancy vehicles (SOVs) need to be reduced. This is the highest portion of GHG emissions region-wide. Consider vessel traffic that can bring people, water, food, etc. between Port Angeles, Port Townsend, Neah Bay, and points in between using retrofitted old boats (EV). 	<ul style="list-style-type: none"> Pacific Northwest National Laboratory (PNNL) is interested in discussions around maritime vessel decarbonization.



Increase public transit options using alternative fuels (i.e., electric, hydrogen).	<ul style="list-style-type: none"> Unsure if there is sufficient funding to supply EVs for public transit. 	<ul style="list-style-type: none"> Regional workshop focused on rural transit with experts on rural transportation. Invest in on-demand transportation and carpooling programs. 	<ul style="list-style-type: none"> Clallam Transit van pool program. A dial-up service in Sequim and Forks through Clallam Transit Peninsula Regional Transportation Planning Organization
Increase EV charging capacity and availability across the region.	<ul style="list-style-type: none"> Locations may be somewhat limited High energy requirement to charge vehicles. Demand for EVs varies across the region, e.g., demand is low in City of Sequim (station averages 1.9 transactions per day). However, Lake Crescent and Kalaloch Lodge chargers are used more frequently. Most demand for charging stations is through tourism, particularly those traveling to Hurricane Ridge. 	<ul style="list-style-type: none"> Cost of EVs is decreasing – it’s important to seize the opportunity to purchase. Charger deployment is planned for in Blyn and surrounding area. 	<ul style="list-style-type: none"> Energy Northwest working through a department of Commerce grant to install high-capacity chargers in Sequim, Forks, Port Angeles as part of HWY 101 electrification program. Targeted toward tourism. There is available funding for installing charging stations around the HWY 101 loop now.
Modify land use policies to reduce need for transportation (See: Increase intra-community transportation accessibility goal in Transportation Resiliency & Adaptation).	<ul style="list-style-type: none"> There is a lack of infrastructure that enables use of alternative modes of transportation, such as shoulders, bikeable roads, sidewalks, etc. 	<ul style="list-style-type: none"> Need coordination between jurisdictions to ensure compliance with Growth Management Plans. 	<ul style="list-style-type: none"> Washington State Emissions - NOAA Peninsula Regional Transportation Planning Organization

Goal #2: Decrease emissions from tourism.

Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Encourage tourists to utilize public transit options.	<ul style="list-style-type: none"> Need to invest in public transit infrastructure (more buses, more stations, etc.) before this becomes feasible or a reality. This is more of a long-term solution. A shuttle study at the park found the problem was nearly all shuttle systems across the NPS are subsidized as 	<ul style="list-style-type: none"> Increased coordination with tourism industry and local governments. Explore options for the Port of Seattle would incentivize EV car rentals, which would cut a lot of visitor emissions. Consider a shuttle route up the Hoh Road (like Clallam Transit Hurricane Ridge Route) 	<ul style="list-style-type: none"> Clallam Transit's Hurricane Ridge pilot route NPS looking into potential funding for temporary transportation coordinator.



	commercial runs are usually not economically feasible.		
Reduce emissions from airline travel to/from the North Olympic Peninsula.	<ul style="list-style-type: none"> Potentially to enough airline travel to Fairchild Airport for this to be meaningful. Should determine emissions for tourism vs local to better determine value of this objective. 	<ul style="list-style-type: none"> Increase tree planting on peninsula to offset emissions. 	<ul style="list-style-type: none"> Information on carbon offsets associated with air travel:

Adaptation and Resiliency Focus

Climate change will impact many of the region’s critical transportation routes, particularly those located in coastal, flooding, and landslide prone areas. The transportation adaptation and resiliency focused strategies outlined below aim to promote climate smart land use decisions such as minimizing development in areas most vulnerable to climate change and designing walkable, dense communities that lower the region’s carbon footprint and improve community resilience.

Goal #1: Increase the response capacity of the region if transportation routes are disrupted.			
Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Identify and/or increase redundancy of transportation corridors.	<ul style="list-style-type: none"> High costs associated with this objective. More transportation corridors could lead to more sprawl. 	<ul style="list-style-type: none"> Consider other travel options that aren’t reliant on road vehicles (e.g., ferries/boats). Focus on roads that are critical – 112, 101, 113. Rather than building new roads, looking at existing forest service roads that can be improved. Forest service roads won’t have development or sprawl. 	<ul style="list-style-type: none"> Makah Tribe working with Governor’s Office and House Transportation Committee to find long-term solutions for remote tribes.
Identify network of roads that can be alternatives if a main route is disrupted.		<ul style="list-style-type: none"> Utilize existing channels (e.g., WSDOT twitter, Facebook groups, text message alert system, AM Radio) to push out emergency messaging. Identify new ways to communicate during extreme events/disasters, especially in more remote communities. Consider existing forest service roads. 	



Increase communication channels to drivers and transit users.			
Goal #2: Fortify vulnerable transit routes and corridors in an ecologically beneficial way.			
Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Identify and fortify vulnerable routes.	<ul style="list-style-type: none"> This objective may conflict with fish habitat and passage. High costs associated with this objective. 	<ul style="list-style-type: none"> Identify, prioritize, and fund projects that fortify and increase robustness of transportation routes (e.g., floodplains next to roads, landslide barriers). 	<ul style="list-style-type: none"> 2015 NODC climate report identified some vulnerable roads due to climate change.
Goal #3: Increase inter-community transportation accessibility.			
Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Increase broadband to minimize need for inter-regional transit.	<ul style="list-style-type: none"> Broadband can reduce some needs for travel (e.g., work commute, doctor's appointments). 	<ul style="list-style-type: none"> Increase access to more nuanced health resources (virtual visits, health-specific transportation options). Estimated that the 1600 rural broadband connections for which Clallam County has secured funding could result in a reduction of more than 7 million miles driven per year. 	
Promote more public transit options between communities.	<ul style="list-style-type: none"> Some current transit stops are hard to access for residents, e.g., in western Port Angeles, some stops are near steep roads or have no shoulder. Public transit options may not work for isolated communities (e.g., Neah Bay). 	<ul style="list-style-type: none"> Need to focus on amplifying health benefits and outcomes (e.g., service access, air quality near highways). Institute rideshare or commuting options, so people are less reliant on SOVs for commuting. Consider accessible and easy-to-use coordination around carpooling opportunities Invest in transport hubs across the region. Use a public education campaign to increase adoption of public transit options. Reinvest in a regional rail system. Survey the public about transit modes and access to get a baseline understanding. 	<ul style="list-style-type: none"> WSDOT has new funding options for EV rideshare. Forth Mobility is providing technical assistance to apply for this funding. Federal infrastructure bill offers public transit investments.



Identify innovative ways to reduce need for transportation.			
Goal #4: Increase intra-community transportation accessibility.			
Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Minimize sprawl within communities to increase walkability of communities.	<ul style="list-style-type: none"> Most communities on the peninsula are reliant on cars. This will be a long-term strategy. Under GMA, rural areas may have more limited options. 	<ul style="list-style-type: none"> Amend local land-use policies that prioritize 10-minute communities. Develop the urban growth area (UGA) and reduce the sprawl and density outside the UGA (see related challenge). 	<ul style="list-style-type: none"> Makah Tribe is exploring food sovereignty to rely less on external transit routes that import non-cultural foods.
Promote micro-transit options within communities.	<ul style="list-style-type: none"> Some current transit stops are hard to access for residents. For example, in western Port Angeles, some stops are near steep roads or have no shoulder, which prevent people from accessing these transit stops. Need to consider transit in relation to housing affordability. 	<ul style="list-style-type: none"> Focus on last mile options to get people from their homes to transit stops. Increase bike-ability. Support maintenance of roads to ensure smooth pavement for bikes and e-scooters. 	

Energy Resiliency, Redundancy, and Independence

Energy consumption and demand will continue to grow steadily in parallel with the growing population of the NOP. If the system demand exceeds supply, the voltage in local power lines can drop and cause brownouts and electricity outages. The risk of power outage is highest during summer and winter months, when increased cooling and heating needs place additional stress on the energy grid, and during extreme weather events. As climate change impacts continue to increase the risks of natural disasters, regional energy resilience and independence will be critical for maintaining electricity and vital services to residents in the event main energy sources fail.

The goals and strategies in this focus area aim to relieve the strain on the energy grid by increasing regional coordination and capacity around energy resilience planning, improving energy efficiency and conservation, and investing in local and renewable energy sources.

Goal #1: Improve and bolster resiliency of existing energy infrastructure.			
Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Work with BPA and local PUDs to understand current limits and issues related to energy infrastructure.	<ul style="list-style-type: none"> All utilities need to achieve carbon neutrality by 2030 and have no emitting sources by 2045 to comply with the Clean Energy Transformation Act. Clallam PUD procured renewable energy credits and technically achieved carbon neutrality already, but still must work toward being carbon-free. Distributed energy from private renewable energy sources is generally not a problem until a certain percentage is reached that creates mitigation problems. There is still substantial room to bring on net meter loads. 	<ul style="list-style-type: none"> Arrange workshops between PUDs, BPA, Department of Commerce, and local governments to understand what is being done, identify local vulnerabilities (e.g., energy supply), and identify local options (e.g., energy demand reduction, increased storage). Implement smart inverters. Understand the peak load and how to lower the height of that peak. Improve and bolster resiliency of existing energy infrastructure. 	
Coordinate a regional renewable energy plan that prioritizes local generation, storage, and distribution. Increase local means of renewable energy by 10% within 10 years.	<ul style="list-style-type: none"> Currently, heavy reliance on hydropower via BPA. While hydropower is “renewable”, unsure if this is the route that the region wants to continue. 	<ul style="list-style-type: none"> Conduct an audit/review of energy purchases and recommend options and recommendations. Encourage micro-turbine generation. Incentivize community solar installations. Consider concern about impacts of offshore wind energy. PUDs should prioritize a Clean Energy Implementation plan that incorporates all these considerations and strategies. 	
Catalog current opportunities and incentives to improve energy efficiency and conservation.		<ul style="list-style-type: none"> PUDs are required to support low-income households and weatherization under state statute. Add solar thermal (hot water heating) to the conservation/ efficiency blocks as it's more efficient than photovoltaics and works well here in summer particularly. 	
Prioritize the energy resiliency of critical		<ul style="list-style-type: none"> Place energy and/or battery storage capacity at critical facilities that can act as electricity microgrids. 	



facilities (e.g., hospitals, fire stations, community centers).		<ul style="list-style-type: none"> PUD Emergency Response and Restoration Plan already catalogues and prioritizes critical facilities and restoration. 	
Keep energy purchases local and more independent.		<ul style="list-style-type: none"> PUD contractually required to procure from BPA. However, PUD does purchase energy from 400 existing or new small solar, wind, and hydroelectric generators under net metering agreements. Makah Tribe is currently modeling and assessing wave energy. Explore middle wind energy sources. Expand community solar projects. 	<ul style="list-style-type: none"> Preliminary information available on tidal energy, which PNNL is tracking. Port of Port Angeles has shore power for freighters at one dock. Clallam PUD has low-income community solar programs and opportunities coming.

Goal #2: Increase capacity of local jurisdictions to plan and implement energy projects.

Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Facilitate regional capacity to support local governments in planning and implementing energy resiliency projects.	<ul style="list-style-type: none"> Limited governmental capacity to engage with these discussions. Energy-related working groups may not be thinking of climate change projections. Unsure what is currently being done by other organizations. Need to consider equity implications of new renewable energy development (e.g., siting). Political will may be a challenge. 	<ul style="list-style-type: none"> Arrange workshops between PUDs, BPA, Department of Commerce, and local governments to understand what is being done, identify local vulnerabilities (e.g., energy supply), and identify local options (e.g., energy demand reduction, increased storage). Identify case studies and examples of lessons learned from previous efforts. NODC partnering with PNNL to increase implementation capacity for microgrids. Support a tribal consortium on regional tribal energy coordination. Local economic development councils (EDCs) prioritize local energy generation so not completely reliant on BPA. 	<ul style="list-style-type: none"> Energy Storage for Social Equity Technical Assistance Program PNNL will support information an resource sharing via workshops, events, etc. Makah Tribe is part of first cohort to assess feasibility. NODC is working on energy resiliency summit with partners, slated for fall 2022. Clallam PUD participates in



			workshops with state and regional entities.
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Wildfires and Wildfire Smoke

With increasing average temperatures, number of extremely hot summer days, and reduced snowpack, periods of severe drought will become longer and more frequent. These combined climate impacts have worked together to increase the risk of wildfire risk on the NOP. Wildfires threaten forest and ecosystem health, infrastructure like homes and businesses, and the lives of people and wildlife. While the risks associated with wildfire may be comparatively lower on the NOP than in eastern Washington, the risk of wildfire smoke from eastern Washington and nearby areas is significant. Vulnerable populations including children and older adults, those living with chronic respiratory issues, and low-income community members without access to proper ventilation are the most susceptible to poor quality caused by spillover wildfire smoke.

The goals and strategies associated with this priority area are focused on coordinated regional wildfire management and planning, producing public education and resources on wildfire prevention, and access to community relief shelters with filtration systems.

Goal #1: Reduce wildfire risk in forests and the wildland-urban interface.			
Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Utilize programs such as FireWise to promote and incentivize behaviors that reduce wildfire risk.	<ul style="list-style-type: none"> The areas most likely to be at risk for wildfire (urban/wildland interface) are in the unincorporated areas of counties, thus county planning and permitting could help reduce danger. 	<ul style="list-style-type: none"> Incentivize and encourage behaviors such as increasing defensible space. Educate builders about practices around fire prevention and protection for structures (e.g., building materials, filtration systems). Implement county planning and permitting processes for the urban/wildland interface of unincorporated counties Build and remodel structures with fire-preventative materials 	
Partner with federal and state agencies to improve science-based forest management	<ul style="list-style-type: none"> Concerns about cross-laminated timber increasing wildfire risk. Consider forest conditions (mature forests burn less intensely). 	<ul style="list-style-type: none"> Potentially partner with regional tribes on this objective. Ensure sustainable logging practices that minimize wildfire risk or post-fire disasters (landslides). Work with small private landowners as well as large landowners to develop a wildfire plan. Establish a publicly-supported forester position at a local agency, such as a forester on county staff. 	<ul style="list-style-type: none"> Chickadee Forestry Port Gamble is working on prairie burns for wildfire risk management.



strategies that reduce wildfire risk.			
Goal #2: Increase capacity and understanding to respond to wildfires.			
Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Promote behaviors that prepare households and businesses for wildfire response.		<ul style="list-style-type: none"> Incentivize or educate households and businesses about collecting rainwater for fire protection. Reserve cisterns for wildfire response because the water level at the height of wildfire season, after the growing season, is typically low. 	
Increase firefighting capacity to respond to projected increase in wildfire risk.		<ul style="list-style-type: none"> Enhance water delivery systems for fighting fires. Ensure accessibility for firefighting equipment on rural and private roads. Lobby Department of Natural Resources to continue expanding firefighting capabilities. 	
Update or create wildfire prevention and preparedness plans that account for climate change.	<ul style="list-style-type: none"> Potentially costly objective. 	<ul style="list-style-type: none"> Identify evacuation protocols and routes. Update Coordinated Water Plan with a focus on water needs for wildfire response. Develop regional resilience hubs. Enhance education for recreational users about human-caused fire. Continue cooperative agreements between parks, forests, and the state for synchronized fire bans. Local forest management companies can help by continuing to close/gate their lands when fire danger is elevated. 	
Goal #3: Increase capacity to respond to wildfire smoke events.			
Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Provide and distribute air filtration technologies.	<ul style="list-style-type: none"> Need to consider heat relief in addition to smoke relief. 	<ul style="list-style-type: none"> Provide, distribute, and/or promote HEPA filters and heat pumps. Educate households about at-home protection methods (e.g., box filter fans). This is effective, inexpensive, and easy. 	
Provide shelters that have clean air quality		<ul style="list-style-type: none"> Open local community centers, schools, or libraries that have air filtration systems to act as community resilience hubs. 	

during wildfire smoke days.			
Identify priority households or community groups to provide air filtration resources.	<ul style="list-style-type: none"> Challenge in how to identify where these people reside (e.g., voluntary registry). 	<ul style="list-style-type: none"> Engage federal and state agencies about funding and research to implement this strategy. Work on cross-jurisdictional knowledge sharing to share best practices. Include folks such as elderly people, unhoused individuals, etc. 	

Local Food Systems and Agriculture

Rising temperatures, declining summertime streamflows, and more frequent periods of drought can impact agricultural production on the NOP. Prolonged extreme heat and water storage and scarcity issues compound summer irrigation demands. Increasing ocean temperatures and acidification have already and will continue to adversely impact fish health and survival, threatening commercial, recreational, and tribal sustenance fisheries (May, et al., 2018). Goals and strategies within this priority area are geared towards establishing resilient local food systems through sustainable farming practices and hatchery operations.

Goal #1: Promote resiliency of regional agriculture sector to climate change to ensure economic viability in the long-term.			
Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Diversify agricultural infrastructure (e.g., greenhouses).	<ul style="list-style-type: none"> Climate projections predict more frost-free days, changes in growing seasons, and increased pests. Need to determine if there is a role of local governments in this area and define what that is. 	<ul style="list-style-type: none"> Infrastructure investments could help prepare for some of climate impacts. 	<ul style="list-style-type: none"> Build off regional work done by NODC, WSU Extension, Land Trusts, and Conservation Districts.
Promote organic farming to minimize runoff pollution.	<ul style="list-style-type: none"> Organic farming does not equate to less pollution. 	<ul style="list-style-type: none"> Address on-site pollution associated with feeding, parasites, and fecal contamination. 	<ul style="list-style-type: none"> Explore work done by Port of Skagit has to support local agriculture.
Encourage local, household, and community gardens to reduce reliance on food imports.			<ul style="list-style-type: none"> Conservation Futures program Consider work done by local school districts to provide school meals.

Work with farmers to increase self-sufficiency to store crops and products.	<ul style="list-style-type: none"> Farmers currently dependent on transportation and mass food storage. 	<ul style="list-style-type: none"> Provide education and information to local farmers about climate change impacts, projected changes, and tools to prepare. 	
Conserve farmland and promote sustainable agricultural practices.		<ul style="list-style-type: none"> Utilize Comprehensive Plans to implement. 	
Improve irrigation efficiency (see: Promote water usage conservation and efficiency to prepare for future water shortages and droughts goal in Water Supply and Availability).			

Goal #2: Ensure resiliency of regional marine food systems to future climate change.

Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Utilize sustainable marine food harvesting methods.		<ul style="list-style-type: none"> Work with regional tribes on fisheries-related strategies. 	
Focus on low environmental impact but high protein food production, such as fish farming or hatchery operations.	<ul style="list-style-type: none"> There is strong opposition to net pens but need to understand those impacts better. 	<ul style="list-style-type: none"> Work with regional tribes on fisheries-related strategies. Use BMPs and compatible species that do not harm local marine systems and species. Leverage things like kelp farms for blue carbon benefits. 	<ul style="list-style-type: none"> Regional hatchery work.
Identify options for species and new marine industries (e.g., new fisheries, aquaculture, etc.) that could be viable under future climate change scenarios.	<ul style="list-style-type: none"> Fisheries management is outside the scope of this project, so need to be cognizant of Tribal rights and treaties. 	<ul style="list-style-type: none"> Work with regional tribes on fisheries-related strategies. Partnership with Olympic Coast National Marine Sanctuary (OCNMS) and Ocean Acidification Sentinel Site (OASes). 	

Goal #3: Promote economic and market viability of all local food systems.			
Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Support direct markets between local food producers and local users/vendors.	<ul style="list-style-type: none"> There are already projects and programs and organizations that are involved in regional food security and vitality. Need to identify a better way to review and catalogue current efforts and identify where gaps may be. There is increasing energy and funding for building contracts between food banks and farmers to achieve this objective. 	<ul style="list-style-type: none"> Encourage local contracting amendments and preferences (e.g., between restaurants or farmers markets with local producers). Set up local food contracts between producers and consumers, securing producers revenue for a year. 	<ul style="list-style-type: none"> Local contracts between producers and consumers were done in Washington County, OR. Many Community Supported Agricultural (CSA) contracts already exist in Jefferson and Clallam Counties.
Improve technology to ensure fishing fleets can be more sustainable and conserve fuel.		<ul style="list-style-type: none"> Work with regional tribes on fisheries-related strategies. Explore electric propulsion systems and marina charging capacity. 	
Increase food storage capacity for local foods.	<ul style="list-style-type: none"> Local cafes and coops need storage for basics to prepare for shortages and/or price changes. Consider role of regional food banks. 		<ul style="list-style-type: none"> The Port Townsend Food Coop has been doing some forward buying, purchasing staples so that they can prepare for shortages and/or price changes.
Support local farms to access and/or subsidize lands.	<ul style="list-style-type: none"> Currently, large farms have more access to federal subsidies than smaller farms. 		

Shoreline Management, Land Use, and Planning

Coastal areas of the peninsula will be greatly impacted by effects of sea level rise, which will magnify existing concerns such as coastal bluff erosion, storm surge, flooding, and saltwater intrusion into groundwater supplies (Miller, et al., 2018). Infrastructure in low-lying urban areas, such as roads and bridges, buildings and homes, and wastewater systems will be particularly vulnerable to damage from coastal flooding. The strategies detailed in this priority area focus on preparing infrastructure to withstand damages associated with sea level rise and protecting the NOP coastline.



Goal 1: Find alternatives to hard armoring on shorelines.			
Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Show examples of communities that have found alternative armoring options that promote coastal resiliency.	<ul style="list-style-type: none"> High costs associated with this objective. Differentiate between hard armoring and soft armoring—soft armoring can provide ecological benefits. 		<ul style="list-style-type: none"> Strait ERN may have some case studies. LIOs came together a couple weeks ago to look at policy barriers and reasons hard armoring is still being permitted. Currently writing a report, can be shared out soon.
Goal 2: Move facilities – especially critical facilities – out of vulnerable areas.			
Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Continue to conduct regional sea level rise (SLR) vulnerability assessments.	<ul style="list-style-type: none"> Increased storm events and sea level rise will affect shoreline infrastructure. 	<ul style="list-style-type: none"> Identify areas that are currently in the coastal flood zone and how it will expand due to climate change across the next 100-years. 	<ul style="list-style-type: none"> City of Port Townsend is currently conducting an SLR vulnerability assessment.
Relocate tribal structures, especially critical facilities, outside tsunami inundation zones	<ul style="list-style-type: none"> Funding challenges to secure adequate funding to facilitate relocating tribal structures. 	<ul style="list-style-type: none"> Support funding for relocation planning. Support funding for capital investments for relocating facilities. 	<ul style="list-style-type: none"> Coastal Tribes (Quinault Indian Tribe, Hoh Tribe, Makah Tribe, Quileute Tribe) are in various stages of relocation.
Work with local businesses and chambers of commerce to prepare for future SLR and coastal flooding.		<ul style="list-style-type: none"> Communicate results from the SLR vulnerability assessments. 	
Protect wastewater treatment systems and sewer lift stations along coastline.	<ul style="list-style-type: none"> High costs associated with this objective. 		
Goal 3: Explore environmentally-sound blue carbon and carbon sequestration opportunities.			
Objective	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options



Encourage blue carbon projects – such as kelp beds – to serve as carbon sinks and mitigate other impacts (e.g., ocean acidification).		<ul style="list-style-type: none">• OCNMS and tribes can serve as good partners with relevant examples.• Consider business opportunities for kelp farming.	<ul style="list-style-type: none">• The new Washington state cap-and-invest program will start generating revenue for carbon capture projects next year.• The Nature Conservancy (TNC) is exploring blue carbon and carbon credit trading between Washington counties.
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APPENDICES

Appendix A: Meeting #1 Summary

See next page.

NODC Local and Regional Climate Planning

Regional Meeting #1

Introduction

This document summarizes participation, activities, and feedback from the NODC Regional Meeting #1.

Meeting Objectives

- Identify key **climate change priorities and strategies** for the North Olympic Peninsula
- **Build capacity for government jurisdictions** to coordinate and implement climate change adaptation and mitigation strategies for regional climate resilience

Workshop Overview

Date & Time	Friday, February 18th, 2022, 10:00am-1:00pm
Location	Online – Zoom Meeting
# of Registrants	46
# of Participants	39
# of Panelists	2

Participant's List:

Project team is **bolded** below.

- | | | |
|-----------------------------|-------------------|--------------------|
| ▪ Karen Affeld | ▪ Cindy Jayne | ▪ Kim Williams |
| ▪ Keiko Betcher | ▪ Clea Rome | ▪ LaTrisha Suggs |
| ▪ Mary Ann Rozance | ▪ David Seabrook | ▪ Laura Tucker |
| ▪ Megan Lee | ▪ Deb Wallace | ▪ Lowell Rathbun |
| ▪ Mike Chang | ▪ Diane Harvey | ▪ Mark Ozias |
| ▪ Sebastian Espinosa | ▪ Geoffrey James | ▪ Monica MickHager |
| ▪ Aislinn Diamanti | ▪ George Yount | ▪ Navarra Carr |
| ▪ Amber Brazil | ▪ Heidi Eisenhour | ▪ Owen Rowe |
| ▪ Amy Nash | ▪ Joe Holtrop | ▪ Pam petranek |
| ▪ Ben Braudrick | ▪ John Mauro | ▪ Robert Knapp |
| ▪ Bob Vreeland | ▪ Judy Surber | ▪ Rod Fleck |
| ▪ Brent Butler | ▪ Kara Cardinal | ▪ Sissi Bruch |
| ▪ Carol Hasse | ▪ Kevin Gallacci | ▪ Steve King |

Workshop Agenda

Time	Agenda Item
10:00-10:05 5 mins	Participants Join <ul style="list-style-type: none">▪ Mike Chang (Cascadia) welcomes participants to the workshop as they join.
10:05-10:10 5 mins	Welcome + Meeting objectives <ul style="list-style-type: none">▪ Karen Affeld (NODC) provides an overview of meeting objectives.
10:05-10:10	Introductions

Time	Agenda Item
5 mins	<ul style="list-style-type: none"> Mike leads an icebreaker, asking participants to type their name and affiliation into the Zoom chat.
10:10-10:35 25 mins	Project overview <ul style="list-style-type: none"> Karen reviews project goals and timeline and briefly discuss how decisions will be made. Mike leads a 10-minute Q&A session.
10:35-11:00 25 mins	Panel Storytelling <ul style="list-style-type: none"> Mary Ann Rozance (Cascadia) facilitates a storytelling panel with the purpose of sharing and learning where different governments or groups are in the process and where they are heading. Panelists are: <ul style="list-style-type: none"> Ben Braudrick, City of Port Angeles John Mauro, City of Port Townsend
11:00-11:30 30mins	Breakout Groups #1 (TBD # people per group) <ul style="list-style-type: none"> Participants are sent to breakout rooms to identify key climate change priorities for their entity (i.e., sea level rise, transportation, wildfire, etc.). 4 breakout rooms are led by Cascadia Staff Megan Lee, Keiko Betcher, Mary Ann Rozance and Sebastian Espinosa, and Mike Change. Facilitators encourage participants to share a short story, personal or professional, relating to the topic of climate change. Facilitators emerge from these breakout rooms with a set of priorities that the group discussed.
11:30-11:45 15 min	15 Min Break <ul style="list-style-type: none"> Participants are given a 15-minute break. During this break, Cascadia transfers identified priorities into a google survey.
11:45 – 12:10 25 min	Breakout Groups #2 (TBD # of people per group) <ul style="list-style-type: none"> Participants are sent back into their breakout groups to continue conversations from earlier about key impacts. Some additional questions are asked, including: <ul style="list-style-type: none"> What impacts may require or is amenable to regional coordination efforts? For topics amenable to regional coordination efforts, what have been some successes or challenges of your jurisdiction addressing it? What has been some successes or challenges that your community has face in addressing these priorities? What does your community need to overcome some of these challenges? Such as education materials, ability to navigate codes and policies, more information about specific topics (e.g., EV retrofits)?
12:10 – 12:50 40 mins	Reflections and Climate Change Prioritization <ul style="list-style-type: none"> Mike provides an overview of a dot exercise priority setting activity. Mike then leads an open discussion of reflections and priorities. Participants vote on priorities, via the google survey Cascadia staff set up during the break. Mike leads a 20-minute discussion about the voting results, asking: <ul style="list-style-type: none"> Are there any adjustments we want to make after seeing the results? What are your reactions to these priorities?
12:50-1:00 10 mins	Adjourn + Next Steps <ul style="list-style-type: none"> Mike tees up discussion around consensus and thanks everyone for attending and identifies next steps and upcoming meetings.

Key Findings

Participants top 5 climate change priorities are listed below:

1. **Water Supply and Availability**
2. **Energy Resiliency**
3. **Transportation Emissions and Mitigation**
4. **Housing (affordable housing, climate migration and refugees, homelessness)¹**
5. **Local Food and Agriculture**

Workshop Outcomes

Project Overview Presentation

Karen oriented participants by sharing the project goal, “Building on previous work to support Tribes, agencies, and local governments in implementing coordinated climate change adaptation and mitigation strategies”. She then reviewed the project key tasks which include:

1. Facilitate series of three region-wide strategy meetings (today is the first one), and identifying climate change priorities well suited for regional coordination and collaboration
2. Developing climate change implementation toolkit to support jurisdictions to implement locally relevant climate change actions even without at CAP. There is a lot of variation between jurisdictions in where they’re at with climate action and planning. This will be a “one size fits all” toolkit.
3. Providing technical assistance to up to four local governments.

Karen proceeded to review the timeline and objectives of the upcoming region-wide strategy meetings, and the vision, scope of work, and participating jurisdictions of the toolkit. Mike then facilitated a brief Q&A session, which is detailed below.

Questions from Chat and Live Answers (5 questions)

- What does it actually mean to build more capacity for local jurisdictions? Is it the toolkit, technical assistance, something else?
 - *There are three elements: 1) Local governments plan and implement strategies in silos. Now we’re seeing more regional collaboratives emerge to make sure jurisdictions are actually achieving emissions targets they set for themselves. 2) Staff resources and funding resources. In these meetings, we’re aiming to identify priorities and strategies that we can implement collectively to address those priorities. What are the funding mechanisms to secure those resources (more FTEs and staff capacity)? 3) The toolkit will ensure processes and decision points include a “climate change pausing point”, acknowledging not all climate change resilience strategies will be labeled that way. There will also be informal outcomes that build capacity—for instance, getting planners from different jurisdictions to talk about what’s worked and what’s needed. Putting resources together, developing a toolkit, and doing individual work with jurisdictions will also build a network of knowledge.*
- When you’re talking about funding mechanisms, does that also mean local grants governments can apply to?

¹ This topic was removed because it has been covered in other plans. Additionally, the evidence base to support climate migration is still being developed.

- Yes.
- (“Mike is brilliant and lovely and great at presenting”) What about resources and nonprofits that have been singing out about the environment for decades, from Audubon society to marine science centers, land trusts, etc?
 - *A lot of nonprofits and NGOs are landowners and land managers themselves. We’re implicitly implying these are organizations people turn to for climate change plan implementation. The toolkit will focus on resources and materials that anyone can use, not just jurisdictions. We welcome input from NGOs and nonprofits as we develop the toolkit. For this meeting specifically, we’re focused on local government consensus. We are doing outreach to these NGOs and nonprofits, but the focus of this particular project is local government actions rather than collective actions. Too many non-government folks in the room may drown out the needs of local jurisdictions. We acknowledge all of the nonprofit groups have a huge role to play in climate change adaptation and mitigation strategies.*
- The Strait ERN held a technical workshop on climate change resiliency and identified major data gaps, barriers, next steps, etc. How do we bring this into this conversation?
 - *This project builds on a lot of work already done in the region. Please bring this up in the breakout groups and feel free to send to Karen/Mike.*
- Note on the new infrastructure bill – there will likely be opportunities for collaborative projects that draw attention to ports, bus charging, regional transit, etc. There are large buckets of funding available right now, some directed specifically at climate goals.
 - *There’s a lot of funding at the federal level that came out the infrastructure bill.*

Storytelling Panel

Mike kicked off the panel by highlighting some climate impacts already affecting the North Olympic Peninsula region. She spoke about extreme rain related to atmospheric rivers, extreme winters, and heat dome events. Mary Ann then introduced the two panelists, Ben Brauderick and Steve King, who shared stories of how regional climate impacts have impacted their lives. The goal of this storytelling exercise was to learn from each other where different groups are at in their process of understanding and addressing impacts from climate change as well as where folks are headed.

Ben Brauderick, Planner, City of Port Angeles:

Ben shared how far Port Angeles has come in their climate planning efforts since September of 2015. From non-profit efforts to updating the Comprehensive Management Plan to include climate related changes, Port Angeles is now partnering with Cascadia to develop its Climate Resiliency Plan which will help guide the City’s climate action. Ben highlighted the success they had with public engagement through the planning effort and noted that they will model future public engagement work after the Climate Resiliency Plan.

Steve King, Public Works Director, City of Port Townsend:

Steve focused his story on sea level rise in Port Townsend, explaining how sea level rise is much more than inundation; wind and rain run up are equally if not more important. He mentioned how Port Townsend experiences Southeast wind patterns and when combined with King Tides, massive erosive energy is inflicted to the shoreline. Finally, Steve mentioned the importance of understanding which assets are in jeopardy so the City can develop a comprehensive plan and strategy.

Mary Ann then facilitated a quick Q&A session with participants, which is detailed below:

Questions from Chat and Live Answers (2 questions)

- (For Ben) Intrigued by public process and success you had using the planning commission and outreach. Can you give more detail on what made it so successful?
 - *We focused public engagement with the volunteer group, who are leading that effort. We've set up information stations at the winter ice village and farmers market, and give the volunteers materials to hand out. We've also put up large posters in the senior center, library, aquatic center, and city hall. We also have an ad-hoc group leading communications, so there's been policy changes about how to manage communications to get to the radio, PDN, Facebook, city website, etc. Those are things we've done before, but now it's much more coordinated. We're trying to redirect all info back to the city website so people can learn the larger story and get all the information they need.*
- Note encouraging taking the scientific results we're seeing now to the next step of the human impact—that's where the rubber hits the road. Ultimately, we're dealing with the impact on human beings. Don't want to separate us, but that's who we're serving.
- What scope are we looking at? Are we looking at accept, adapt, plan, or ways to reduce, sequester, or all of the above?
 - *Short answer: all of the above.*

Breakout Group Discussions

Breakout room facilitators led two discussions, separated by a 15-minute break. During the first discussion facilitators asked participants to identify key climate change priorities for their organization, agency, and/or community, and to share stories related to climate change. During discussion two, facilitators asked participants to identify which impacts may require or is amenable to regional coordination efforts. The following questions were also posed:

Breakout Group	Facilitator(s)
1	Mary Ann & Sebastian
2	Keiko
3	Megan
4	Mike

- For topics amenable to regional coordination efforts, what have been some successes or challenges of your jurisdiction addressing it?
- If you run out of questions or not a talkative group, some additional questions:
- What has been some successes or challenges that your community has face in addressing these priorities?
- What does your community need to overcome some of these challenges? Such as education materials, ability to navigate codes and policies, more information about specific topics (e.g., EV retrofits)?

Responses from both discussions are included below, delineated by facilitation groups. The following tables capture comments from meeting participants verbatim and as a result some of the language is informal.

Group 1 – Mary Ann & Sebastian

Climate Impact	Discussion #1 Notes	Discussion #2 Notes
Sea Level	<ul style="list-style-type: none"> ■ Planning 	<ul style="list-style-type: none"> ■ IT should be amenable, impacting one shoreline could affect another jurisdiction, regional coordination could be helpful ■ King tide project - photograph certain areas to see how high tide really is, this could be extended to other counties and areas. ■ Sharing information to other counties and communities ■ Finding leads for projects ■ There are Grant opportunities to work together

		<ul style="list-style-type: none"> Some places are ahead, and some are behind, benefit to work together Schools should be on board with this - Science education, empowering our youth and getting their perspective
Permitting	<ul style="list-style-type: none"> Government state engagement around climate work Significant number of structures have been permitted in harm's way; how do we result this 	<ul style="list-style-type: none"> Challenges associated? Could be more of a technical support model State agencies are involved to provide good quality science models that can help permitting decisions be made. Call on state agency to ensure that science data is good quality. Is there a forum where elected officials can come together and implement policy decision in a planning effort? The best way to support this is to create code packages, but would be difficult to implement these codes across communities Essential that permitting processes that there is commitment to not permitting without climate concerns in mind. Roads/ infrastructure are not in flooding zones Set schedule to meet and pick climate change topics to focus on Trying to determine what to do with undeveloped parcels in river flood zone. Already permitted construction need mechanism to buyout Permitting in harm zones continues today. Climate action is continuously delayed- yet there are underlying political motives behind this.
Sewer and Water	<ul style="list-style-type: none"> General impacts from climate and also other hazards. Keeping systems online, where to locate 	<ul style="list-style-type: none"> Prevented from extending sewer and water management systems. Wants development within growth management condense these areas Education for people with septic systems, what to do if this floods? Lack of water is also problem Water supply: more creative uses for water reuse, these opportunities might be more community wide. Elevating questions on alternatives to how we use water (flushing)
Transportation	<ul style="list-style-type: none"> Alternative routes, intersection between climate change and seismic work. WDOT should pay attention between these two areas This is a sector critical around public engagement Multi Modal transportation to reduce GHG Walkable Cities and alternate vehicular fuel sources planning not just for climate change but also earthquakes. 	<ul style="list-style-type: none"> There is the regional transportation committee
Food systems and climate work		
Emissions		
Disaster related system preparedness	<ul style="list-style-type: none"> Organizing neighborhoods to be self-supportive in disasters in the short term, eg. power outages, road closures, burst water pipes. In the 	

NODC | Regional Meeting #1 Summary

	long term, planning for food shortages and other supply chain issues	
Health impacts		
Mitigation and Adaptation	<ul style="list-style-type: none"> Holding governments and elected officials are held accountable. How do we take into account 	
Public health- mental health of climate impacts (emotional, youth impacts, Mental health)	<ul style="list-style-type: none"> A lot of coastal communities are looking for safe places to gather. 	<ul style="list-style-type: none"> Outreach campaign that covers mental health issues, and climate change
Proactive planning	<ul style="list-style-type: none"> How to advocate and bring other communities along and offer them support 	<ul style="list-style-type: none"> Be proactive in getting information out to the public about mitigation, adaptation, and general information.
Infrastructure maintenance/alterations/re-location		<ul style="list-style-type: none">
Public engagement	<ul style="list-style-type: none"> Holding difficult conversations with people about changes that are needed 	<ul style="list-style-type: none"> Regionally coordinated public information and outreach on climate change to garner additional information and support to encourage political will and funding for infrastructure investment etc be proactive in getting information out to the public about mitigation, adaptation, and general information.
Water quantity	<ul style="list-style-type: none"> Water Quantity is another issue 	<ul style="list-style-type: none"> Instream flows for water quantity
Financing these as well	<ul style="list-style-type: none"> Generally, how to finance the adaptation, emissions reduction and resilience needs 	
Youth engagement		<ul style="list-style-type: none"> Schools should be on board with this - Science education, empowering our youth and getting their perspective

Group #2 - Keiko

Climate Impact	Discussion #1 Notes	Discussion #2 Notes
Tribal treaty rights - especially when it comes to foods	<ul style="list-style-type: none"> Clams, shellfish, fish that are highly impacted by climate change. Food availability as shores change. 	
Energy independence, infrastructure, walkability of sidewalks, built environment	<ul style="list-style-type: none"> how we can better provide people with services in a way they can achieve and access. Overwhelming level of ghg emissions are from transportation. 	
Food interdependency/sovereignty	<ul style="list-style-type: none"> All the bridges we have, we're all on the same bridge islands. 	<ul style="list-style-type: none"> Regional effort
Food systems resiliency	<ul style="list-style-type: none"> Shifting growing patterns with climate change, major events that cut off transportation networks—how do we feed ourselves? 	
Housing	<ul style="list-style-type: none"> Port Townsend is starting to have signs as destination for climate refugees, exacerbating housing crunch and wealth and income inequality. All point to the need to adapt land use to actual urban, walkable, non transportation-dependent urban uses and protect resource & agriculture uses. Homelessness is a climate-related issue. 	<ul style="list-style-type: none"> We're paying more to get the same type of housing as the I-5 corridor. Pt. Angeles recently allowed duplexes in every zone, but it didn't go anywhere because of the cost of building. There was no incentivization. Need to think about regional buying power. Don't have capacity—tradesman or staff capacity. Even for small jobs like repairing bathrooms.

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	<ul style="list-style-type: none"> Housing and transportation work against each other in some situations. 	<ul style="list-style-type: none"> What are the solutions? From a municipal standpoint, making building housing more achievable in though zoning regulations, multifamily tax exemptions. Pt Townsend developed in rural patterns, and what the current market demands is not sustainable. Regional collaboration - if we can get urban growth areas together to build complexes and initiate economic development.
Water quality and quantity	<ul style="list-style-type: none"> Quality, quantity, too much or not enough, water for irrigation and farmers, water for fish. Ground water and water reserves, surface water cut-off due to severe low flows. Water will be really big—if we don't have it, we're in trouble. 	
Tourism	<ul style="list-style-type: none"> Is that a sustainable basis for our economy? How can we plan a transition to something more sustainable? 	
Population growth	<ul style="list-style-type: none"> Prior to covid, this area was "found" for its natural beauty and other attractions. How to accommodate for inevitable growth, especially with better internet access? 	<ul style="list-style-type: none"> Densifying urban and not building in rural. Have too many roads to maintain because we're too spread out. Stormwater requirements can't handle urban densification.
Wellbeing, social impacts	<ul style="list-style-type: none"> Diseases, diabetes, food, lymes disease, respiratory diseases. Depression, mental health. losing natural resources tends to impact Tribes more. Climate anxiety. 	
Flooding	<ul style="list-style-type: none"> Facilities need to be moved. Infrastructure impacts due to flooding. What will happen to existing infrastructure and land with more major storm events? The millions we've put into that are not enough. 	
Stormwater infrastructure	<ul style="list-style-type: none"> Channelizing is not what is needed. We need to open up flood plains and use nature to improve health of ecosystem. Microsystems (for infrastructure) make things more resilient. 	<ul style="list-style-type: none"> We need to have proper infrastructure before we can begin to densify.
Ecosystem services	<ul style="list-style-type: none"> How do we value these more? How do we value a natural wetland, forest, kelp forest, etc.? Shorelines have a purpose – restructuring where and how we build. We need to follow the current science about natural systems and services to help mitigate impacts. Site potential tree height: requiring buffer zones on streams, rivers, tributaries in WA. Buffer size relates to maximum height of tree. 	
Infrastructure	<ul style="list-style-type: none"> When the infrastructure fails, it impacts everything in daily human life. 	<ul style="list-style-type: none"> Stormwater infrastructure is not build for current needs, way over capacity. This is a regional issue. This will be expensive, time consuming, but it the task we can find solutions to. Would like to see water reuse, but we can't even afford to keep current systems running. Can't think about investment in things that need to happen. There are opposing forces in some of the goals we have.
Major rain events and septic sewer system overflows	<ul style="list-style-type: none"> Toxic shellfish, all other sorts of impacts. Fecal coliform leak is deadly to everything in the river. 	<ul style="list-style-type: none"> Looking at single-use vs community

Political divisions and challenge of community engagement and communications		<ul style="list-style-type: none"> ▪ Amenable to regional coordination. Climate refugees have been displaced, and we're seeing our community shift, sometimes having trouble recognizing neighbors. This adds to the stress and social divisions. ▪ Recognizing isolation – we have to be in this together. We have to regionally protect ourselves. ▪ Lots of new perspectives from new people. ▪ "Sea Level Rise planning" was hard for the community to grasp. Change to "coastal flooding" took away political divisions and open up conversation to everyone. ▪ Say "climate resiliency" not "climate change".
Housing and infrastructure, population growth		<ul style="list-style-type: none"> ▪ North Olympic Peninsula sheltered, sort of a "refuge". People are flocking here because we're still amazing! Protected from wildfires, stayed cooler during the heat dome.
Energy		<ul style="list-style-type: none"> ▪ Regional effort.

Group #3 – Megan

Climate Impact	Discussion #1 Notes	Discussion #2 Notes
Transportation	<ul style="list-style-type: none"> ▪ 66% of emissions footprint ▪ Regional transportation planning to reduce GHG emissions across counties ▪ Local 2020 identified transportation as major priority ▪ Health aspects: non-motorized has great opportunity to benefit public health 	<ul style="list-style-type: none"> ▪ Perfect for regional planning ▪ Share similar issues in rural communities across counties ▪ Where can we leverage funding - regional planning will set us up well ▪ Existing regional transportation planning org. That sets priorities - unsure if climate impacts have ever been included - interesting avenue for consideration <ul style="list-style-type: none"> ○ Have expressed interest in bringing this issue forward ▪ Success with Jefferson Transit and Kitsap Transit (Foot ferry). Coordinated bus route to get to ferry. ▪ EV infrastructure planning is very amenable to regional work ▪ Coordination on non-motorized trails <ul style="list-style-type: none"> ○ Olympic Discovery Trail; complete trail across counties? Oversized transportation corridor ○ Would like to consider non-motorized trails differently - build routes for transit and commuters rather than just for recreation; focus on ped/bike infrastructure over SOV infrastructure. Logistically difficult to travel solely by bike routes ▪ Challenging to use ODT to commute; not very safe
Carbon Sequestration	<ul style="list-style-type: none"> ▪ Need to preserve trees and improve carbon sequestration 	<ul style="list-style-type: none"> ▪ Carbon seq. strategies are mostly regional ▪ Looking at things as Olympic Pen. region - bring this to our regional office - Create micro regional office. Olympic Pen. specific ▪ Bio char - beneficial but not yet feasible. Needs to be addressed on regional scale ▪ Feasibility of assisting farmers with regen. ag principles: can be done but small pop of farmers - minor amt of land.

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Water Supply & Quality	<ul style="list-style-type: none"> Concern for a while and only going to get worse Irrigation, habitat Water quality (in addition to supply) <ul style="list-style-type: none"> Water temperatures detrimental to salmonids and shellfish 	<ul style="list-style-type: none"> Help farmers prepare for low-carbon alternatives Does it make sense to work region wide on water supply? <ul style="list-style-type: none"> Seems to be site specific Water resource inventory area is site specific; more challenging to take regional approach Previous grant prioritized on water adaptation strategies <ul style="list-style-type: none"> Have done regional work, now need to focus on local areas Outreach and education efforts (targeted and regional) to use less and conserve water - can be done regionally Current plans list of adaptation strategies identifies great strategies, but have yet to implement - need to go back and reference those plans
Extreme Weather Events x2 (impacts on road/transit)	<ul style="list-style-type: none"> Increasingly vulnerability of road/transit System More extreme rain and snow events; cut off communities from critical services (e.g., medical services) Flooding Only so much planning one can do Forest impacted by road closures Safety concerns Planning for future, better infrastructure designs to build resilience when extreme weather events occur 	
Wildfire x2	<ul style="list-style-type: none"> AQ concerns High % of population is elderly (more vulnerable to poor AQ) High # of homes/infrastructure in wildland/urban interface - significant issue Transportation concerns Wildfire smoke = largest contributor to GHG emissions in the state End of Dec. wind driven brush fires from CO pushed into suburban areas (burned down hotel near Superior) - risk is moving north affecting property and life. Wildfires in BC Fire agencies in the region are not only fire agencies but also health care professionals <ul style="list-style-type: none"> Impact of heat on human health (esp. those lacking AC, existing respiratory conditions, public health generally) Limited in resources to achieve EMS goals; look to city and county governments to help mitigate fire risks. 2011 largest wildfire in Texas history - 3 years later experience another large fire; perfect conditions for fall fires. Significant loss of life. Road infrastructure is challenging in these events. Inaccessible for fire trucks, etc. Likely the case in the Olympic Pen. as well. Planned developments easily accessible for fire protection. Any property in forest is at great fire risk 	<ul style="list-style-type: none"> Jefferson and Clallam county are looking at collaborative efforts that could be used for forestry management - specific to DNR trust lands Forest Service strategies are developed out of regional level; prioritize wildfire strategies at regional level Collaborate with DNR** Funding available for wildfire protection plans <ul style="list-style-type: none"> Clallam county has one and might be a great resource - completed years ago (may be more of assessment than plan) 2009? Olympic Region Clean Air Agency

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Waste Diversion	<ul style="list-style-type: none"> Removing green waste from landfills Funding mechanisms for transfer facilities don't align with tonnage diversion Removing green material = great opportunity 	
Renewable Energy	<ul style="list-style-type: none"> Resilience and opportunity Microgrid scale (regional/small scale) 	
Sea Level Rise	<ul style="list-style-type: none"> Bulkheads Change beach profile Impact public enjoyment of beaches Permitting process is very complex - need to partner with federal and state agencies to protect structures and achieve no net loss/economic viability Storm surge <ul style="list-style-type: none"> Historic downtown/resources/homes are being threatened. Short term emergency response and cleanup and long term financial implications Training for planning and others on short term emergency response 	<ul style="list-style-type: none"> A regional opportunity is creation of Mitigation Banks for mitigating impacts from shoreline armoring
Ocean Acidification	<ul style="list-style-type: none"> Sentinel site for ocean acidification Impacts on Salmon, ecosystems 	
Energy Efficiency	<ul style="list-style-type: none"> Identified in Local 2020 Heat pumps, LED light bulb replacement Adaptation measures Consider encouraging basements (instead of AC) 	
Electrification	<ul style="list-style-type: none"> EVs Energy electrification (appliances, stoves) Fuel switching Need more reliable electricity in rural community (increase grid reliability) <ul style="list-style-type: none"> Might not be feasible for rural communities 	
Winter flooding	<ul style="list-style-type: none"> Concern for forest 	
Septic Management	<ul style="list-style-type: none"> More extreme weather events will impact septic management as well as transportation, energy etc. 	
Stormwater Management	<ul style="list-style-type: none"> How to manage for future extreme rain events Study and build for capacity Build more resilient systems 	

Group #4 - Mike

Climate Impact	Discussion #1 Notes	Discussion #2 Notes
Coastal flooding and sea level rise	<ul style="list-style-type: none"> King tides flooding in Port Townsend Transportation facility in downtown PA 	<ul style="list-style-type: none"> Anyone living on the shoreline are dealing with the same issues - having a forum to discuss coastal and shoreline issues can be important to learn from each other and help all of us across different communities. Allows the finite revenue to go even further. And get more for it. Understanding the tsunami maps and coordinating on planning and infrastructure. <ul style="list-style-type: none"> Moving critical facilities (e.g., Coast Guard station, transit stations) into less hazard prone areas.

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Wildfires in the watershed	<ul style="list-style-type: none"> Affects water quality; wildfires in the Quilcene Lords (?) Lake - not going to hold enough water until enlarge it. 	<ul style="list-style-type: none"> Coordination of emergency management for these types of disasters and extreme events. <ul style="list-style-type: none"> Way to coordinate community members and households who live on the edges. (Wildland Urban Interface consideration). Also applies to other impacts (e.g., SLR). Clallam County already doing outreach across jurisdictions for emergency planning. <ul style="list-style-type: none"> Already have a regional agreement in place for assistance. For Clallam Jefferson and Kitsap fire departments - have regional agreement that is in place.
Water availability and snowpack and droughts	<ul style="list-style-type: none"> Snowpack and water supply; City of PA experiences that every year - have had multiple years of drought restrictions Pertinent for Cities not snow-fed. Affects ground water. This also relates to fire prevention. 	
Heavy rain events	<ul style="list-style-type: none"> Affect infrastructure - pipes breaking. Streets flooding. Not enough stormwater conveyance capacity as well. 	
Supply chain	<ul style="list-style-type: none"> Proud of industries in PA - and reliant on this to get goods out. Also reliant on shipping in food too. Affects local food resiliency. 	<ul style="list-style-type: none"> Peninsula - island potentially if cut off after an extreme event. Self resilience after these events to survive. <ul style="list-style-type: none"> Increase connection with farmers in the region. Also energy resilient - each community center is its own micro-grid.
Landslides	<ul style="list-style-type: none"> Affects transportation - critical transportation routes are cut off. 	
Shoreline development and land use	<ul style="list-style-type: none"> Current policies allows this to happen - need land use policies to be updated. SMP just updated - however, the SMP was not updated to include climate change. Port concerns about this - have used rip rap. And finding other alternatives for this. 	
Salmon and shellfish and habitat	<ul style="list-style-type: none"> Tribe's concerns about these important cultural resources. Also relates to heavy rains, washouts in the stream. Shoreline development is also bad for this. 	<ul style="list-style-type: none"> City of PA moving from "no net loss" to "net ecological gain". If there are multiple jurisdictions coordinating this, then there can be a potential push at the state legislative level. City replacing culverts. Also affects salmon. "Whole stream salmon" approach.
Droughts and extreme heat		
Non-NOP Wildfires	<ul style="list-style-type: none"> Have wildfires for weeks when big wildfires outside of the North Olympic Peninsula - so far. 	
Riverine Flooding	<ul style="list-style-type: none"> Blod (sp?) Creek - right through Sequim. Lots of infrastructure surrounding this. 	
Transportation - mitigation	<ul style="list-style-type: none"> GHG related to transportation. 	<ul style="list-style-type: none"> PA just passed an ordinance to increase residential building capacity. They put in an EV parking requirement for new development. This is the right direction - from a regional perspective, need to coordinate these types of efforts to ensure there is continuity across the region. <ul style="list-style-type: none"> Parking spaces to include EV capabilities - require the electrical output to be in the parking spaces.

		<ul style="list-style-type: none"> ○ There is a real tourism aspect to EV - can attract people. ○ Implementing an EV network - bicounty or even tricounty. Knowing where the centers are important. This can be a powerful economic driver. ■ Fast charging stations across the Peninsula so visitors can fast charge and make it easier for people to stay and spend more money on the Peninsula. <ul style="list-style-type: none"> ○ Also related to energy resiliency.
Transportation - resiliency to landslides	<ul style="list-style-type: none"> ■ Affected by landslides - transit buses can't reach places like Neah Bay. 	<ul style="list-style-type: none"> ■ This is an area that is particularly critical - have to drive through Jefferson County to get to Clallam County. So if critical infrastructure fails, it's hard to get to Clallam County. ■ Build Back Better funds. ■ City replacing culverts. Also affects salmon. "Whole stream salmon" approach.
Loss of electricity	<ul style="list-style-type: none"> ■ Happens during storms and landslides ■ West side of Clallam County ■ Don't have microgrids to help support this ■ Affects lots of households. 	<ul style="list-style-type: none"> ■ Microgrids - connectivity! Yes! <ul style="list-style-type: none"> ○ Fairchild Airport ○ Connect to fairgrounds and new Clallam County EOC. ■ Full energy resilience analysis of critical infrastructure in Clallam County. <ul style="list-style-type: none"> ○ Will reach out to PA and Sequim and others.
Renewable energy and conservation		
Carbon sequestration		<ul style="list-style-type: none"> ■ This will require - some cities (e.g., PA) will need to partner for this to happen effectively. ■ Continues to be expectation that rural areas in WA will sequester emissions from Cities and other urban centers. ■ Consideration of carbon lifecycle and utilization of forests. <ul style="list-style-type: none"> ○ Captured carbon in timber.
Mental health (public health?)	<ul style="list-style-type: none"> ■ Feelings of hopelessness ■ Poorer communities and POC disproportionately impacted by climate change. See this with coastal tribal communities - in low-lying areas and doing climate action to move buildings to higher ground. <ul style="list-style-type: none"> ○ Low-income communities don't have access to resources to help cope with CC impacts as well. ○ Need resources to help with those in need. ■ Healthcare - also related to things like smoke. ■ Also hospital facilities in hazard prone areas (e.g., on bluffs overlooking PA Bay) 	

Reflections & Climate Change Prioritization

After breakout group discussions, Cascadia staff consolidated the climate impacts indicated in the left most column of the tables above. Mike shared his screen, allowing participants to see the full list of climate impacts identified across breakout groups then offered some time for participants to reflect on the initial list of priorities. Once a final list of climate impacts was agreed upon, Cascadia input these climate priorities into a google survey, and asked participants to vote in their top 5 climate impact priorities (see Figure 1Error! Reference source not found.). Responses from the google survey are presented in two ways below, one in a data chart (Figure 2) and one in a table (Table 3).

Figure 1: Climate prioritization survey

NODC Strategy Meeting #1

If you had to rank your top 5 priorities, what would you choose.

[Sign in to Google](#) to save your progress. [Learn more](#)

Please rank your top 5 priorities

	1 (lowest priority)	2	3	4	5 (highest priority)
Transportation emissions and mitigation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transportation - resiliency and adaptation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy resiliency - loss of electricity, energy conservation and efficiency, energy redundancy, energy independence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 2: Climate impacts prioritization chart

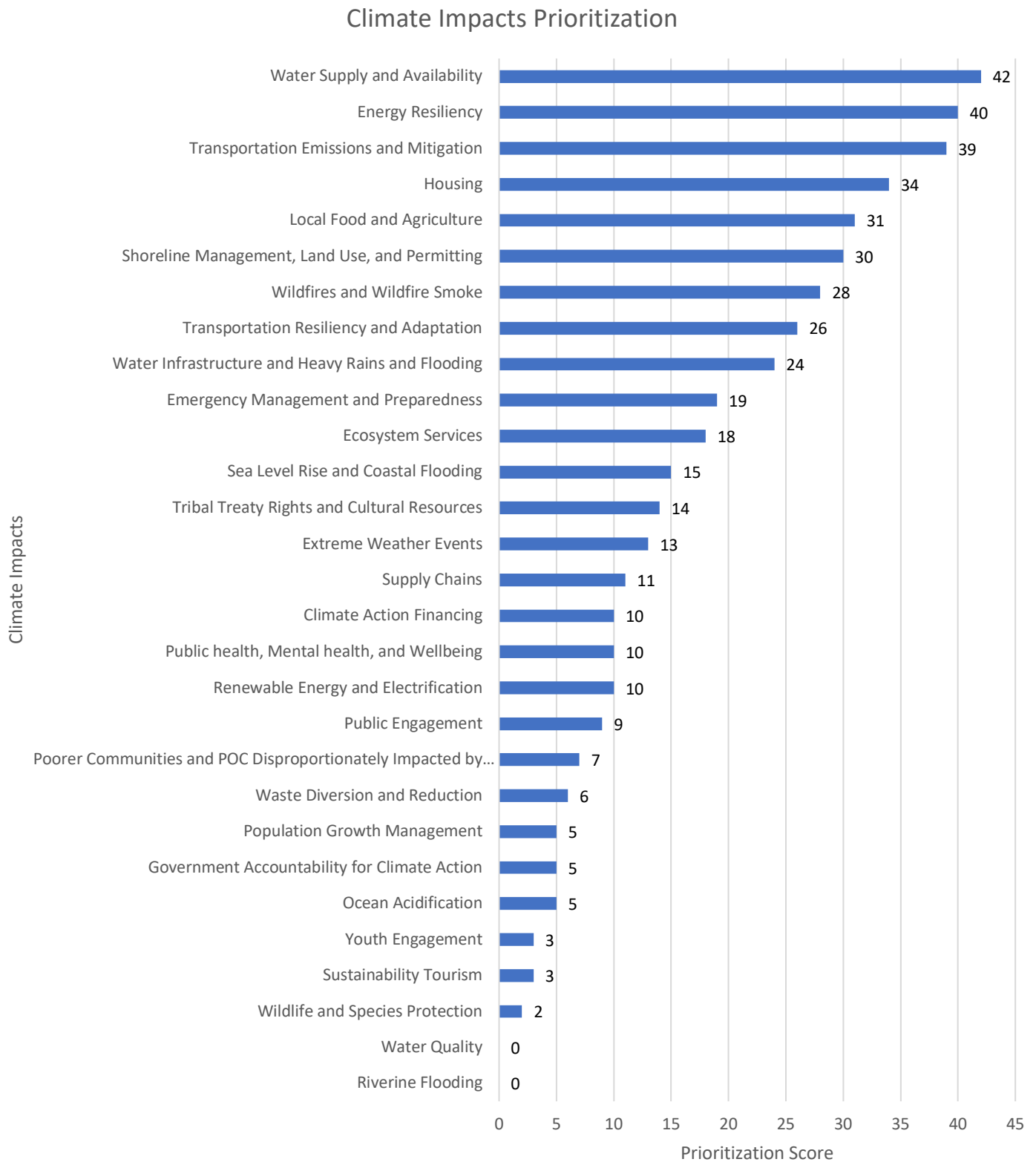


Table 3: Climate impacts prioritization table

Climate Impact	Prioritization Score
Water Supply and Availability – from low snowpack	42
Energy Resiliency - loss of electricity, energy conservation and efficiency, energy redundancy, energy independence	40
Transportation Emissions and Mitigation	39
Housing - affordable housing, climate migration and refugees, homelessness ²	34
Local Food and Agriculture	31
Shoreline Management, Land Use, and Permitting	30
Wildfires and Wildfire Smoke	28
Transportation Resiliency and Adaptation	26
Water Infrastructure and Heavy Rains and Flooding - sewer, stormwater infrastructure	24
Emergency Management and Preparedness	19
Ecosystem Services - habitat quality and connectivity, natural floodplains, carbon sequestration	18
Sea Level Rise and Coastal Flooding	15
Tribal Treaty Rights and Cultural Resources - salmon, shellfish	14
Extreme Weather Events	13
Supply Chains	11
Renewable Energy and Electrification - buildings, vehicles	10
Public health, Mental health, and Wellbeing	10
Climate Action Financing	10
Public Engagement	9
Poorer Communities and POC Disproportionately Impacted by Climate Change	7
Waste Diversion and Reduction	6
Ocean Acidification	5
Government Accountability for Climate Action	5
Population Growth Management	5
Sustainability Tourism	3
Youth Engagement	3
Wildlife and Species Protection – regulatory considerations	2
Riverine Flooding - especially during the winter	0
Water Quality - affected by wildfires, irrigation	0

Post-Voting Discussion

After participants prioritized their top 5 climate impacts, Mike shared the results with the group and led a 20-minute discussion asking participants the following questions:

- Are there any adjustments we want to make after seeing the results?
- What are your reactions to these priorities?

Results from the post voting discussion are detailed below:

What is missing? What considerations do we want to flag?

- One thing to keep in mind for regional prioritization planning: Prior workshops from the 2015 effort focused on three topic areas (critical infrastructure, water supplies, ecosystems) pulled in regional folks in those areas. We did some level of regional planning in those areas. Keep in mind the background on what's been touched on.

² This topic was removed because it has been covered in other plans. Additionally, the evidence base to support climate migration is still being developed.

- Missing: Impact of climate change on habitats and species. There are regulatory considerations with those (protections for certain species).

How did you choose your top priorities?

- Looked at actions with the highest potential impacts – in Port Angeles, it's transportation. So what are the top 5 priorities that would make the largest impact on GHG emissions? What are the large topics that other topics can be mixed under?
- Without water, we're done. This is the biggest reason great civilizations have failed in the past.
- Made choices based on what would be most effectively served by regional coordination. Where we can develop compatible projects across multiple jurisdictions.
- Water is our highest priority. As we look at basic needs it's going to be water, food, shelter. Education is important too, to make sure everyone feels empowered to do their part in mitigating and preparing for climate change.

What are your reactions to these priorities? Are there any adjustments we want to make after seeing the results?

- Surprised by wildfires and wildfire smoke. It's certainly an issue, but when looking at local things we can do, surprised ecosystem services didn't beat this out.
- Response to above: While we haven't experienced a wildfire in our region in decades, as we have a cycle of heat events and summer drought, it comes a lot more likely that we will, so planning for that event is critical.
- When voting, used what we have the power to change as a lens. We can prepare and adapt to Sea Level Rise, but we have little ability to create change. Transportation—we can adapt and make better systems, but we don't control production, marketing, etc. Thinking about how we can act locally to adapt.
- River systems are not regionally spread, so it's not a priority.
- Proactive education and outreach to help people understand why decisions and choices are made. Education will make these strategies understandable to folks and easier to implement.
- Riverine flooding and water quality can fall under the shoreline management/land use/permitting category.

Adjourn + Next Steps

To wrap up the meeting, Mike reviewed the consensus building framework, and future meeting dates and objectives.



Appendix B: Meeting #1 Survey Results

See next page.

Organization	Water supply & availability	Energy resiliency	Transportation emissions and mitigation	Local food and agriculture
Clallam County	4	4	3	4
Rescue	4	4	2	5
City of Port Angeles	4	4	5	5
Tribe	4	4	4	4
Transportation	4	4	4	4
Park	1	1	3	3
member	4	4	4	4
City of Sequim	5	5	5	5
Economic	3	5	2	1
Townsend	4	4	4	4
City of Sequim	4	4	4	4
Jefferson County	3	3	3	5
Tribe	5	5	5	5
City of Sequim	5	5	5	5
NODC	4	5	4	5
S'Klallam Tribe	5	4	4	5
Trust	3	4	4	5
Public Health	3	5	5	5
City of Forks	3	4	2	4
PNNL	4	5	4	4
Townsend	4	4	5	4
Action Committee	3	4	5	5
Recovery Network	5	4	5	4
WSU Extension	4	4	4	4
port of port townsend	5	5	5	5
City of Port Angeles	4	4	5	5
Port of Port Angeles	4	3	3	3
Jefferson Land Trust	5	4	4	5
Tribe	4	4	4	4
Clallam County	4	5	4	5
Council/Fort Worden	1	4	0	5
Public Health	2	1	2	1
Action	4	5	5	4
Action	3	5	5	4
	3.764705882	4.088235294	3.882352941	4.235294118

5	7	11	12	16
4	17	19	13	14
3	7	2	4	2
2	1	0	4	0
1	2	2	0	2
0	0	0	1	0
	34	34	34	34

Shoreline management & land use		Wildfires & wildfire smoke		Transportation resiliency & redundancy		Water infrastructure	
	3		4		3		3
	2		5		4		2
	5		4		5		5
	4		4		4		4
	5		3		5		4
	4		4		4		4
	4		3		4		4
	3		3		5		5
	2		5		1		1
	4		4		4		4
	3		4		4		4
	5		3		3		5
	5		4		5		5
	5		5		3		4
	5		5		5		5
	4		3		5		4
	5		4		4		5
	4		4		5		4
	4		4		4		5
	4		4		5		4
	5		4		5		4
	4		5		4		3
	5		3		5		5
	4		4		4		4
	5		5		5		5
	5		4		5		5
	3		3		4		3
	4		5		2		4
	4		4		4		4
	5		4		4		4
	4		1		4		5
	1		1		2		1
	4		4		5		4
	4		4		4		5
4.029411765		3.823529412		4.088235294		4.029411765	

12	7	13	12
15	18	15	16
4	7	3	3
2	0	2	1
1	2	1	2
0	0	0	0
34	34	34	34

If you selected options 0 through 2 for any of the priorities listed above, what specific issues do you have with those priorities?

Those I ranked as 3 either already have sufficient focus and/or funding.

mitigation of our carbon emissions. Adaptation done right will produce mitigation as a byproduct.

most relevant aspects of this topic seem to be related to land use and permitting in the wildland / urban interface,

None, they are just not high priorities for my particular agency--national park

warn the populace. We should take steps to be ready to put down local wildfires.

political capital and energy in my mind.

Just prioritization- important issues but others higher priority

emissions and mitigation. My reasoning is that I don't think this group can do anything to meaningfully impact these

Additional comments

Thanks!

of these without direction from Tribal leadership. Thank you for advancing this important work.
energy or else have little impact on the issues at hand. Resilient transportation infrastructure underpins several

The framework was a bit confusing for me.

intent of the priority.

education and engagement: the basics of what people need to know and then specifics on (a) what individuals can
very different world. Intentional communities (village based), off grid, with central communal alternative energy

above.

discussed and had regional planning done in specific workshops where the water system and stormwater system

full impact considerations, along with investigating who and what is behind various marketing, politics, and

fives. None of them are problematic for planning and consideration; but some have more urgency in my opinion.

above (toucan@olypen.com). I do not use the gmail address it inserted. #1 Water supply and availability are also



Appendix C: Meeting #2 Summary

See next page.

NODC Local and Regional Climate Planning Regional Meeting #2

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Introduction

This document summarizes participation, activities, and feedback from the North Olympic Resource Conservation and Development Council's (NODC) Regional Meeting #2.

Meeting Objectives

- Review and confirm **key climate change priorities** for the North Olympic Peninsula
- Begin to identify **key coordination and capacity needs** for governments jurisdictions and **associated strategies**

Workshop Overview

Date & Time	Friday, April 1st, 2022, 9:00am-12:00pm
Location	Online – Zoom Meeting
# of Registrants	42
# of Participants	34

Participant's List:

Project team is **bolded** below.

- | | | |
|----------------------|--------------------|----------------|
| ▪ Karen Affeld | ▪ Mike Chang | ▪ Brent Butler |
| ▪ Keiko Betcher | ▪ Aislinn Diamanti | ▪ Carol Hasse |
| ▪ Kristina Zeynalova | ▪ Ann Soule | ▪ Cindy Jayne |
| ▪ Mary Ann Rozance | ▪ Amy Nash | ▪ Clea Rome |
| ▪ Megan Lee | ▪ Ben Braudrick | ▪ Craig Nolte |

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- Ed Bowlby
- Elise Rasmussen
- George Yount
- Haley Harguth
- Haley Kennard
- Janis Burger
- Joe Holtrop
- Judy Surber
- Kara Cardinal
- Kevin Gallacci
- Kim Williams
- Lara Aston
- LaTrisha Suggs
- Laura Tucker
- Lowell Rathbun
- Owen Rowe
- Pam Petranek
- Paul McCollum
- Ray Colby
- Robert Knapp
- Rod Fleck
- Ryan Erhart
- Sissi Bruch
- Steve King
- Tom Sanford

Workshop Agenda

Time	Agenda Item
9:00 – 9:05am <i>5 mins</i>	Participants Join
9:05 – 9:10am <i>5 mins</i>	Welcome + Meeting Objectives
9:10 – 9:15am <i>5 mins</i>	Introductions
9:15 – 9:30am <i>15 mins</i>	Overview of Meeting #1 and Outcomes
9:30 – 10am <i>30 mins</i>	Discussion of Regional Climate Priorities
10 – 10:10am <i>10 mins</i>	Overview of Breakout Rooms Discussion
10:10 – 10:40am <i>30 mins</i>	Breakout Groups #1 <ul style="list-style-type: none"> • Breakout room topics: <ul style="list-style-type: none"> ○ Water Supply and Availability ○ Transportation Emissions and Mitigation ○ Energy Resiliency, Redundancy, and Independence ○ Wildfires and Wildfire Smoke
10:40 – 10:50am <i>10 mins</i>	10 Min Break
10:50 – 11:25am <i>35 mins</i>	Breakout Groups #2 <ul style="list-style-type: none"> • Breakout room topics: <ul style="list-style-type: none"> ○ Transportation Resiliency and Adaptation ○ Local Food and Agriculture ○ Shoreline Management and Planning ○ Water infrastructure – Sewer and Stormwater Systems
11:25 – 11:57am <i>32 mins</i>	Reflections on Key Strategies and Coordination Needs
11:57 – 12:00pm <i>3 mins</i>	Adjourn + Next Steps

Overview of Meeting #1 Key Outcomes

Mike briefly went over the key outcomes of meeting #1, where attendees participated in an exercise to rank and prioritize an initial list of 30+ regional priorities. The following eight emerged as top climate change priorities:

- Water Supply and Availability
- Energy Resiliency
- Transportation Emissions and Mitigation
- Transportation Resiliency and Redundancy
- Local Food and Agriculture
- Shoreline Management and Land Use
- Wildfires and Wildfire Smoke
- Water Infrastructure

Consensus Survey Results

Following meeting #1, the project team sent out survey to all meeting participants to get consensus to move forward with the eight climate change priority areas identified during the meeting. The survey allowed for a range of consensus options, with 0 as “No way, I will block this” to 5 as “I will this, I will champion this.” This variation in consensus options allows people to express concerns with or desire to amend aspects of these priorities. A total of 34 respondents provided input to the survey, with the following 22 organizations represented:

- | | |
|--------------------------------------|---|
| • Clallam County (2) | • Jefferson County Climate Action Committee |
| • East Jefferson Fire & Rescue | • Strait ERN |
| • City of Port Angeles (2) | • WSU Extension |
| • Jamestown S’Klallam Tribe (3) | • Port of Port Townsend |
| • PRTPO | • Jefferson Land Trust |
| • Olympic National Park | • Olympic Climate Action (2) |
| • Port Gamble S’Klallam Tribe | • City of Sequim (4) |
| • North Olympic Land Trust | • Port of Port Angeles (2) |
| • Jefferson County Public Health (2) | • City of Port Townsend (3) |
| • City of Forks | • Jefferson County |
| • PNNL | • NODC |

The heat map below shows that overall there was broad consensus across all priority areas; however, concerns ranging from major and minor were reported within each priority area.

Meeting #2 Outcomes

Discussion of Regional Climate Priorities

Mike walked through each priority area and highlighted the breakdown scores from the consensus survey and average score, the issues and concerns that need to be addressed to reach consensus and pathways to address and mitigate those concerns. He then asked participants for verbal confirmation of consensus to move forward with priority area. Key outcomes are listed below.

- **Consensus to move forward was reached for seven of the eight priority areas.**
- However, participants flagged a potential need for **Transportation Emissions & Mitigation to be integrated with Transportation Resiliency, Redundancy, & Adaptation**, which would result in one overarching transportation priority area.

Consensus discussions are detailed in the tables below by priority area.

Water Supply and Availability

Score breakdown	Average score	Issues to address to reach consensus	How to address issues	Verbal consensus to move forward
5: 7 4: 17 3: 7 2: 1 1: 2 0: 0	3.735	<ul style="list-style-type: none">• Not a high priority for organization.• Group cannot meaningfully address this issue.• Nothing we can do about snowpack without global emissions reductions.	<ul style="list-style-type: none">• Focus on strategies that require multi-jurisdictional coordination.• De-prioritize strategies that localities or the State need to lead or intervene on.• Focus on water usage adaptation strategies.	Yes
Discussion and chat comments				
<ul style="list-style-type: none">• Need to manage water resources much better.• While we can't impact snowpack, we can impact water usage and ways to move water safely (flooding, storm drains, etc.), and keep our multitude of septic systems working properly for health reasons.• Comments confuse me - I thought this process was about preparing for impacts. We need to cooperate at multiple levels to address and prepare! Every level can address this. It seems like every individual can prepare for having less water in the future or helping to restore ecosystem to be able to handle this water.				

- Totally understand this for those organizations that have water systems dependent upon snowpack. Ours here in Forks is more dependent upon rainfall in the high uplands as they relate to a deep water well. Supportive of the strategy.
- Water rights, water reserves, and emergency use agreements are things that we can work interjurisdictionally.
- Water conservation is key and all jurisdictions can work on this, from individuals to governments.
- Makah Tribe's planning processes have highlighted water as key climate impact people are seeing. Rain dominant systems have high seasonal fluctuations including water shortage in the summer. Will advocate for continuing to keep water supply and availability on here.

Energy Resiliency, Redundancy, and Independence

Score Breakdown	Average score	Issues to address to reach consensus	How to address issues	Verbal consensus to move forward
5: 11 4: 19 3: 2 2: 0 1: 2 0: 0	4.088	<ul style="list-style-type: none"> • Not a high priority for organization • Doesn't call out health considerations 	<ul style="list-style-type: none"> • Ensure that the final strategies also acknowledge the health considerations and benefits that can result from energy resiliency. 	Yes

Discussion and chat comments

- Again, we (Makah Tribe) are new to this process, but would be supportive of including health impacts. One of the things that has been highlighted in our internal planning process is that when the power goes out many elders and other vulnerable populations are dependent on wood stoves, which have negative health outcomes and for local air quality.
- Distributed energy sources will be very useful in the event of short-term emergencies.
- Many people depend on electricity to operate medical equipment at home. Additionally, most of the strategies mentioned for dealing with climate change (heat pumps, air filters) are dependent on electricity.
- From a GHG reduction point of view, efficiency and conservation are so important and less expensive.

Transportation Resiliency and Adaptation

Score breakdown	Average score	Issues to address to reach consensus	How to address issues	Verbal consensus to move forward
5: 13 4: 15 3: 3 2: 2 1: 1 0: 0	4.088	<ul style="list-style-type: none"> This needs to be done at the state level mostly (WSDOT), particularly since state routes connect a lot of the North Olympic Peninsula. Other issues are higher priority. 	<ul style="list-style-type: none"> Prioritize strategies that focus on multi-jurisdictional coordination (e.g., public transit routes, response options). Acknowledge that various jurisdictions will have different perspectives, considering transportation criticality. 	Yes, but may to integrate into the transportation emissions and mitigation priority area

Discussion and chat comments

- Ties a lot with some of the EOC work other folks are involved with. While there are many places with one way in and out, there are a series of networked mainline logging roads that have been considered and looked at for use. There are problems with them, but there are some things that could be done to identify those as part of the responsive network that we would need.
- Alternative Routes are mostly state routes and need WSDOT/NFS assistance. We need to act together at the state legislature to have our area prioritized.
 - Actually, out here, they are private/DNR mainlines...but the engagement of the State is critical.
- We do have another planning process looking at natural disaster resiliency and that particular topic of potential bypass routes and whether we can find infrastructure money to strengthen those is one of the topics being looked at. We'll make sure you're invited to that series of workshops.
- Seems like there are two different time scales: emergency response vs. long-term land use
 - Make note of two different time scales: emergency response vs long-term land use.
- Looking at OFM projected population levels in eastern Clallam and Jefferson County due to things including climate refuges, this work will be key for resiliency.
- Boats are mode of transportation as well. Thinking about regional transportation resiliency, also acknowledge that.

Transportation Emissions and Mitigation

Score breakdown	Average score	Issues to address to reach consensus	Issues to address to reach consensus	Issues to address to reach consensus
5: 12 4: 13 3: 4 2: 4 1: 0 0: 1	3.853	<ul style="list-style-type: none"> Need to focus on adaptation options, rather than mitigation, since overall the region is responsible for small portion of emissions. Transportation should be mandated at the state level. Strategies related to additional fees are a non-starter since region is reliant on vehicles. Need to acknowledge health considerations of transportation-related emissions. 	<ul style="list-style-type: none"> Focus on regional policies rather than policies that require State intervention. Prioritize strategies that have adaptation & mitigation co-benefits. Acknowledge health benefits. De-prioritize strategies that include fees or taxes. 	No. Proposal to combine with transportation resiliency priority area.

Discussion and chat comments

- Access to low/no-emissions transportation is an equity issue.
 - I think we need to have a more detailed discussion on this. Owen Rowe - I share your comments and concerns. More so when we remind ourselves of the economic disparities within the two-county region. For example, the detailed review of this NOAA report is worth looking at: <https://www.pmel.noaa.gov/co2/story/WA+State+Emissions>
- As the 0 vote, I want to be clear that the other Transportation Adaptation and Resiliency topic is worth our time and will have knock-on impacts on emissions. An emissions focus for these bodies seems like a waste of our resources and time in the scope of who participates in this group and what we are charged with in this process.
- This is a land use issue at the local level.
- Given that transportation is the largest chunk of our GHG emissions, seems like we need to try to address some mitigation.
- More on equity issues: access to vehicles and being able to buy vehicles. Distributed rural population, we can't just say use public transit or take advantage of walkable community.
 - To add on equity: when you look at census tracts west of Lake Crescent, you have low population whose median income is 2/3 of state, poverty level of 22-25%, unemployment level between 10-12%. If you have EVs as incentives, that may help within one economic sector, but mandating things is a challenge that needs to be given some thought with respect to members of community.
- We can be a way-shower for other rural areas, and urban ones too.

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- Many communities can truthfully say that their emissions are a small portion of the overall problem. If we all do that, then emissions will never be reduced.
- Regional transportation planning can have both mitigation and adaptation benefits, and as others noted, has equity benefits, and transportation is the biggest source of our emissions.
- Seems like consistent educational messages are needed.
- I would love to see additional information on the GHG emissions. I also think everyone can do something here but mandating things and making assumptions about very expensive transportation mitigation approaches or similar mandates is the reason I believe this needs some additional work and refinement.
- Having broadband available can also reduce the need for VMT.
- If those are the areas of focus, how is this different from the other Transportation topic on our list?
- Focus on regional policies, specifically regional transportation planning. Also prioritizing strategies that have adaptation and mitigation co-benefits. Rural and economic considerations: not even considering things like mandates, fees, taxes. Maybe another path forward is combining this transportation (emissions) with the other one focusing on resiliency and adaptation. Rather than delineating into two priority areas for transportation, there's a proposal to move forward with combining them into a single transportation priority area. Thoughts, concerns?
 - I've often seen transportation strategies that focus on development of nodes where active transportation (non-motorized vehicle transportation) could be advanced, e.g., core cities such as Sequim, Port Townsend, and potentially the Hadlock UGA. Often under the rubric of complete streets, this has focused on creating alternatives.
 - I believe I would need a bit more information - I think it has some merit warranting further discussion.
 - Concerned about this because approaches are very different. If you're looking at building resilient road systems, that won't do anything for greenhouse gas emissions. They both deal with transportation but they're distinctly different.
 - I agree, distinguishing the differences conveys the importance of both.
 - What if roads incorporated safer cycle lanes that might inspire more cyclist in areas.
- We acknowledge there are concerns around this focus area. We're going to send another consensus survey for goals, objectives, and strategies after this meeting. As we move forward into third regional meeting, there will be priority areas, strategies that will be locked off. That doesn't mean there won't be other efforts, but that will be the case for this body. So can we acknowledge there is disagreement now, but we will work that out between third meeting.
 - Can we capture equity? Bike lanes and Teslas are not equally accessible across the region.
 - Make sure to highlight equity issues and considerations.
 - I agree that mandates are problematic but there are many things we can do that don't involve mandates.
 - What can THIS GROUP do about emissions when individual jurisdictions are working on emissions as well? What would coordination on that improve for the residents of our region?
 - If you look at survey results, 5 and 4 is positive and quite a bit of a priority. You must worry about the bias of a couple of negative comments vs the majority. This is a separate thing, and we should go forward.

- Is the other transportation priority involving flooding, location of roads, etc.?

Local Food and Agriculture

Score breakdown	Average score	Issues to address now to reach consensus	How to address issues	Verbal consensus to move forward
5: 16 4: 14 3: 2 2: 0 1: 2 0: 0	4.235	<ul style="list-style-type: none"> • Don't champion anything that requires huge subsidies. • Acknowledge health benefits of this priority. • Include marine foods as well. 	<ul style="list-style-type: none"> • Ensure that the final strategies acknowledge marine foods and health benefits. • Focus on strategies that stray away from subsidy reliance and focus on local stockpiles and food security & resiliency. 	Yes

Discussion and chat comments

General thumbs up and consensus

Shoreline Management, Land Use, and Planning

Score breakdown	Average score	Issues to address now to reach consensus	How to address issues	Verbal consensus to move forward
5: 12 4: 15 3: 4 2: 2 1: 1 0: 0	4.029	<ul style="list-style-type: none"> • Focus on adaptation, not mitigation. • Focus on health benefits that can result from this. 	<ul style="list-style-type: none"> • Ensure that the final strategies integrate and prioritize adaptation & mitigation co-benefits. • Acknowledge the health benefits that can result from these strategies. 	Yes

Discussion and chat comments

- Health Benefits, is this human health or environmental health?

- The human health benefit and environmental health benefits are related. For example, shoreline management and land use can affect impervious surfaces, critical facilities, other shoreline uses such as recreation, harvesting. All connected. We also recognize we have some health experts if anyone else wants to jump in.

Wildfires and Wildfire Smoke

Score breakdown	Average score	Issues to address now to reach consensus	How to address issues	Verbal consensus to move forward
5: 7 4: 18 3: 7 2: 0 1: 2 0: 0	3.824	<ul style="list-style-type: none"> • Need to acknowledge the health considerations of this. • This is outside of the purview of the region. 	<ul style="list-style-type: none"> • Ensure that the final strategies acknowledge the health benefits that can result from these strategies. • Prioritize strategies that respond to spillover wildfire smoke while also considering strategies that minimize wildfire risk on the Peninsula. 	Yes

Discussion and chat comments

- Fire resilience for structures should be part of this (e.g., Firewise...).
- Preparing to take care of the people in our communities in the face of this impact is something we all can do better with.
- As on the state level, I believe that we should not divert funds reserved for fighting wildfires to other purposes. We should have adequate resources for firefighting.
 - I am supportive of looking at means to aid in the impact of this, but I do think that this statement would be a logical outcome of adopting this issue.
- Facilities like "warming centers" for clean air.
 - I agree, a focus on providing locations for people to have access to clean air during a smoke event is an equity issue.
- As our summer droughts continue, I think we will be seeing more of our community losing their homes to wildfires. Smoky days are not the only issue.
- Having seen so much of wildfire fighting budget go toward structural protection, is there an incentive for Firewise efforts to spread out limited firefighting funding?
- Earlier this year, DNR updated wildland-urban interface maps, it's a rapidly expanding type of land use.

Water Infrastructure – Sewer and Stormwater Systems

Score breakdown	Average score	Issues to address now to reach consensus	How to address issues	Verbal consensus to move forward
5: 12 4: 16 3: 3 2: 1 1: 2 0: 0	4.029	<ul style="list-style-type: none"> Address health implications of this. Not worth our focus our time regionally – most of this needs to be addressed locally. 	<ul style="list-style-type: none"> Focus on what multi-jurisdictional coordination can do and de-prioritize strategies that only require a single jurisdiction. Acknowledge health implications of addressing this topic. Propose to potentially integrate this with another priority area – maybe shoreline management or water supply/availability. 	Yes, but may consider integrating into another water-focused priority area.
Discussion and chat comments				
<ul style="list-style-type: none"> The costs for moving areas from septic systems to managed wastewater treatment approaches, especially near waterways, is a staggering price. I think a regional, multi-jurisdictional discussion on just that is warranted and deserving of consideration <ul style="list-style-type: none"> This may be one of the costliest impacts on infrastructure as a result of climate change for Port Townsend. The disposal of the biosolids coming from sewers is a health concern. Individual septic systems are at high risk for failing with high rainfall events. 				

Breakout Group Discussions

Breakout room facilitators led two discussion sessions, separated by a 10-minute break. Participants voluntarily opted into one of the following four breakout rooms:

Breakout Groups #1	
Topic	Facilitator
Water Supply and Availability	Mike
Transportation Emissions and Mitigation	Mary Ann
Energy Resiliency, Redundancy, and Independence	Keiko & Megan
Wildfires and Wildfire Smoke	Kristina
Breakout Groups #2	
Topic	Facilitator
Transportation Resiliency and Adaptation	Keiko & Megan
Local Food and Agriculture	Mary Ann
Shoreline Management and Planning	Mike
Water Infrastructure – Sewer and Stormwater Systems	Kristina

Facilitators and breakout room participants worked through each regional priority area to capture the following information:

- Clearly define **goals and potential objectives** of the related climate topic.
- Identify **challenges and needs** for jurisdictions to address these regional priorities.
- Identify **potential strategies** to address regional priorities.
- Identify **case studies** or **implementation options** (e.g., funding options) to support these strategies.

Discussions from each breakout room are captured in the tables below by priority area.

Water Supply and Availability

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Ensure there is sufficient capacity to capture and store rain/snow via built and natural systems.	Promote aquifer and reservoir recharge via strategic investments in habitat restoration and conservation.	<ul style="list-style-type: none"> Heavier rains mean increased runoff, meaning less time for water to soak and recharge aquifers. Issue of scale – especially for aquifers and smaller reservoirs. Aquifers are inherently local, so if this is something we want to lean into on a regional basis, need to think about how to prioritize which aquifers. Might be limited by water rights. 	<ul style="list-style-type: none"> Increased forest cover and wetlands can help facilitate water intercept to achieve recharge objectives. Capture and infiltrate stormwater runoff into the ground instead of sewers. 	Nine (9) facilities built in the Dungeness basin has increased capacity to infiltrate. Exploring the potential to do more with this.
	Continue to study how less snowpack in the Olympics will affect regional water supply.	There is a timing challenge re: water release and flows. Snowpack melting earlier + more winter rain events shifting seasonal timing of participation.	Water systems are inherently connected, so while some regions are rain-dominant, this can still affect those regions.	
	Increase capacity to capture and store rainfall.	This is inherently at a local scale.	Invest in large rain cisterns, especially for rain-dominant basins.	
Promote water usage conservation and efficiency to prepare for future water shortages and droughts.	Implement water reuse systems.	<ul style="list-style-type: none"> Main barrier for doing this is water treatment capacity and technology. These can be very costly too. 		Southwest region has some examples.
	Promote water conservation behavior change measures.	Need to define the unit of analysis for this – households? Industries? Watersheds?	<ul style="list-style-type: none"> Promote household behavior change (e.g., fixing leaky faucets and changing water usage habits). Utilize local ordinances and declarations to promote water conservation. Utilize education and public outreach activities to address water supply and conservation usages. 	Dungeness basin already water short.

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	Ensure enough potable water.	<ul style="list-style-type: none"> There is a timing challenge re: water release and flows. Snowpack melting earlier + more winter rain events shifting seasonal timing of participation. Need to ensure that there is an alignment of water supply and demand. Need to accommodate future projections/influx of climate migrants and refugees. 	Ensure accessible water supply – particularly for those more vulnerable to water supply shortages (e.g., homeless, transient populations, low-income communities).	
	Ensure adequate water for farming and agriculture.	<ul style="list-style-type: none"> Irrigation is largest consumptive use of water – especially for agriculture purposes. There is a timing challenge re: water release and flows. Snowpack melting earlier + more winter rain events shifting seasonal timing of participation. Need to ensure that there is an alignment of water supply and demand. 	Irrigation largely limited to Dungeness basin and lots of work already done within the watershed to improve irrigation efficiency.	
Ensure that there is good water quality.	Continue to invest and collect water quality data (e.g., pollutants, temperature).	Erosion could be an issue, which increased sediment in the water.	List pollution sources and identify pollution sources.	NWIFC has State of Watershed reports.
	Address nitrate pollution.	Nitrate pollution in groundwater and marine waters due to climate change and runoff. Could worsen if influx of climate migrants and refugees.		
	Ensure septic systems aren't flooded, presenting water quality issues.	Usually in low-lying areas, so subject to worse flooding.	Allow the Growth Management Act allow for sewer connections with modified rules when environmentally responsible, without authorizing density increases.	

Energy Resiliency, Redundancy, and Independence

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Improve and bolster resiliency of existing energy infrastructure.	Work with BPA and local PUDs to understand current limits and issues related to energy infrastructure.		Arrange workshops between PUDs, BPA, Department of Commerce, and local governments to understand what is being done, identify local vulnerabilities (e.g., energy supply), and identify local options (e.g., energy demand reduction, increased storage).	Improve and bolster resiliency of existing energy infrastructure.
	Coordinate a regional renewable energy plan that prioritizes local generation, storage, and distribution. Increase local means of renewable energy by 10% within 10 years.	<ul style="list-style-type: none"> • Unsure what the current percentage comes from renewable energy. • Currently, heavy reliance on hydropower via BPA. While “renewable”, unsure if this is the route that the region wants to continue. 	<ul style="list-style-type: none"> • Conduct an audit/review of energy purchases and recommend options and recommendations. • Encourage micro-turbine generation. • Incentive community solar installations. 	
	Catalogue current opportunities and incentives to improve energy efficiency.			
	Prioritize the energy resiliency of critical facilities (e.g., hospitals, fire stations, community centers).		Place energy and/or battery storage capacity at critical facilities. They can act as electricity microgrids.	
	Keep energy purchases local and more independent.			
Increase capacity of local jurisdictions to participate in long-term energy resiliency planning.	Facilitate regional capacity to support local governments in planning for energy resiliency.	<ul style="list-style-type: none"> • Most governmental bodies don’t have an energy person/expert on staff, so 	<ul style="list-style-type: none"> • Arrange workshops between PUDs, BPA, Department of Commerce, and local governments to understand what is being done, identify 	Increase capacity of local jurisdictions to participate in long-term energy resiliency planning.

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		<p>there is limited capacity to engage with these discussions.</p> <ul style="list-style-type: none"> • Energy-related working groups may not be thinking of climate change projections. • Unsure what is currently being done by other organizations. 	<p>local vulnerabilities (e.g., energy supply), and identify local options (e.g., energy demand reduction, increased storage).</p> <ul style="list-style-type: none"> • Identify case studies and examples of lessons learned from previous efforts. 	
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Transportation Resiliency and Adaptation

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Increase the response capacity of the region if transportation routes are disrupted.	Identify and/or increase redundancy of transportation corridors.	Currently there's network of roads by state and federal agencies, but people may not know which ones are functional.	<ul style="list-style-type: none"> • May have other travel options that aren't reliant on road vehicles (e.g., ferries/boats). • Identify network of roads that can be alternatives if a main route is disrupted 	
	Identify network of roads that can be alternatives if a main route is disrupted.		<ul style="list-style-type: none"> • Utilize existing channels (e.g., WSDOT twitter, Facebook groups, text message alert system, AM Radio) to push out messages. • Identify new ways to communicate during extreme events/disasters, especially for more remote communities. 	
	Increase communication channels to drivers and transit users.			
Fortify vulnerable transit routes and corridors.	Identify vulnerable routes and fortify those routes.	<ul style="list-style-type: none"> • Original NODC climate report identified some vulnerable roads due to climate change. • Not going to stop storm events or climate change, so need to find troubled spots. 	<ul style="list-style-type: none"> • Identify, prioritize, and fund projects that fortify and increase robustness of transportation routes (e.g., floodplains next to roads, landslide barriers). 	
Increase inter-community transportation accessibility.	Increase broadband to minimize need for inter-regional transit.	Many communities need to travel for things like work, doctor's appointments, etc. If have	Increase access to more nuanced health resources (virtual visits, health-specific transportation options).	

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		broadband, can reduce some of these needs.		
	Promote more public transit options between communities.	<ul style="list-style-type: none"> Some current transit stops are hard to access for residents. For example, in western Port Angeles, some stops are near steep roads or have no shoulder, which prevent people from accessing these transit stops. For Jamestown S’Kallam Tribe, a bunch of people are traveling in/out to/from the same place. However, job shifts may affect timing during the day (e.g., some people work nights). Public transit options may not work for isolated communities (e.g., Neah Bay). Can focus on amplifying health benefits and outcomes (e.g., service access, air quality near highways). 	<ul style="list-style-type: none"> Focus on a transit system that prioritizes transportation of people to health services. Institute rideshare or commuting options, so people are less reliant on single-occupancy cars for commuting. Invest in creating transport hubs across the region. Use a public education campaign to increase adoption of public transit options. (Re)-invest in a regional rail system. Survey the public about transit modes and access to get a baseline understanding. 	<ul style="list-style-type: none"> WSDOT has new funding options for EV rideshare. Forth Mobility is providing technical assistance to apply for this funding. Federal infrastructure bill also focuses on public transit investments. Forks has a good transit system with a mainline into PA. Shifting to a call-on-demand local system in Forks. <p>PA used to have trolley system.</p>
	Identify innovative ways to reduce need for transportation.	When 112 landslides happened, people commuting to Clallam Bay were affected. Got permission to bring camper vans so don’t need to commute back and forth around landslides.		See Clallam Bay example.
Increase intra-community transportation accessibility.	Minimize sprawl within communities to increase walkability of communities.	Currently within communities, most people are reliant on cars. Even if local routes are damaged, this can promote local resilience within communities.	<ul style="list-style-type: none"> This will be a long-term strategy. Amend local land-use policies that prioritize 10-minute communities. Develop the urban growth area (UGA) and reduce the sprawl and density outside the UGA. 	Makah Tribe is thinking of food sovereignty to rely less on external transit routes that import non-cultural foods.
	Promote micro-transit options within communities.	Some current transit stops are hard to access for residents. For example, in western Port Angeles, some stops are near steep roads or	Focus on last mile options to get people from their homes to transit stops.	

		have no shoulder, which prevent people from accessing these transit stops.		
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Transportation Emissions and Mitigation

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Reduce regional transportation emissions in an equitable way.	Evaluate vehicle miles traveled (VMT) across the region.	VMT and EVs are decoupled, especially as EVs are increasingly adopted.		See Port Angeles tracking system.
	Evaluate and track the number of EVs purchased across the region.			
	Increase alternative modes of transportation routes. (See: Increase inter-community transportation accessibility goal in Transportation Resiliency & Adaptation).		Adaptation co-benefits.	
	Increase public transit options using alternative fuels (i.e., electric, hydrogen).			
	Increase EV charging capacity and availability across the region.			
	Modify land use policies to reduce need for transportation (See: Increase intra-community transportation accessibility goal in Transportation Resiliency & Adaptation).		Adaptation co-benefits.	
Decrease emissions from tourism.	Encourage tourists to utilize public transit options.	This will likely be a long-term solution, after public transit options are expanded.	Decrease emissions from tourism.	
	Reduce emissions from airline travel to/from the North Olympic Peninsula.			

Local Food and Agriculture

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Promote resiliency of regional agriculture sector to climate change to ensure economic viability in the long-term.	Diversify agricultural infrastructure (e.g., greenhouses).	Climate projections predict more frost and changes in growing seasons and also increased pests. Infrastructure investments could help prepare for some of these impacts.		Build off regional work done by NODC, WSU Extension, Land Trusts, and Conservation Districts.
	Promote organic farming to minimize runoff pollution.			
	Encourage local or household gardens to reduce reliance on food imports.			
	Work with farmers to increase self-sufficiency to store crops and products.	Farmers currently dependent on transportation and mass food storage.		
	Conserve farmland and promote sustainable agricultural practices.		Utilize Comprehensive Plans to implement.	
	Improve irrigation efficiency (see: Promote water usage conservation and efficiency to prepare for future water shortages and droughts goal in Water Supply and Availability).			
Ensure resiliency of regional marine food systems to future climate change.	Utilize sustainable marine food harvesting methods.		Work with regional Tribes on fisheries-related strategies.	
	Focus on low environmental impact but high protein food production, such as fish farming or hatchery operations.		Work with regional Tribes on fisheries-related strategies.	Regional hatcheries already exist.
	Identify options for species and new marine industries (e.g., new fisheries, aquaculture, etc.) that could be viable under future climate change scenarios.			
	Utilize sustainable marine food harvesting methods.		Work with regional Tribes on fisheries-related strategies.	

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Promote economic and market viability of all local food systems.	Support direct markets between local food producers and local users/vendors.	<ul style="list-style-type: none"> There are already projects and programs and organizations that are involved in regional food security and vitality. Is there a better way to review and catalogue current efforts and identify where gaps may be? Potential benefit: promoting more local growing and consumption can eliminate GHG emissions related to supply chains and imports. 	<ul style="list-style-type: none"> Encourage local contracting amendments and preferences (e.g., between restaurants or farmers markets with local producers). Set up local food contracts between producers and consumers, where consumers can 'buy' a contract for farmers/fishers, guaranteeing them revenue for a year. 	Local contracts between producers and consumers were done in Washington County, OR.
	Improve technology to ensure fishing fleets can be more sustainable and conserve fuel.		Work with regional Tribes on fisheries-related strategies.	
	Increase food storage capacity for local foods.	Local café and co-ops need storage for basics. This can allow for more forward buyings or purchasing staples to prepare for shortages and/or price changes.		The co-op has been doing some forward buying, purchasing staples so that they can prepare for shortages and/or price changes.
	Support local farms to access and/or subsidize lands.	Currently, large farms have more access to federal subsidies than smaller farms.		

Shoreline Management, Land Use, and Planning

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Find alternatives to hard armoring on shorelines.	Show examples of communities that have found alternative armoring options that promote coastal resiliency.			
Move facilities – especially critical facilities – out of vulnerable areas.	Continue to conduct regional SLR vulnerability assessments.	Increased storm events and SLR will affect shoreline infrastructure.	Identify areas that are currently in the coastal flood zone and how it will expand due to climate change across the next 100-years.	City of Port Townsend is currently doing this via their technical assistance.
	Work with local businesses and chambers of commerce to prepare for future SLR and coastal flooding.		Communicate results from the SLR vulnerability assessments.	

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	Protect wastewater treatment systems and sewer lift stations along coastline.			
Explore blue carbon and carbon sequestration opportunities.	Encourage blue carbon projects – such as kelp beds – to serve as carbon sinks and mitigate other impacts (e.g., ocean acidification).		OCNMS and Tribes can be a good partner for this. Might also have examples already.	

Wildfires and Wildfire Smoke

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Reduce wildfire risk in forests and the wildland-urban interface.	Utilize programs such as FireWise to promote behaviors that reduce wildfire risk.		<ul style="list-style-type: none"> Incentive and encourage behaviors, such as increasing defensible space. Educate builders about practices around fire preventing and protection structures (e.g., building materials, filtration systems). 	
	Partner with federal and state agencies to improve forest management strategies that reduce wildfire risk.		Potentially partner with regional Tribes on this objective.	
Increase capacity and understanding to respond to wildfires.	Promote behaviors that prepare households and businesses for wildfire response.		Incentive or educate households and businesses about collecting rainwater for fire protection.	
	Increase firefighting capacity to respond to projected increased in wildfire risk.		<ul style="list-style-type: none"> Enhance water delivery systems for fighting fires. Ensure accessibility for firefighting equipment can be accessed via roads. 	
	Update or create wildfire prevention and preparedness plans that account for climate change.		<ul style="list-style-type: none"> Identify evacuation protocols and routes. <p>Update Coordinated Water Plan with a focus on water needs for wildfire response.</p>	

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Increase capacity to respond to wildfire smoke events.	Provide and distribute air filtration technologies.	Also need to consider heat relief in addition to smoke relief.	<ul style="list-style-type: none"> Provide, distribute, and/or promote HEPA filters and heat pumps. Educate households about at-home protection methods (e.g., box filter fans). 	
	Provide shelters that have clean air quality during wildfire smoke days.		Open up local community centers, schools, or libraries that have air filtration systems.	
	Identify priority households or community groups to provide air filtration resources.	<ul style="list-style-type: none"> Challenge in how to identify where these people reside (voluntary registry?). Include folks such as elderly people, unhoused individuals, etc. 	<ul style="list-style-type: none"> Engage federal and state agencies about funding and research to fund and implement this strategy. Work on cross-jurisdictional knowledge sharing to share best practices. 	

Water Infrastructure – Sewer and Stormwater Systems

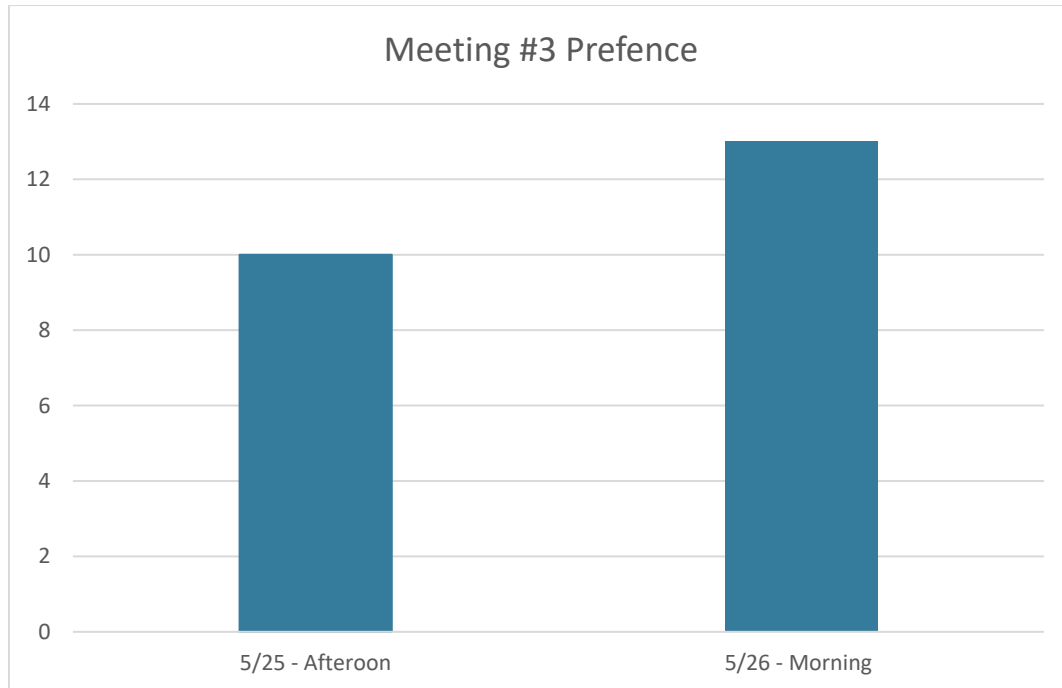
Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Increase resiliency of water systems.	Protect wastewater treatment systems and sewer lift stations along coastline (see: Move facilities – especially critical facilities – out of vulnerable areas goal in Shoreline Management priority area).			
	Capture and infiltrate stormwater runoff into the ground (see: Ensure there is sufficient capacity to capture and store rain/snow via built and natural systems goal of Water Supply and Availability priority area).			
	Address nitrate pollution (see: Ensure that there is good water quality goal of Water Supply and Availability priority area).			

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	Ensure septic systems aren't flooded, presenting water quality issues (see: Ensure that there is good water quality goal of Water Supply and Availability priority area).	Usually in low-lying areas, so subject to worse flooding.	Allow the Growth Management Act allow for sewer connections with modified rules when environmentally responsible, without authorizing density increases.	
	Ensure stormwater systems and wastewater management can accommodate increase rainfall and population increases.	<ul style="list-style-type: none"> • Low staff capacity to address this. • This can be expensive, especially for small cities. • Stormwater and sewage is a major impediment to growth. 		UW CIG has a stormwater / climate change tool.

Adjourn + Next Steps

To wrap up the meeting, Mike thanked participants for their input and continued contribution to this process. He let participants know that the project team would be following up with a consensus survey to confirm (1) goals for each regional climate priority area and (2) objectives for each goal. Lastly, Mike launched a poll to determine participant preference for meeting #3. Of the 23 participants who responded, 13 preferred the meeting to occur on the morning of Thursday May 26th.





Appendix D: Meeting #2 Survey Results

See next page.

NODC Consensus Survey Results

Survey open from April 14, 2022 to May 13, 2022

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Overall Summary

Total # of survey participants	32
Jurisdictions represented	<ul style="list-style-type: none"> • Port Gamble S’Klallam Tribe (2) • Jamestown S’Klallam Tribe • U.S. Forest Service – Olympic National Forest (2) • Clallam County (4) • Jefferson County • City of Port Townsend (3) • City of Sequim (2) • City of Port Angeles • Port of Port Townsend (2) • Port of Port Angeles (2) • Clallam PUD • Jefferson County Public Health • WSU Extension • Strait Ecosystem Recovery Network • East Jefferson Fire and Rescue • North Olympic Land Trust • Jefferson County Conservation District • Clallam Conservation District • North Olympic Resource Conservation & Development Council • Olympic Climate Action (2) • Resident

Summary of Results

[illegible]

	Goal #1: Ensure there is sufficient capacity to capture and store rain/snow via built and natural systems.	Goal #2: Promote water usage conservation and efficiency to prepare for future water shortages and droughts.	Goal #3: Ensure that there is good water quality.
Average	4.28125	4.3125	4.15625
Frequency of 5	15	17	13
Frequency of 4	14	10	13
Frequency of 3	1	3	4
Frequency of 2	1	2	2
Frequency of 1	1	0	0
Frequency of 0	0	0	0

Key Considerations

Goal	Objectives	Considerations
Goal #1: Ensure there is sufficient capacity to capture and store rain/snow via built and natural systems.	<ul style="list-style-type: none"> a) Promote aquifer and reservoir recharge via strategic investments in habitat restoration and conservation. b) Continue to study how climate change affects snowpack on the Olympic Peninsula and downstream impacts to regional water supply. c) Increase the capacity to capture and store rainfall. 	<ul style="list-style-type: none"> Promotion of aquifer and reservoir recharge via strategic investments in habitat restoration and conservation doesn't make any sense to me. What is meant by "strategic investments in habitat restoration and conservation?" Every map I see shows that we are not even experiencing dry conditions. This should not be our top priority. It is not nearly as critical as other priorities. The current language of the objectives looks like they would not include other ways to recharge aquifer, such as with grey water, etc. So perhaps word that more broadly.
Goal #2: Promote water usage conservation and efficiency to prepare for future water shortages and droughts.	<ul style="list-style-type: none"> a) Implement water reuse systems. b) Promote water conservation behavior change measures. c) Ensure enough potable water. d) Ensure adequate water for farming and agriculture. 	<ul style="list-style-type: none"> Need to define "enough" (2c) potable and "adequate" (2d) agricultural water in ways that incorporate appropriate demographic projections and equitable land and resource use. It is not as critical as other issues. Is there any conflict with obj. d and having enough water for fish runs at various times of the year? Just a questions and not sure if it is a concern here. This seems a bit out of scope of this body, as far as best return on local effort. Acting as a devil's advocate: The term "adequate" is flimsy, as it can be construed differently depending on your personal bias. Is it adequate for farms to irrigate inefficiently, or should they be required to use more efficient methods in order to conserve water

Goal	Objectives	Considerations
		for everyone in order to receive shares? Ag uses an exorbitant amount of the share of available water, even if its not potable.
Goal #3: Ensure that there is good water quality	<ul style="list-style-type: none"> • a) Continue to invest and collect water quality data (e.g., pollutants, temperature). • b) Address nitrate pollution. • c) Ensure septic systems aren't flooded, presenting water quality issues. 	<ul style="list-style-type: none"> • Addressing nitrate pollution needs to be better defined. And I don't understand what is planned to ensure that septic systems aren't flooded. • There are vast differences in the County as to water quality. This is a major issue in some areas of the County, and not of paramount concern in others. • 3c: "Work towards ensuring" septic systems aren't flooded—don't promise an absolute • It is not as critical as other issues. • This area seems to be pretty well covered by local jurisdictions.

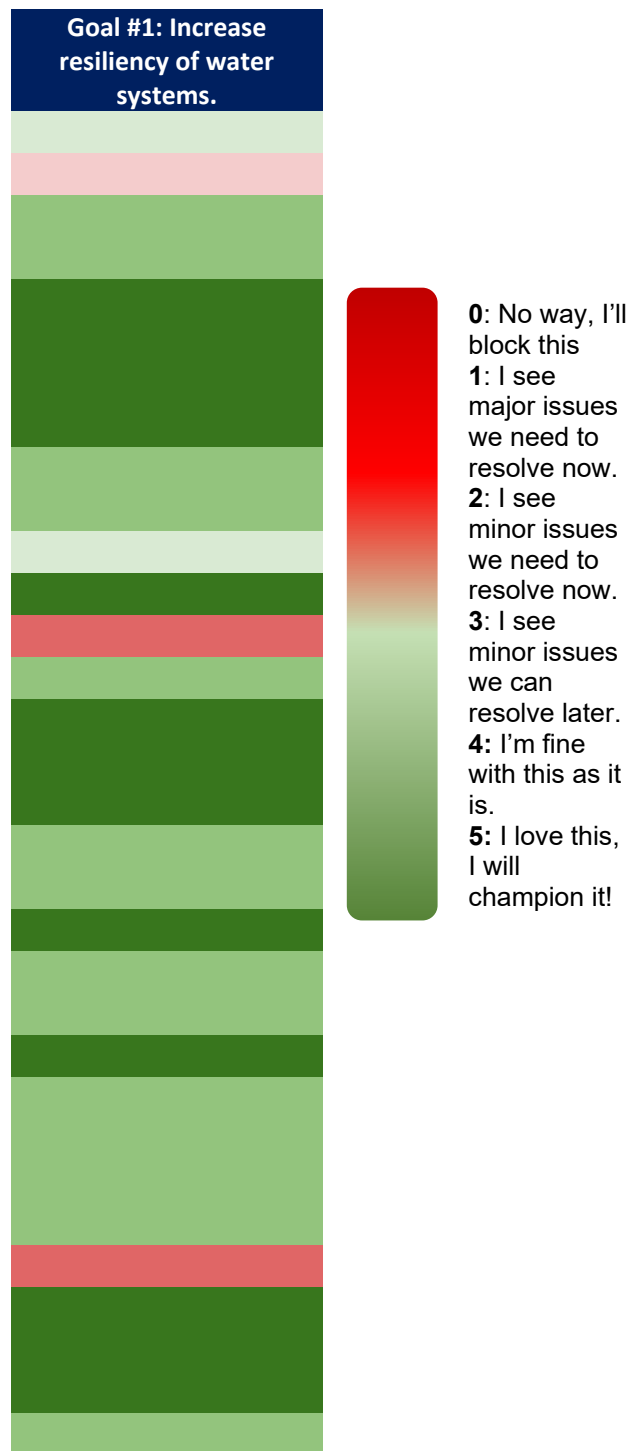
Implementation and Coordination Strategies – Water Supply, Quantity, and Quality

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Ensure there is sufficient capacity to capture and store rain/snow via built and natural systems.	Promote aquifer and reservoir recharge via strategic investments in habitat restoration and conservation.	<ul style="list-style-type: none"> Heavier rains mean increased runoff, meaning less time for water to soak and recharge aquifers. Issue of scale – especially for aquifers and smaller reservoirs. Aquifers are inherently local, so if this is something we want to lean into on a regional basis, need to think about how to prioritize which aquifers. Might be limited by water rights. 	<ul style="list-style-type: none"> Increased forest cover and wetlands can help facilitate water intercept to achieve recharge objectives. Capture and infiltrate stormwater runoff into the ground instead of sewers. 	Nine (9) facilities built in the Dungeness basin has increased capacity to infiltrate. Exploring the potential to do more with this.
	Continue to study how less snowpack in the Olympics will affect regional water supply.	There is a timing challenge re: water release and flows. Snowpack melting earlier + more winter rain events shifting seasonal timing of participation.	Water systems are inherently connected, so while some regions are rain-dominant, this can still affect those regions.	
	Increase capacity to capture and store rainfall.	<ul style="list-style-type: none"> This is inherently at a local scale. This might be more relevant for rain dominant basins. 	Invest in large rain cisterns, especially for rain-dominant basins.	
	Monitoring water supply and quality data.		<ul style="list-style-type: none"> Reiterate importance of monitoring network from USGS. 	
	Built systems for water supply.		<ul style="list-style-type: none"> Desalinization feasibility or pilot projects. Grey water reuse and recharge. 	
Promote water usage conservation and efficiency to prepare for future water shortages and droughts.	Implement water reuse systems.	<ul style="list-style-type: none"> Main barrier for doing this is water treatment capacity and technology. These can be very costly too. 		Southwest region has some examples.
	Promote water conservation behavior change measures.	Need to define the unit of analysis for this – households? Industries? Watersheds?	<ul style="list-style-type: none"> Promote household behavior change (e.g., fixing leaky faucets and changing water usage habits). Utilize local ordinances and declarations to promote water conservation. Utilize education and public outreach activities to address water supply and conservation usages. 	Dungeness basin already water short.

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
	Ensure enough potable water.	<ul style="list-style-type: none"> There is a timing challenge re: water release and flows. Snowpack melting earlier + more winter rain events shifting seasonal timing of participation. Need to ensure that there is an alignment of water supply and demand. Need to accommodate future projections/influx of climate migrants and refugees. 	Ensure accessible water supply – particularly for those more vulnerable to water supply shortages (e.g., homeless, transient populations, low-income communities).	
	Ensure adequate water for farming and agriculture.	<ul style="list-style-type: none"> Irrigation is largest consumptive use of water – especially for agriculture purposes. There is a timing challenge re: water release and flows. Snowpack melting earlier + more winter rain events shifting seasonal timing of participation. Need to ensure that there is an alignment of water supply and demand. This might also be in conflict with having enough water for fish runs. 	<ul style="list-style-type: none"> Irrigation largely limited to Dungeness basin and lots of work already done within the watershed to improve irrigation efficiency. Use non-potable water for irrigation. Require or promote more water conservation and efficiency for irrigation. 	
Ensure that there is good water quality.	Continue to invest and collect water quality data (e.g., pollutants, temperature).	Erosion could be an issue, which increased sediment in the water.	List pollution sources and identify pollution sources.	NWIFC has State of Watershed reports.
	Address nitrate pollution.	<ul style="list-style-type: none"> Nitrate pollution in groundwater and marine waters due to climate change and runoff. Could worsen if influx of climate migrants and refugees. This needs to be better defined. 		
	Work towards ensuring septic systems aren't flooded, presenting water quality issues.	<ul style="list-style-type: none"> Usually in low-lying areas, so subject to worse flooding. Needs to be led by local jurisdictions. 	<ul style="list-style-type: none"> Allow the Growth Management Act allow for sewer connections with modified rules when environmentally responsible, without authorizing density increases. Ensure septic systems are not flooded. 	

Water Infrastructure – Sewer and Stormwater Systems

Summary of Results



	Goal #1: Increase resiliency of water systems.
Average	4.09375
Frequency of 5	13
Frequency of 4	14
Frequency of 3	2
Frequency of 2	1
Frequency of 1	2
Frequency of 0	0

Key Considerations

Goal	Objectives	Considerations
Goal #1: Find alternatives to hard armoring on shorelines.	<ul style="list-style-type: none"> a) Protect wastewater treatment systems and sewer lift stations along coastline (see: Move facilities – especially critical facilities – out of vulnerable areas goal in Shoreline Management priority area). b) Capture and infiltrate stormwater runoff into the ground (see: Ensure there is sufficient capacity to capture and store rain/snow via built and natural systems goal of Water Supply and Availability priority area). c) Address nitrate pollution (see: Ensure that there is good water quality goal of Water Supply and Availability priority area). d) Ensure septic systems aren't flooded, presenting water quality issues (see: Ensure that there is good water quality goal of Water Supply and Availability priority area). e) Ensure stormwater systems and wastewater management can accommodate increase rainfall and population increases. 	<ul style="list-style-type: none"> As stated earlier, nitrate pollution needs to be better explained, as does the prevention of septic system flooding. I need more information This makes sense as a priority/goal independent from Shorelines and Water Supply, and objectives that overlap with those under other priorities should be moved here to strengthen this as a work area. How will this be paid for? Our communities' largest issue is affordable housing. These recommendations will just exacerbate the cost of housing and living in Clallam County for our working population.

Implementation and Coordination Strategies – Water Infrastructure (Sewer and Stormwater Systems)

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Increase resiliency of water systems.	Protect wastewater treatment systems and sewer lift stations along coastline (see: Move facilities – especially critical facilities – out of vulnerable areas goal in Shoreline Management priority area).	All objectives will be expensive and may come at odds with other priorities such as affordable housing.		
	Capture and infiltrate stormwater runoff into the ground (see: Ensure there is sufficient capacity to capture and store rain/snow via built and natural systems goal of Water Supply and Availability priority area).			
	Address nitrate pollution (see: Ensure that there is good water quality goal of Water Supply and Availability priority area).			
	Ensure septic systems aren't flooded, presenting water quality issues (see: Ensure that there is good water quality goal of Water Supply and Availability priority area).	Usually in low-lying areas, so subject to worse flooding.	Allow the Growth Management Act allow for sewer connections with modified rules when environmentally responsible, without authorizing density increases.	
	Ensure stormwater systems and wastewater management can accommodate increase rainfall and population increases.	<ul style="list-style-type: none"> • Low staff capacity to address this. • This can be expensive, especially for small cities. • Stormwater and sewage is a major impediment to growth. 		UW CIG has a stormwater / climate change tool.

Summary of Results



	Goal #1: Improve and bolster resiliency of existing energy infrastructure.	Goal #2: Increase capacity of local jurisdictions to participate in long-term energy resiliency planning.
Average	4.09375	4.0625
Frequency of 5	13	11
Frequency of 4	14	16
Frequency of 3	2	3
Frequency of 2	1	0
Frequency of 1	2	2
Frequency of 0	0	0

Key Considerations

Goal	Objectives	Considerations
Goal #1: Improve and bolster resiliency of existing energy infrastructure.	<ul style="list-style-type: none"> a) Work with BPA and local PUDs to understand current limits and issues related to energy infrastructure. b) Coordinate a regional renewable energy plan that prioritizes local generation, storage, and distribution. Increase local means of renewable energy by 10% within 10 years. c) Catalogue current opportunities and incentives to improve energy efficiency. d) Prioritize the energy resiliency of critical facilities (e.g., hospitals, fire stations, community centers). e) Keep energy purchases local and more independent. 	<ul style="list-style-type: none"> "Major issues: Seattle developer pushes for floating offshore wind ""farm"" off Olympic Peninsula coast. Look at the Columbia River Dams; the dependence and devastating impacts.... NO 5G!!! Our current local PUD has some major issues to resolve....residents need to get informed & involved." This is likely implied in c), but adding conservation as well as efficiency. Aiming for only 10% increase in our very low deployment of RE in 10 years seems very modest. Increase? This is much more important than the first item. "The response ""3"" is associated with only one of the items: <ul style="list-style-type: none"> a) 5, The PUD wishes to convey information and inform others regarding this objective. b) 3, The PUD prioritizes a Clean Energy Implementation plan that incorporates all of these elements but does consider comparable costs of a variety of existing options and options expected to become viable in the future, and does so on an ongoing basis. The objectively stated goal substantially undershoots what is suggested by current trends. c) 4, The PUD is obligated to do this by state statute, but the planning and analysis can be substantially improved through collaboration with other agencies. d) 5, The PUD Emergency Response and Restoration Plan Restoration includes prioritization of the stated critical facilities in

Goal	Objectives	Considerations
		<p>restoration efforts and would fully support efforts to improve energy resiliency more generally.</p> <ul style="list-style-type: none"> ○ e) 5, Excluding 400 existing and new small solar, wind and hydroelectric generators under net metering agreements, the PUD is contractually obligated to procure energy purchases from BPA. The PUD strongly favors continuing energy purchases under the authority of our local independent Board. " • Energy is the MASTER resource. everything requires energy and we will need to transition from using a lot to using a lot less. Its not just electricity as the question implies. For example something like 93% of the energy required by the food system in the U.S. comes from fossil fuels. Nothing that's listed here is bad, its just that adaptation will require all our vital systems to adapt to a major transition.
Goal #2: Increase capacity of local jurisdictions to participate in long-term energy resiliency planning.	<ul style="list-style-type: none"> • a) Facilitate regional capacity to support local governments in planning for energy resiliency (e.g., workshops between regional entities to discuss energy resiliency). 	<ul style="list-style-type: none"> • This should be our top concern from the Clallam EDC perspective. We need to pursue our own energy generation so we are not completely reliant on BPA power where we are at the end of their distribution and transmission lines. • The wording of this goal is somewhat ambiguous without the "e.g." and might be phrased better for clarity. Clallam PUD does regularly participates in workshops with and is involved in discussions with State and regional entities for such long-term planning purposes, and similarly welcomes engaging with the NODC sponsored effort. • As above. But also, resilience and resiliency are important terms that often go undefined. Are we planning for "preventive" resilience in an effort to maintain the current energy system? Or are we planning for adaptive resilience that will allow us to still have a functioning food system, for example, when other systems such as our global energy system collapse?

Implementation and Coordination Strategies – Energy Resiliency, Redundancy, and Independence

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Improve and bolster resiliency of existing energy infrastructure.	Work with BPA and local PUDs to understand current limits and issues related to energy infrastructure.		Arrange workshops between PUDs, BPA, Department of Commerce, and local governments to understand what is being done, identify local vulnerabilities (e.g., energy supply), and identify local options (e.g., energy demand reduction, increased storage).	Improve and bolster resiliency of existing energy infrastructure.
	Coordinate a regional renewable energy plan that prioritizes local generation, storage, and distribution. Increase local means of renewable energy by 10% within 10 years.	<ul style="list-style-type: none"> • Unsure what the current percentage comes from renewable energy. • Currently, heavy reliance on hydropower via BPA. While “renewable”, unsure if this is the route that the region wants to continue. • 	<ul style="list-style-type: none"> • Conduct an audit/review of energy purchases and recommend options and recommendations. • Encourage micro-turbine generation. • Incentive community solar installations. • Concern about off-shore wind energy. • PUDs prioritizes a Clean Energy Implementation plan that incorporates all of this. 	
	Catalogue current opportunities and incentives to improve energy efficiency and conservation .		PUDs already required to do this under state statute.	
	Prioritize the energy resiliency of critical facilities (e.g., hospitals, fire stations, community centers).		<ul style="list-style-type: none"> • Place energy and/or battery storage capacity at critical facilities. They can act as electricity microgrids. • PUD Emergency Response and Restoration Plan already catalogues and prioritizes critical facilities and restoration. 	
	Keep energy purchases local and more independent.		<ul style="list-style-type: none"> • PUD contractually required to procure from BPA. However, does purchase energy from 400 existing or new small solar, wind, and hydroelectric generators under net metering agreements. 	
Increase capacity of local jurisdictions to	Facilitate regional capacity to support local governments in planning for energy resiliency.	<ul style="list-style-type: none"> • Most governmental bodies don’t have an energy person/expert on staff, so 	<ul style="list-style-type: none"> • Arrange workshops between PUDs, BPA, Department of Commerce, and local governments to understand 	PNNL has energy storage for social equity technical assistance program. Makah

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
participate in long-term energy resiliency planning.		<p>there is limited capacity to engage with these discussions.</p> <ul style="list-style-type: none"> • Energy-related working groups may not be thinking of climate change projections. • Unsure what is currently being done by other organizations. <ul style="list-style-type: none"> ○ Clallam PUD already participates in workshops with State and regional entities. • Need to consider equity implications of new renewable energy development (e.g., siting). 	<p>what is being done, identify local vulnerabilities (e.g., energy supply), and identify local options (e.g., energy demand reduction, increased storage).</p> <ul style="list-style-type: none"> • Identify case studies and examples of lessons learned from previous efforts. • NODC partnering with PNNL to increase implementation capacity for microgrids. • Support a tribal consortium on regional tribal energy coordination. • Local EDCs prioritize local energy generation so not completely reliant on BPA. • 	<p>Tribe is part of first cohort to assess feasibility.</p>

Transportation Resiliency, Adaptation, and Mitigation

Summary of Results

COMBINING TRANSPORTATION EMISSIONS AND MITIGATION PRIORITY AREA WITH THE TRANSPORTATION RESILIENCY AND ADAPTATION FOCUS AREA

Overall, 20 of 32 respondents said they supported combining the two Transportation priority areas.

Yes	20
No	5
Maybe	7

Considerations include:

- **Supportive comments**

- While I'm supportive of reduced emissions, I think this is a relatively minor issue compared to resiliency of the system to address the increasing population accelerated by climate refugees.
- I am happy either way, as long as actions are supported for all three (resiliency, adaptation and mitigation)
- Given the GHG inventories showing transportation being our largest sector, we need to address strongly and combining may help with that.
- Other than aggressively pursuing electrification of public transit (1d), the main objectives that excite me here are the ones that overlap with the adaptation priority (1c, 1f). I don't object to the others, but I don't see them as a regional strategic priority.
- Even though this is a difficult issue to address in our geographically large community, transportation is still our largest carbon output by far. This is worth addressing.
- In view of SB 5974 "Clean Cars 2030" and the likely electric infrastructure and equity challenges presented, some deliberation is probably warranted to avoid adverse outcomes.
- We can best mitigate our emissions and GHG footprint by phasing in adaptation measures ASAP. Simply focusing on reducing our emissions does not help us prepare for the future. This is a strategy that "we" have been trying for decades now with no significant decrease in global emissions. Time to come at it from a different angle.
- Transportation is our largest sector of emissions and also includes sensitive infrastructure. The North Peninsula will have a better fighting chance in the legislature to protect our infrastructure (mitigate) and reduce overall emissions if we coordinate.

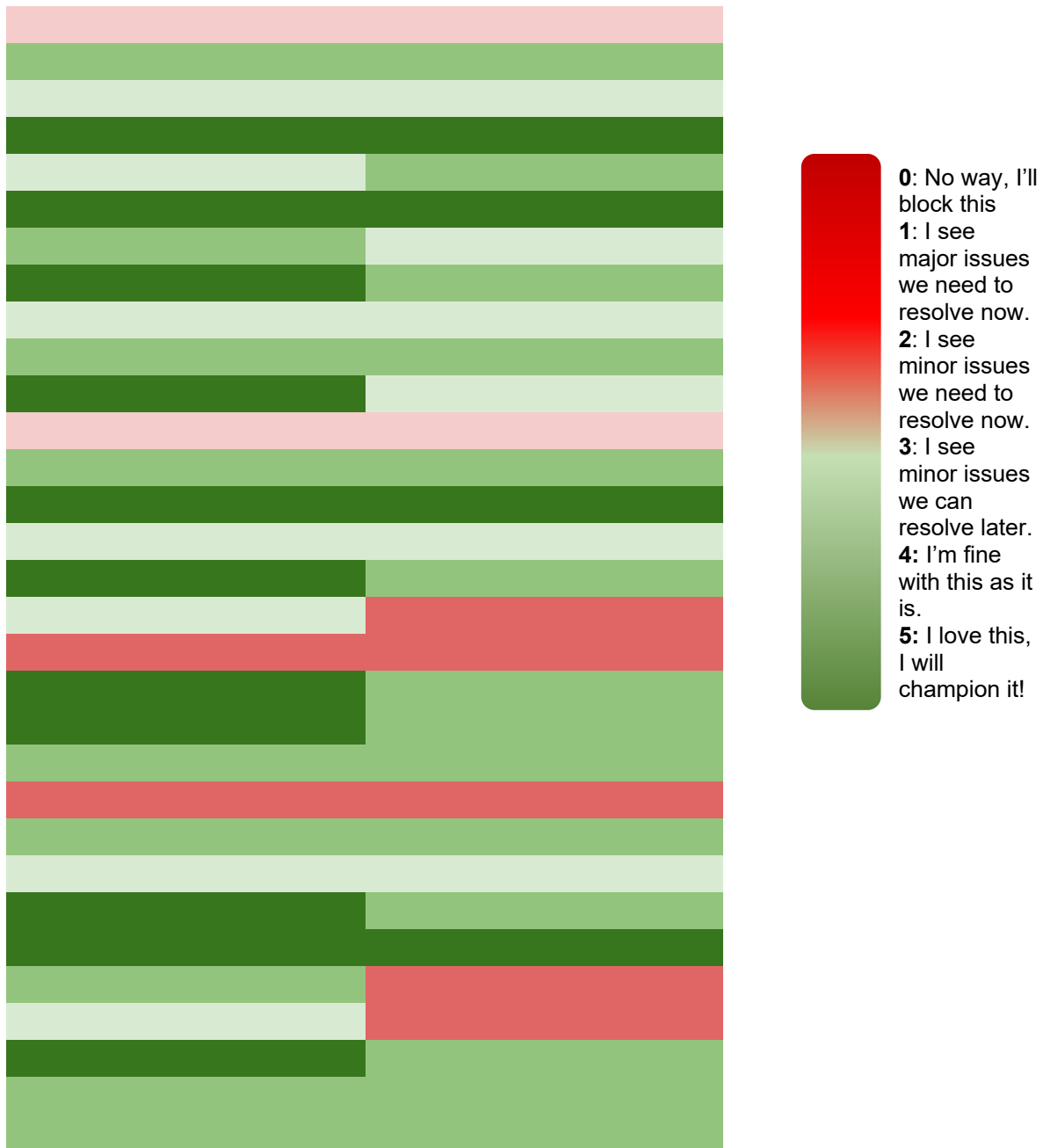
- **Other comments**

- Transportation in a rural area is a complex subject. In order to address the subject in my opinion, this needs to be broken into its many components with the costs and benefits of each component evaluated.
- My preference is to keep them separate, as many of the solutions are different.
- I think the Transportation Resiliency & Adaptation area has enough in it without taking on these goals. I think the impact of achieving these goals will be very small compared to some of the other topics, and we can't do them all.

CONSENSUS SUMMARY – TRANSPORTATION EMISSIONS AND MITIGATION

Goal #1: Reduce regional transportation emissions in an equitable way.

Goal #2: Decrease emissions from tourism.



	Goal #1: Reduce regional transportation emissions in an equitable way.	Goal #2: Decrease emissions from tourism.
Average	3.8125	3.34375
Frequency of 5	11	4
Frequency of 4	10	15
Frequency of 3	7	6
Frequency of 2	2	2

Frequency of 1	2	5
Frequency of 0	0	0

KEY CONSIDERATIONS

Goal	Objectives	Considerations
Goal #1: Reduce regional transportation emissions in an equitable way.	<ul style="list-style-type: none"> a) Evaluate vehicle miles traveled (VMT) across the region. b) Evaluate and track the number of EVs purchased across the region. c) Increase alternative modes of transportation routes. (See: Increase inter-community transportation accessibility goal in Transportation Resiliency & Adaptation). d) Increase public transit options using alternative fuels (i.e., electric, hydrogen). e) Increase EV charging capacity and availability across the region. f) Modify land use policies to reduce need for transportation (See: Increase intra-community transportation accessibility goal in Transportation Resiliency & Adaptation). 	<ul style="list-style-type: none"> There are several more objectives that need to be listed. Transportation in a rural area is a complex subject. In order to address the subject in my opinion, this needs to be broken into it many components with the costs and benefits of each component evaluated. Our focus here should be reducing tourism-related emissions; otherwise our population is small enough that we risk spending much time and effort on a strategy that will have little actual impact. There's no place listing incentivizing EV deployment by local governments and business and private individuals. Perhaps through parking, workplace incentives, etc. Item B) shouldn't just be track and evaluate, but also deploy as widely as feasible while working to be equitable. EV charging with legislated mass conversion to EVs in a short timeframe is a major planning topics within the electric industry We do not have the infrastructure or sufficient funding to supply EV to Clallam County in a meaningful way or built out a larger footprint for public transit. Again, nothing listed here is bad. But I see it as more incrementalism that won't build our adaptive capacity. I think the important/achievable bits of this are included in the other topic. Track miles as long as EV are evaluated at the same rate as other vehicles I'm not sure that Electric vehicles are the answer. In rural communities we need transportation, often 4 wheel drive etc. Things that EV's don't have yet. Also there is the financial issue. Many people who have EV's also have a truck and a gas vehicle as backup. I'm having a hard time putting this one into real world action.
Goal #2: Decrease emissions from tourism.	<ul style="list-style-type: none"> to utilize public transit options. b) Reduce emissions from airline travel to/from the North 	<ul style="list-style-type: none"> I think the organizations and businesses promoting & depending on tourism need to be held responsible to be part of the solution. I hope we're successful in this endeavor with tourists which will also be of value to the tourist experience, but the operators do not make \$ providing this

Goal	Objectives	Considerations
	<p>Olympic Peninsula.a) Encourage tourists</p> <ul style="list-style-type: none"> • 	<p>service, and a government provided service would be very costly. Did you speak to anyone in the tourism industry. For now, not sure if this should be a priority.</p> <ul style="list-style-type: none"> • Be sure to deploy/expand EV charging capacity in places tourists frequent, not just local business, but also B & Bs, lodging, destinations like Hurricane Ridge, Kalaloch, Blackball ferry parking... This is somewhat in goal #1 e. • We need better infrastructure (eg. EV charging stations, better public transportation) before we can move very far on this issue. We don't have resources to address this issue at the local level. This is already driven by state and federal regulations. We should not be adding extra layers of complex regulations which will just increase costs and inflation. • Vehicle electrification? • We actually do not have a lot of airline travel to Fairchild Airport. We do not have the public transit infrastructure or the money to build it in order to handle the number of tourists that come through our County during the summer to visit our Federal Parks and events like the Lavender Festival. • Local/regional adaptation should work towards minimal fossil fuel usage. I do not see how tourism can coexist with such a future. Same with airline travel. • Improving our public transit options will make them more desirable to use, the focus should be there rather than on encouragement. I don't believe it's a stated goal of these jurisdictions to reduce airline travel to the region, is it? Our other tourism expenditures don't reflect that. I guess I need to do some more research here, but still this doesn't seem like a high priority to me. • Does this mean, decrease air traffic? • We are rural. There is not adequate public transportation to take people into the park and places that make this area attractive for tourism. Again I'm having a hard time seeing this one become reality.

CONSENSUS SUMMARY – TRANSPORTATION RESILIENCY AND ADAPTATION



	Goal #1: Increase the response capacity of the region if transportation routes are disrupted.	Goal #2: Fortify vulnerable transit routes and corridors.	Goal #3: Increase inter-community transportation accessibility.	Goal #4: Increase intra-community transportation accessibility.
Average	4	3.84375	4.1875	4
Frequency of 5	10	8	12	11
Frequency of 4	17	16	18	15
Frequency of 3	2	4	0	3
Frequency of 2	1	3	0	1
Frequency of 1	2	1	2	2
Frequency of 0	0	0	0	0

KEY CONSIDERATIONS

Goal	Objectives	Considerations
Goal #1: Increase the response capacity of the region if transportation routes are disrupted.	<ul style="list-style-type: none"> a) Identify and/or increase redundancy of transportation corridors. b) Identify network of roads that can be alternatives if a main route is disrupted. c) Increase communication channels to drivers and transit users. 	<ul style="list-style-type: none"> We basically have one road in and out of our region. Not sure where you're going with this, but any alternative route will be really expensive. This should be a higher priority. If people are cut off from the larger communities- HWY 112 - then that clearly is an equity issue for our 3 west coast tribes. We are working closely with the Makah Tribe and the Governor's office and the House Transportation Committee in an attempt to fund a long term solution for our remote tribes. Clallam County has very few viable transit routes (101, 112 and 113). We are constrained by geography in creating new roads without even considering the cost of such infrastructure projects. I'm guessing most of these questions are based on the existing auto/truck transportation paradigm. That's a problem
Goal #2: Fortify vulnerable transit routes and corridors.	<ul style="list-style-type: none"> a) Identify vulnerable routes and fortify those routes. 	<ul style="list-style-type: none"> Again, really expensive alternative to fortify our roads. Does anyone really believe that we can acquired the \$ doe any discussion on this subject. \$50 million to really fix Hwy 112? This is potentially a huge issue as so much local infrastructure is in vulnerable floodplains and relocation is so expensive while fortifying needs to be sensitive to fish habitat and the sustainability of constantly rebuilding flood and slide-prone roads in the face of wetter winters and increased atmospheric river events. This could easily be rolled into goal #1 Should be a higher priority. We should be creating solid bicycle commute routes instead of focusing exclusively on existing roadway infrastructure. Many transportation routes pass through important habitats. Wetlands, salt-marsh, and frequently flooded

Goal	Objectives	Considerations
		<p>areas were once considered useless lands and many transportation projects were built through these areas. We now understand the importance of these natural systems. These natural areas are also critical to resilience to the impacts of climate change. I have concerns about the phrase "Fortify vulnerable transit routes and corridors". I do not support fortifying transit routes where this infrastructure blocks fish passage or interferes with habitat forming natural processes. In some cases, these routes need to be relocated out of harms way and to less sensitive habitats.</p>
Goal #3: Increase inter-community transportation accessibility.	<ul style="list-style-type: none"> • a) Increase broadband to minimize need for inter-regional transit. • b) Promote more public transit options between communities. • c) Identify innovative ways to reduce need for transportation. 	<ul style="list-style-type: none"> • "I am against broadband as a solution as it opens the door for a huge population increase here... I will champion finding other innovative ways to reduce need for transportation. " • In our surveying of 505 random people in Clallam County at grocery stores, Public transportation and broadband issues did not make it into the top 3 concerns. Affordable Housing was number 1 by far. If people don't have their basic needs met, they are not going to concern themselves with environmental issues. Only 3 people mentioned the environment as a top concern and two of those people were retired. 355 of the 505 were in the workforce.

Goal	Objectives	Considerations
Goal #4: Increase intra-community transportation accessibility.	<ul style="list-style-type: none"> a) Minimize sprawl within communities to increase walkability of communities. b) Promote micro-transit options within communities. 	<ul style="list-style-type: none"> The goal sounds great---how about housing affordability? Add safe bike-ability as well. Micro-transit such as electric scooters relies on continuous smooth pavement. Even bike share requires a dense bike path network. Objective 4b should be identifying funding for pavement maintenance and extension (which benefits micro-transit as well as pedestrians, bicyclists, and vehicles) as a means to the goal of increased intra-community transportation accessibility. Minimizing sprawl (4a) reduces the need for pavement extension and constrains the scope of the funding problem. This should not be an issue we spend time on. Other issues are much more important. This was proven out by our extensive random surveying of Clallam's working population. Sequim, and Port Angeles have some walkable communities. The east end of the County is designated rural and it has to stay rural under the Growth Management Act. Communities in the Urban Growth Areas might be able to have walkable communities, but that would only happen as part of a larger effort to create clusters of housing, stores and community parks. It is possible but we have failed to have that vision or make efforts to reach out to developers to make such a vision occur. We presently have a DCD Director that does communicate with the BOCC at all making it impossible to even think about cluster community development. Removes choice to individuals that chose Clallam for its rural qualities.

Implementation and Coordination Strategies – Transportation Resiliency, Adaptation, and Mitigation

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Reduce regional transportation emissions in an equitable way.	Evaluate vehicle miles traveled (VMT) across the region.	VMT and EVs are decoupled, especially as EVs are increasingly adopted.		See Port Angeles tracking system.
	Evaluate and track the number of EVs purchased across the region.	<ul style="list-style-type: none"> EVs not always feasible for rural communities – need 4-wheel drive. EVs are more expensive relative to gas-powered vehicles. 	<ul style="list-style-type: none"> Incentivize EV deployment by local governments via parking, workplace incentives, etc.. 	
	Increase alternative modes of transportation routes. (See: Increase inter-community transportation accessibility goal in Transportation Resiliency & Adaptation).		<ul style="list-style-type: none"> Adaptation co-benefits. Commuter trips in SOVs need to be reduced. For Jamestown S’Klallam Tribe, highest portion of GHG emissions. 	
	Increase public transit options using alternative fuels (i.e., electric, hydrogen).	<ul style="list-style-type: none"> Unsure if there is sufficient funding to supply EVs for public transit. 		
	Increase EV charging capacity and availability across the region.			
	Modify land use policies to reduce need for transportation (See: Increase intra-community transportation accessibility goal in Transportation Resiliency & Adaptation).		Adaptation co-benefits.	
Decrease emissions from tourism.	Encourage tourists to utilize public transit options.	<ul style="list-style-type: none"> This will likely be a long-term solution, after public transit options are expanded. Need to invest in public transit infrastructure (more buses, more stations, etc.) before this becomes feasible or a reality. 	<ul style="list-style-type: none"> Coordination with tourism industry and local governments. 	Port Angeles has bus that runs up to Hurricane Ridge.
	Reduce emissions from airline travel to/from the North Olympic Peninsula.	<ul style="list-style-type: none"> Maybe not enough airline travel to Fairchild Airport for this to be meaningful. 		

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Increase the response capacity of the region if transportation routes are disrupted.	Identify and/or increase redundancy of transportation corridors.	<ul style="list-style-type: none"> Currently there's network of roads by state and federal agencies, but people may not know which ones are functional. Will be really expensive. 	<ul style="list-style-type: none"> May have other travel options that aren't reliant on road vehicles (e.g., ferries/boats). Identify network of roads that can be alternatives if a main route is disrupted Focus on roads that are critical – 112, 101, 113. 	Makah Tribe working with Governor's Office and House Transportation Committee to find long-term solutions for remote Tribes.
	Identify network of roads that can be alternatives if a main route is disrupted.		<ul style="list-style-type: none"> Utilize existing channels (e.g., WSDOT twitter, Facebook groups, text message alert system, AM Radio) to push out messages. Identify new ways to communicate during extreme events/disasters, especially for more remote communities. 	
	Increase communication channels to drivers and transit users.			
Fortify vulnerable transit routes and corridors in an ecologically beneficial way.	Identify vulnerable routes and fortify those routes.	<ul style="list-style-type: none"> Original NODC climate report identified some vulnerable roads due to climate change. Not going to stop storm events or climate change, so need to find troubled spots. Will be really expensive. May be in conflict with fish habitat and passage. 	<ul style="list-style-type: none"> Identify, prioritize, and fund projects that fortify and increase robustness of transportation routes (e.g., floodplains next to roads, landslide barriers). 	
Increase inter-community transportation accessibility.	Increase broadband to minimize need for inter-regional transit.	<ul style="list-style-type: none"> Many communities need to travel for things like work, doctor's appointments, etc. If have broadband, can reduce some of these needs. Broadband and public transit not big issues in Clallam County survey. 	Increase access to more nuanced health resources (virtual visits, health-specific transportation options).	
	Promote more public transit options between communities.	<ul style="list-style-type: none"> Some current transit stops are hard to access for residents. For example, in western Port Angeles, some stops are near steep roads or have no 	<ul style="list-style-type: none"> Focus on a transit system that prioritizes transportation of people to health services. 	<ul style="list-style-type: none"> WSDOT has new funding options for EV rideshare. Forth Mobility is providing technical assistance to apply for this funding.

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
		<p>shoulder, which prevent people from accessing these transit stops.</p> <ul style="list-style-type: none"> For Jamestown S’Kallam Tribe, a bunch of people are traveling in/out to/from the same place. However, job shifts may affect timing during the day (e.g., some people work nights). Public transit options may not work for isolated communities (e.g., Neah Bay). Can focus on amplifying health benefits and outcomes (e.g., service access, air quality near highways). 	<ul style="list-style-type: none"> Institute rideshare or commuting options, so people are less reliant on single-occupancy cars for commuting. Invest in creating transport hubs across the region. Use a public education campaign to increase adoption of public transit options. (Re)-invest in a regional rail system. Survey the public about transit modes and access to get a baseline understanding. 	<ul style="list-style-type: none"> Federal infrastructure bill also focuses on public transit investments. Forks has a good transit system with a mainline into PA. Shifting to a call-on-demand local system in Forks. <p>PA used to have trolley system.</p>
	Identify innovative ways to reduce need for transportation.	When 112 landslides happened, people commuting to Clallam Bay were affected. Got permission to bring camper vans so don’t need to commute back and forth around landslides.		See Clallam Bay example.
Increase intra-community transportation accessibility.	Minimize sprawl within communities to increase walkability of communities.	Currently within communities, most people are reliant on cars. Even if local routes are damaged, this can promote local resilience within communities.	<ul style="list-style-type: none"> This will be a long-term strategy. Amend local land-use policies that prioritize 10-minute communities. Develop the urban growth area (UGA) and reduce the sprawl and density outside the UGA. <ul style="list-style-type: none"> Under GMA, rural areas may have more limited options. 	Makah Tribe is thinking of food sovereignty to rely less on external transit routes that import non-cultural foods.
	Promote micro-transit options within communities.	<ul style="list-style-type: none"> Some current transit stops are hard to access for residents. For example, in western Port Angeles, some stops are near steep roads or have no shoulder, which prevent people from accessing these transit stops. Need to consider transit in relation to housing affordability. 	<ul style="list-style-type: none"> Focus on last mile options to get people from their homes to transit stops. Increase bikability. Support maintenances of roads to ensure smooth pavement for bikes and e-scooters. 	

Summary of Results



	Goal #1: Reduce wildfire risk in forests and the wildland-urban interface.	Goal #2: Increase capacity and understanding to respond to wildfires.	Goal #3: Increase capacity to respond to wildfire smoke events.
Average	4.125	4.25	4
Frequency of 5	11	10	10
Frequency of 4	17	21	17
Frequency of 3	2	0	2
Frequency of 2	1	1	1
Frequency of 1	1	0	2
Frequency of 0	0	0	0

Key Considerations

Goal	Objectives	Considerations
Goal #1: Reduce wildfire risk in forests and the wildland-urban interface.	<ul style="list-style-type: none"> a) Utilize programs such as FireWise to promote behaviors that reduce wildfire risk. b) Partner with federal and state agencies to improve forest management strategies that reduce wildfire risk. 	<ul style="list-style-type: none"> --Washington DNR is being sued for failing to account for the climate impacts of its logging proposals---see Center for Sustainable Economy. --There are significant environmental concerns for increasing ""Cross Laminate Timber"" which is being touted as ""green"". " Be sure b) says independent, science-based forest management as there are divergent voices from industry and independent science on BMP for fire resilience. On a) perhaps add promote and incentivize such programs. Not sure what we can do on this that isn't covered already by other entities. FireWise program does look interesting, though! Just want to insure logging companies dont use this as a well to clear cut areas of concern
Goal #2: Increase capacity and understanding to respond to wildfires.	<ul style="list-style-type: none"> a) Promote behaviors that prepare households and businesses for wildfire response. b) Increase firefighting capacity to respond to projected increased in wildfire risk. c) Update or create wildfire prevention and preparedness plans that account for climate change. 	<ul style="list-style-type: none"> The DNR was allocated \$ to expand their fire fighting capabilities I recall someone pointed out evacuation route planning is an issue on narrow rural roads. That would be part of c)
Goal #3: Increase	<ul style="list-style-type: none"> a) Provide and distribute air filtration technologies. 	<ul style="list-style-type: none"> again in my opinion, we need to spend the \$ at the forest level. Since forest fires are typically

Goal	Objectives	Considerations
capacity to respond to wildfire smoke events.	<ul style="list-style-type: none"> • b) Provide shelters that have clean air quality during wildfire smoke days. • c) Identify priority households or community groups to provide air filtration resources. 	<p>the second largest contributor of CO2 to the atmosphere in Washington, concentrate on the forests.</p> <ul style="list-style-type: none"> • There are some big ticket items here that will require grant funding such as filtration devices for many households and sufficient shelters. • How will we pay for this? People can't afford a home or their groceries. • Broadly we need to build resilience hubs in each community. These hubs need resilient power, water, and communications, these hubs can the provide refuge from: unhealthy outdoor air quality (smoke), extreme heat, cold, precipitation, loss of critical energy supplies, and other natural or human-caused disasters. • Coming out of COVID.....everyone has masks.

Implementation and Coordination Strategies – Wildfires and Wildfire Smoke

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Reduce wildfire risk in forests and the wildland-urban interface.	Utilize programs such as FireWise to promote and incentivize behaviors that reduce wildfire risk.		<ul style="list-style-type: none"> Incentive and encourage behaviors, such as increasing defensible space. Educate builders about practices around fire preventing and protection structures (e.g., building materials, filtration systems). 	
	Partner with federal and state agencies to improve science-based forest management strategies that reduce wildfire risk.	<ul style="list-style-type: none"> Concerns about cross laminated timber. 	<ul style="list-style-type: none"> Potentially partner with regional Tribes on this objective. Port Gamble – Roma Call – working on prairie burns for wildfire risk management. Ensure sustainable logging practices that minimizes wildfire risk or post-fire disasters (landslides). 	
Increase capacity and understanding to respond to wildfires.	Promote behaviors that prepare households and businesses for wildfire response.		Incentive or educate households and businesses about collecting rainwater for fire protection.	
	Increase firefighting capacity to respond to projected increased in wildfire risk.		<ul style="list-style-type: none"> Enhance water delivery systems for fighting fires. Ensure accessibility for firefighting equipment can be accessed via roads. Lobby DNR to expand firefighting capabilities. 	
	Update or create wildfire prevention and preparedness plans that account for climate change.	<ul style="list-style-type: none"> Will be expensive potentially. 	<ul style="list-style-type: none"> Identify evacuation protocols and routes. Update Coordinated Water Plan with a focus on water needs for wildfire response. Develop regional resilience hubs. 	
Increase capacity to respond to wildfire smoke events.	Provide and distribute air filtration technologies.	Also need to consider heat relief in addition to smoke relief.	<ul style="list-style-type: none"> Provide, distribute, and/or promote HEPA filters and heat pumps. Educate households about at-home protection methods (e.g., box filter fans). 	

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
	Provide shelters that have clean air quality during wildfire smoke days.		Open up local community centers, schools, or libraries that have air filtration systems.	
	Identify priority households or community groups to provide air filtration resources.	<ul style="list-style-type: none"> Challenge in how to identify where these people reside (voluntary registry?). Include folks such as elderly people, unhoused individuals, etc. 	<ul style="list-style-type: none"> Engage federal and state agencies about funding and research to fund and implement this strategy. Work on cross-jurisdictional knowledge sharing to share best practices. 	

Summary of Results



	Goal #1: Promote resiliency of regional agriculture sector to climate change to ensure economic viability in the long-term.	Goal #2: Ensure resiliency of regional marine food systems to future climate change.	Goal #3: Promote economic and market viability of all local food systems.
Average	4.25	3.6875	4.25
Frequency of 5	14	4	14
Frequency of 4	14	20	14
Frequency of 3	2	5	2
Frequency of 2	2	1	2
Frequency of 1	0	1	0
Frequency of 0	0	1	0

Key Considerations

Goal	Objectives	Considerations
Goal #1: Promote resiliency of regional agriculture sector to climate change to ensure economic viability in the long-term.	<ul style="list-style-type: none"> a) Diversify agricultural infrastructure (e.g., greenhouses). b) Promote organic farming to minimize runoff pollution. c) Encourage local or household gardens to reduce reliance on food imports. d) Work with farmers to increase self-sufficiency to store crops and products. e) Conserve farmland and promote sustainable agricultural practices. f) Improve irrigation efficiency (see: Promote water usage conservation and efficiency to prepare for future water shortages and droughts goal in Water Supply and Availability). 	<ul style="list-style-type: none"> Organic farming doesn't mean less polluted runoff. Never once do I see the need to maintain sustainable agriculture which means that they must be economically viable. Perhaps add "community" to c) These are such big issues I do not see how local governments would make any impact. If we experience major earthquakes or a tsunami how long would local food sources be able to support our local community? It seems to me flying in those resources are a much more viable option. The purpose of a local food system is to provide food to the population. Framing potential solutions in terms of economic viability may include an assumption that the dominant economic system we currently live with will continue. This could impede innovative solutions that are not currently economically viable but might be needed in some future scenarios. I'm all for this, but I believe we need to make explicit that Certified Organic/Fair Trade agriculture is essential.
Goal #2: Ensure resiliency of regional	<ul style="list-style-type: none"> a) Utilize sustainable marine food harvesting methods. 	<ul style="list-style-type: none"> "I support environmentally responsible land based aquaculture. There are too many ecosystem and public health risks from nearshore or offshore

Goal	Objectives	Considerations
marine food systems to future climate change.	<ul style="list-style-type: none"> • b) Focus on low environmental impact but high protein food production, such as fish farming or hatchery operations. • c) Identify options for species and new marine industries (e.g., new fisheries, aquaculture, etc.) that could be viable under future climate change scenarios. • d) Utilize sustainable marine food harvesting methods. 	<p>aquaculture. I absolutely will fight against net pens in our waters for any type of fish; native or not."</p> <ul style="list-style-type: none"> • Never once do I see the need to maintain sustainable agriculture which means that they must be economically viable. • I don't want fish farms ... this industry create to much pollution in our waters and low quality protein source. • Add word kelp farming or blue carbon as potential to the new industries examples. For b) fish farming, add wording about compatible species and BMPs that don't harm local marine systems and species. • The examples in 2b of low environmental impact use a narrow definition, ignoring risks of concentrated aquaculture such as disease. The objective would be better presented as "Research and identify methods of low environmental impact but high protein food production" without assuming the answer is already known. • Fish farming can have environmental impacts, so perhaps rewrite b and c to clarify only systems with minimal environmental impacts. • The local Tribes need to have a voice in this issue! Tribal Treaty rights are the supreme law of the land. • concern with local impacts of in-water aquaculture operations vs. land-based sites • I'm all for this, EXCEPT the inclusion of farming fish in pens in the Salish Sea.
Goal #3: Promote economic and market viability of all local food systems.	<ul style="list-style-type: none"> • a) Support direct markets between local food producers and local users/vendors. • b) Improve technology to ensure fishing fleets can be more sustainable and conserve fuel. • c) Increase food storage capacity for local foods. • d) Support local farms to access and/or subsidize lands. 	<ul style="list-style-type: none"> • Please insure that economic viability (profitability) is a cornerstone of your goals • For b), rather than assume "fuel," add idea of exploring conversion to electric propulsion systems and charging capacity at marinas. • Item B - Improve technology to ensure fishing fleets can be more sustainable and conserve fuel. How will our local governments make any headway in this space? This is not the role of local governments. Is the intention to lobby state or federal governments? Many of these proposals do not seem to be in the scope of local government. • We should be promoting public support of our local/regional food system. It is a vital Public Good. • NODC should not be promoting subsidizing a farm. Its viable or not. • again, Tribes need to be consulted in this area. • need to address onsite onsite pollution issues with feeding, parasite & fecal contamination to adjacent sites

Implementation and Coordination Strategies – Local Food Systems and Agriculture

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Promote resiliency of regional agriculture sector to climate change to ensure economic viability in the long-term.	Diversify agricultural infrastructure (e.g., greenhouses).	<ul style="list-style-type: none"> Climate projections predict more frost and changes in growing seasons and also increased pests. Infrastructure investments could help prepare for some of these impacts. Unsure the role of local governments in this area. 		Build off regional work done by NODC, WSU Extension, Land Trusts, and Conservation Districts.
	Promote organic farming to minimize runoff pollution.	<ul style="list-style-type: none"> Organic farming doesn't mean less pollution. 	<ul style="list-style-type: none"> Address on-site pollution with feeding, parasite, and fecal contamination. 	
	Encourage local, household, and community gardens to reduce reliance on food imports.			
	Work with farmers to increase self-sufficiency to store crops and products.	Farmers currently dependent on transportation and mass food storage.		
	Conserve farmland and promote sustainable agricultural practices.		Utilize Comprehensive Plans to implement.	
	Improve irrigation efficiency (see: Promote water usage conservation and efficiency to prepare for future water shortages and droughts goal in Water Supply and Availability).			
Ensure resiliency of regional marine food systems to future climate change.	Utilize sustainable marine food harvesting methods.		Work with regional Tribes on fisheries-related strategies.	Regional hatcheries already exist.
	Focus on low environmental impact but high protein food production, such as fish farming or hatchery operations.	Strong opposition to net pens.	<ul style="list-style-type: none"> Work with regional Tribes on fisheries-related strategies. Use BMPs and compatible species that don't harm local marine systems and species. Leverage things like kelp farms for blue carbon benefits. 	
	Identify options for species and new marine industries (e.g., new fisheries, aquaculture, etc.) that could be viable	Fisheries management is outside the scope of this project, so need to be cognizant of Tribal rights and treaties.	Work with regional Tribes on fisheries-related strategies.	

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
	under future climate change scenarios.			
Promote economic and market viability of all local food systems.	Support direct markets between local food producers and local users/vendors.	<ul style="list-style-type: none"> There are already projects and programs and organizations that are involved in regional food security and vitality. Is there a better way to review and catalogue current efforts and identify where gaps may be? Potential benefit: promoting more local growing and consumption can eliminate GHG emissions related to supply chains and imports. 	<ul style="list-style-type: none"> Encourage local contracting amendments and preferences (e.g., between restaurants or farmers markets with local producers). Set up local food contracts between producers and consumers, where consumers can 'buy' a contract for farmers/fishers, guaranteeing them revenue for a year. 	Local contracts between producers and consumers were done in Washington County, OR.
	Improve technology to ensure fishing fleets can be more sustainable and conserve fuel.		<ul style="list-style-type: none"> Work with regional Tribes on fisheries-related strategies. Electric propulsion systems and marina charging capacity. 	
	Increase food storage capacity for local foods.	Local café and co-ops need storage for basics. This can allow for more forward buyings or purchasing staples to prepare for shortages and/or price changes.		The co-op has been doing some forward buying, purchasing staples so that they can prepare for shortages and/or price changes.
	Support local farms to access and/or subsidize lands.	Currently, large farms have more access to federal subsidies than smaller farms.	<ul style="list-style-type: none"> Against NODC providing subsidies. 	

Summary of Results



	Goal #1: Find alternatives to hard armoring on shorelines.	Goal #2: Move facilities – especially critical facilities – out of vulnerable areas.	Goal #3: Explore blue carbon and carbon sequestration opportunities.
Average	4.0625	4.125	4.1875
Frequency of 5	10	12	11
Frequency of 4	18	15	17
Frequency of 3	2	3	3
Frequency of 2	0	1	1
Frequency of 1	2	1	0
Frequency of 0	0	0	0

Key Considerations

Goal	Objectives	Considerations
Goal #1: Find alternatives to hard armoring on shorelines.	<ul style="list-style-type: none"> a) Show examples of communities that have found alternative armoring options that promote coastal resiliency. 	<ul style="list-style-type: none"> What is the cost of this and how would it be paid for in the near term? I know the Port does not have the finances to pay for this kinds of proposal. Rising sea levels and increased storm frequency, why not harden key areas?
Goal #2: Move facilities – especially critical facilities – out of vulnerable areas.	<ul style="list-style-type: none"> a) Continue to conduct regional SLR vulnerability assessments. b) Work with local businesses and chambers of commerce to prepare for future SLR and coastal flooding. c) Protect wastewater treatment systems and sewer lift stations along coastline. 	<ul style="list-style-type: none"> 2c is covered better under the "Water Infrastructure – Sewer and Stormwater Systems" priority and doesn't need to be included here. "Our community is all-in on spending \$50 million on the Field Arts & Events Hall and many other improvements that will total hundreds of millions in investments that are in vulnerable shoreline areas. How do we justify stating that SLR and Coastal Flooding. How will this be paid for? Ideally these recommendations will truly be one's that can be implemented locally through local funding. That must be kept in mind. " Since the emphasis is on moving, I am not sure if item c) fits within this goal. Manage retreat rather than protection is the best long-term strategy.
Goal #3: Explore blue carbon and carbon sequestration opportunities.	<ul style="list-style-type: none"> a) Encourage blue carbon projects – such as kelp beds – to serve as carbon sinks and mitigate other impacts (e.g., ocean acidification). 	<ul style="list-style-type: none"> I need more information Like all carbon sequestration projects, they need to be evaluated both scientifically and economically. There's also a market for kelp products, so perhaps add about business opportunities. Kelp farming can have environmental impacts depending on how it is done, so perhaps add "environmentally sound" or similar qualifier.

Implementation and Coordination Strategies – Shoreline Management, Land Use, and Planning

Goal	Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Find alternatives to hard armoring on shorelines.	Show examples of communities that have found alternative armoring options that promote coastal resiliency.	<ul style="list-style-type: none"> Will be expensive to do. Hardening seems like a good way to prevent coastal flooding. 		
Move facilities – especially critical facilities – out of vulnerable areas.	Continue to conduct regional SLR vulnerability assessments.	Increased storm events and SLR will affect shoreline infrastructure.	Identify areas that are currently in the coastal flood zone and how it will expand due to climate change across the next 100-years. Every jurisdiction should have one of these.	City of Port Townsend is currently doing this via their technical assistance.
	Work with local businesses and chambers of commerce to prepare for future SLR and coastal flooding.		Communicate results from the SLR vulnerability assessments.	
	Protect wastewater treatment systems and sewer lift stations along coastline.	<ul style="list-style-type: none"> Will be expensive to do. 	<ul style="list-style-type: none"> Potentially move this to water supply systems. 	
Explore environmentally-sound blue carbon and carbon sequestration opportunities.	Encourage blue carbon projects – such as kelp beds – to serve as carbon sinks and mitigate other impacts (e.g., ocean acidification).		<ul style="list-style-type: none"> OCNMS and Tribes can be a good partner for this. Might also have examples already. Consider business opportunities for things like kelp farming. 	

Overall Summary Comments

Some of the overall summary comments are below.

- I think these priorities and objectives have too much variability between the conceptual and very specific actions. I would recommend modifying for more consistency.
- It would be great to create a list and invite all of our regional environmental organizations to this table.
- All of these priorities support and fit within our priorities of the Strait ERN
- Surprisingly engaging to look at the intersections of all these issues! 10/10 would recommend.
- We should ensure the vast majority of our populations' concerns are being addressed. The silent majority has spoken. The number one issue is housing that people making less than \$75k can afford. We should be very careful in Clallam County not to exacerbate the inequities and poverty that already exists.
- Thank you, great survey! Well done.
- Thank you.
- Good options, should be further prioritized as to which are most doable that will make the most difference in CC adaptation and mitigation
- We need tribal voices, otherwise great work!
- Obviously there are a lot of nuances in response categories. Devil in the details, . . .But I think this is going in the right direction.
- Cascade Consulting has done a brilliant job of listening and organizing the groups thoughts. Well done! Thank you, Carol Hasse



Appendix E: Meeting #3 Summary

See next page.

NODC Local and Regional Climate Planning Regional Meeting #3

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Introduction

This document summarizes participation, activities, and feedback from the North Olympic Resource Conservation and Development Council's (NODC) Regional Meeting #3.

Meeting Objectives

- Confirm final **climate change priorities, goals, and objectives** for the North Olympic Peninsula.
- Begin to identify **near-term and long-term implementation** and coordination actions.

Workshop Overview

Date & Time	May 25, 2022 1:00pm to 4:00pm
Location	Online – Zoom Meeting
# of Registrants	32
# of Participants	23

Participant's List

Project team is **bolded** below.

- Karen Affeld
- Keiko Betcher
- Mary Ann Rozance
- Mike Chang
- Amy Nash
- Ann Soule
- Ben Braudrick
- Carol Hasse
- Cindy Jayne
- Clea Rome
- Haley Kennard
- Janis Burger
- Joe Holtrop
- John Purvis
- Kara Cardinal
- Kim Williams
- Lara Gaasland-Tatro
- Lindsey Schromen-Wawrin
- Lowell Rathbun
- Mark Ozias
- Melanie Roberts
- Owen Rowe
- Robert Knapp
- Rod Fleck
- Ryan Erhart
- Sissi Bruch
- Tyler King

Workshop Agenda

Time	Agenda Item
1:00 – 1:05pm 5 mins	Participants Join
1:05 – 1:10pm 5 mins	Welcome and Review Meeting Objectives
1:10 – 1:45pm 35 mins	Consensus Discussion #1: Water Supply, Availability, and Quality & Water Infrastructure Focus Areas
1:45 – 2:30pm 45 mins	Consensus Discussion #2: Transportation Resiliency, Adaptation, and Mitigation Focus Areas
2:30 – 2:40pm 10 mins	10-Minute Break
2:40 – 3:15pm 35 mins	Consensus Discussion #3: Energy Resiliency, Redundancy, and Independence & Wildfires and Wildfire Smoke
3:15 – 3:50pm 35 mins	Consensus Discussion #4: Local Food Systems and Agriculture & Shoreline Management, Planning, and Land Use
3:55 – 4:00pm 5 mins	Adjourn + Next Steps

Consensus Survey Results

Following meeting #2, the project team sent out a survey to all meeting participants to obtain consensus to move forward with the goals of each climate change priority area identified in the breakout rooms. The survey allowed for a range of consensus options, with 0 as “No way, I will block this” to 5 as “I will champion this.” This variation in consensus options allows people to express concerns with or desire to amend aspects of these goals. The survey was open for about 5 weeks, from 4/14 to 5/13. A total of 32 respondents provided input to the survey, with 22 organizations represented. These organizations are listed below. The priorities established from the list were then used to detail the consensus discussions for meeting #3.

- Port Gamble S’Klallam Tribe (2)
- Jamestown S’Klallam Tribe
- U.S. Forest Service – Olympic National Forest (2)
- Clallam County (4)
- Jefferson County
- City of Port Townsend (3)
- City of Sequim (2)
- City of Port Angeles
- Port of Port Townsend (2)
- Port of Port Angeles (2)
- Clallam PUD
- Jefferson County Public Health
- WSU Extension
- Strait Ecosystem Recovery Network
- East Jefferson Fire and Rescue
- North Olympic Land Trust
- Jefferson County Conservation District
- Clallam Conservation District
- North Olympic Resource Conservation & Development Council
- Olympic Climate Action (2)
- Resident

Agenda Overview

The purpose of this meeting was for CCG to go over the culmination process of regional strategies to address climate change and to confirm consensus. This involved a full group discussion so the project team could establish and finalize priority areas from the consensus survey [results](#). Two priorities at a time we asked participants for their opinions and their thoughts. Consensus discussion topics included:

- Water Supply, Availability, and Quality & Water Infrastructure Focus Areas
- Transportation Resiliency, Adaptation, and Mitigation Focus Areas
- Energy Resiliency, Redundancy, and Independence & Wildfires and Wildfire Smoke
- Local Food Systems and Agriculture & Shoreline Management, Planning, and Land Use

Meeting #3 Outcomes

Consensus Discussion #1: Water Supply, Availability, and Quality & Water Infrastructure Focus Areas

WATER SUPPLY, AVAILABILITY, AND QUALITY

All three goals were well supported. Overall, there were few reservations or considerations for the three goals.

Goals	Considerations	Revised Goals
Goal #1: Ensure there is sufficient capacity to capture and store rain/snow via built and natural systems.	<ul style="list-style-type: none"> Keep broader to include other ways to recharge aquifers (e.g., grey water) Prioritizing the natural systems over built systems since there are additional benefits conferred from them. Will be different across the Peninsula – some are fed by glaciers, also snow/rain dominant. 	No revisions.
Goal #2: Promote water usage conservation and efficiency to prepare for future water shortages and droughts.	<ul style="list-style-type: none"> For objectives, “enough” and “adequate” may need to be more specific and stronger. Outside of scope. 	No revisions.
Goal #3: Ensure that there is good water quality	<ul style="list-style-type: none"> Water quality varies across the region. Local jurisdictions already doing this. 	No revisions.

REACTIONS, REFLECTIONS, QUESTIONS

- Just looking at goal #1—I appreciate that we need the capacity, but I wonder if we can give priority to natural systems, it does multiple things more than just stormwater. We can and should allow for built systems but prioritize natural systems.
- As an aside—a recent report predicting glaciers will be essentially gone by 2070. Most of the glacier-fed systems are on the westside. It highlights the need for understanding these impacts, but it will be different depending on geographical location.

IMPLEMENTATION AND COORDINATION STRATEGIES TABLE

Content added based on the consensus surveys is colored blue. Content added during the meeting is colored red.

Goal #1: Ensure there is sufficient capacity to capture and store rain/snow via built and natural systems.			
Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Promote aquifer recharge and reservoir storage via strategic investments in	<ul style="list-style-type: none"> Heavier rains mean increased runoff, meaning less time for water to soak and recharge aquifers. Issue of scale – especially for aquifers and smaller reservoirs. Aquifers are inherently local, so if this is 	<ul style="list-style-type: none"> Increased forest cover and wetlands can help facilitate water intercept to achieve recharge objectives. Capture and infiltrate stormwater runoff into the ground instead of sewers. 	<ul style="list-style-type: none"> Nine (9) facilities built in the Dungeness basin has increased capacity to infiltrate. Exploring the potential to do more with this.

Goal #1: Ensure there is sufficient capacity to capture and store rain/snow via built and natural systems.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
habitat restoration and conservation.	<p>something we want to lean into on a regional basis, need to think about how to prioritize which aquifers.</p> <ul style="list-style-type: none"> • Might be limited by water rights. • Aquifers and reservoirs are both storage, but reservoir recharge is unclear. Change to promote aquifer recharge and reservoir storage capacity. 		
Continue to study how less snowpack in the Olympics will affect regional water supply.	<ul style="list-style-type: none"> ▪ There is a timing challenge re: water release and flows. Snowpack melting earlier + more winter rain events shifting seasonal timing of participation. 	<ul style="list-style-type: none"> • Water systems are inherently connected, so while some regions are rain-dominant, this can still affect those regions. • Understand how this affects aquifer recharge. 	<ul style="list-style-type: none"> • Dr Andrew Fountain on Olympics' Disappearing Glaciers, past 100 years, and future 100, zoom program June 15, 6:30-8, registration will be posted soon at olyclimate.org
Increase capacity to capture and store rainfall.	<ul style="list-style-type: none"> • This is inherently at a local scale. • This might be more relevant for rain dominant basins. 	<ul style="list-style-type: none"> • Invest in large rain cisterns, especially for rain-dominant basins. • Offer water collection options on roofs and using large cisterns for non-potable water supply (watering gardens) 	
Monitoring water supply and quality data.		<ul style="list-style-type: none"> • Reiterate importance of monitoring network from USGS. 	<ul style="list-style-type: none"> • Streamkeepers has a data set and is doing ongoing water quality monitoring in a variety of places around Clallam. • Both Clallam and Jefferson environmental health should be able to provide at least some water quality monitoring data and future monitoring plans.
Built systems for water supply.		<ul style="list-style-type: none"> • Desalinization feasibility or pilot projects. <ul style="list-style-type: none"> ○ Make sure we're capturing accurately ○ Understand and assess existing tools for water-making systems • Grey water reuse and recharge. • Monitor built infrastructure for water supply, especially older buildings. 	<ul style="list-style-type: none"> • Dungeness off-channel reservoir project

Goal #2: Promote water usage conservation and efficiency to prepare for future water shortages and droughts.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Implement water reuse systems.	<ul style="list-style-type: none"> • Main barrier for doing this is water treatment capacity and technology. • These can be very costly too. 		<ul style="list-style-type: none"> • Southwest region has some examples.
Promote water conservation behavior change measures.	<ul style="list-style-type: none"> ▪ Need to define the unit of analysis for this – households? Industries? Watersheds? 	<ul style="list-style-type: none"> • Promote household behavior change (e.g., fixing leaky faucets and changing water usage habits). • Utilize local ordinances and declarations to promote water conservation. • Utilize education and public outreach activities to address water supply and conservation usages. 	<ul style="list-style-type: none"> • Dungeness basin already water short. • There are many water conservation strategies being targeted to farmers via the Conservation Districts.
Ensure enough potable water.	<ul style="list-style-type: none"> • There is a timing challenge re: water release and flows. Snowpack melting earlier + more winter rain events shifting seasonal timing of participation. Need to ensure that there is an alignment of water supply and demand. <ul style="list-style-type: none"> ○ change in precipitation is also an important consideration • Need to accommodate future projections/influx of climate migrants and refugees. • [Challenge] The most likely ACTUAL issue with provision of potable water is a future of failing small water systems and/or small local water systems being purchased by multinational corporations and aggregated which results in large fee hikes. This is already happening. 	<ul style="list-style-type: none"> • Ensure accessible water supply – particularly for those more vulnerable to water supply shortages (e.g., homeless, transient populations, low-income communities). • Check in with water providers across the county - PUD, City of PA, Dry Creek Water, etc. and within the region (e.g. Sequim) - to collect existing potable water strategies. • Establish some sort of prioritization, such as prioritizing potable water over farming water, and fish water over farming water. • Consider potential to treat water collected in rain catchers to make potable water • Consider the option of a large-scale desalinization plant for potable water and irrigation 	<ul style="list-style-type: none"> • Dungeness River Management Team for other major river systems.
Ensure adequate water for farming, agriculture, and wildlife .	<ul style="list-style-type: none"> • Irrigation is largest consumptive use of water – especially for agriculture purposes. • There is a timing challenge re: water release and flows. Snowpack melting earlier + more winter rain events shifting seasonal timing of participation. Need to ensure that there is an alignment of water supply and demand. • This might also be in conflict with having enough water for fish runs. 	<ul style="list-style-type: none"> • Irrigation largely limited to Dungeness basin and lots of work already done within the watershed to improve irrigation efficiency. • Use non-potable water for irrigation. • Require or promote more water conservation and efficiency for irrigation. • Understand the projection of future farming areas, especially as a food strategy 	

Goal #3: Ensure that there is good water quality.			
Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Continue to invest and collect water quality data (e.g., pollutants, temperature).	<ul style="list-style-type: none"> Erosion could be an issue, which increased sediment in the water. 	<ul style="list-style-type: none"> List pollution sources and identify pollution sources. 	<ul style="list-style-type: none"> NWIFC has State of Watershed reports.
Address and implement pollution reduction measures .	<ul style="list-style-type: none"> Nitrate pollution in groundwater and marine waters due to climate change and runoff. Could worsen if influx of climate migrants and refugees. This needs to be better defined. There are so many other pollutants, chemicals of concern harming salmon. We need an overall plan to reduce all pollutants and set standards. We need to work with discharge permits to change current limits. Adding phosphorus here as well. 	<ul style="list-style-type: none"> I would suggest coordination between local and county jurisdictions regarding stormwater regulations Establish regional pollutant discharge limits and water quality standards, mining ideas out of local water quality plans 	<ul style="list-style-type: none"> Clallam County is working with Clallam PUD on nitrate pollution, including drilling a test well into the deep aquifer in Carlsborg Sequim has specific stormwater regulations. Then there is the issue of detection and enforcement. The WA State Water Quality Standards are an extension of the Clean Water Act. But a lot of pollutants don't have limits to them, and the EPA takes a long time to establish those limits. Makah Tribe has their own water quality standards. Local water quality plans might seem old, but their recommendations are still very relevant. Those processes involved a lot of input from a lot of stakeholders and went through approval with elected bodies.
Work towards ensuring septic systems aren't flooded, presenting water quality issues.	<ul style="list-style-type: none"> Usually in low-lying areas, so subject to worse flooding. Needs to be led by local jurisdictions. 	<ul style="list-style-type: none"> Allow the Growth Management Act allow for sewer connections with modified rules when environmentally responsible, without authorizing density increases. Ensure septic systems are not flooded. 	<ul style="list-style-type: none"> Clallam works with partners including Conservation District and Craft3 to locate and address failing septic systems, with direct impacts on water quality in Dungeness Bay.

WATER INFRASTRUCTURE – SEWER AND STORMWATER

There was high consensus for the goals.

Goals	Considerations	Revised Goals
Goal #1: Increase resiliency of water systems.	<ul style="list-style-type: none"> Concern this is too expensive and will increase housing prices. Relates to water supply and quality focus area 	<p>No revisions.</p> <p>Proposal: Combine this with the Water Supply, Quantity, and Quality focus area. This proposal was accepted.</p>

IMPLEMENTATION AND COORDINATION STRATEGIES TABLE

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Goal #1: Increase resiliency of stormwater and wastewater systems.			
Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Protect wastewater treatment systems and sewer lift stations along coastline (see: Move facilities – especially critical facilities – out of vulnerable areas goal in Shoreline Management priority area).	<ul style="list-style-type: none"> All objectives will be expensive and may come at odds with other priorities such as affordable housing. 		
Capture and infiltrate stormwater runoff into the ground (see: Ensure there is sufficient capacity to capture and store rain/snow via built and natural systems goal of Water Supply and Availability priority area).	<ul style="list-style-type: none"> Many local govts have these plans in place, they just need capacity support. 	<ul style="list-style-type: none"> Encourage local homes to have rain gardens. Collecting water in the summer would be a solution to some of the runoff issues Reporting on how many people take advantage of incentive programs and rebates Guidelines/policies on reducing/minimizing impervious surfaces in new construction- look at building materials Build capacity at the local government level to implement existing plans and codes 	<ul style="list-style-type: none"> Seattle, King County, Port Angeles provide rebates for rain gardens–soils and materials.
Address nitrate pollution (see: Ensure that there is good water quality goal of Water Supply and Availability priority area).			
Ensure septic systems aren't flooded, presenting water quality issues (see: Ensure that there is good water quality goal of Water Supply and Availability priority area).	<ul style="list-style-type: none"> Usually in low-lying areas, so subject to worse flooding. 	<ul style="list-style-type: none"> Allow the Growth Management Act allow for sewer connections with modified rules when environmentally responsible, without authorizing density increases. 	
Ensure stormwater systems and wastewater management can accommodate increase rainfall and population increases.	<ul style="list-style-type: none"> Low staff capacity to address this. This can be expensive, especially for small cities. Stormwater and sewage is a major impediment to growth. 		<ul style="list-style-type: none"> UW CIG has a stormwater / climate change tool.

Consensus Discussion #2: Transportation Resiliency, Adaptation, and Mitigation Focus Areas

Following the second meeting, there were concerns around delineating adaptation and mitigation strategies. While there are a lot of potential synergies between adaptation and mitigation, there are concerns about inequitable impacts to rural communities if they were delineated.

In the consensus survey, the majority agreed to combining the two focus areas. Those in favor expressed it is important to do this because emissions are the largest source of GHG emissions in the Peninsula. For folks that said no – the main concern was the solutions would be different.

TRANSPORTATION MITIGATION AND EMISSIONS

Goals have **less consensus** compared to the other focus areas.

Combine Transportation Mitigation and Adaptation?	
Yes	20
No	5
Maybe	7

Goals	Considerations	Revised Goals
Goal #1: Reduce regional transportation emissions in an equitable way.	<ul style="list-style-type: none"> Funding this will be difficult. Unsure how 'impactful' this will be because of rural and smaller population. 	<p>No revisions.</p> <p>Good to combine this with adaptation goals, because don't want to increase route redundancy, but don't want associated emissions with this.</p>
Goal #2: Decrease emissions from tourism.	<ul style="list-style-type: none"> Private entities and companies will need to play a role in this. Addressing airline travel is not feasible. 	<p>No revisions.</p> <p>Tourists do want a better public transit system.</p>

REACTIONS, REFLECTIONS, QUESTIONS

- Decreasing tourism and regional transportation emissions—I want to fold them into one another. You don't want to create extra routes and have higher emissions. If you make it better for locals, it will be better for tourism. If there are reduced emissions for locals, there will be reduced emissions for tourism. If we can get inter and intra transportation things done well, that would be wonderful.
- Tourists wish we had a much better public transportations system. Clallam transit is starting experimental shuttle, and Park is looking into funding for temp transportation planner. What benefits tourists will benefit locals. The whole airline thing—considered selling carbon offsets but that system is fraught with verification.
- We live on a peninsula that is mountainous with little opportunities for transportation corridors, which can increase the potential for urban sprawl. Reduce miles traveled and increase public travel. But if we're talking about increasing routes, we're going to have disruptions. Not sure if we're pretending that we're not on peninsula or figuring out how to make transportation work better for people.

IMPLEMENTATION AND COORDINATION STRATEGIES TABLE

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Goal #1: Reduce regional transportation emissions in an equitable way.			
Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Evaluate vehicle miles traveled (VMT) across the region.	<ul style="list-style-type: none"> VMT and EVs are decoupled, especially as EVs are increasingly adopted. 		<ul style="list-style-type: none"> See Port Angeles tracking system.
Evaluate and track the number of EVs purchased across the region.	<ul style="list-style-type: none"> EVs not always feasible for rural communities – need 4-wheel drive. EVs are more expensive relative to gas-powered vehicles. 	<ul style="list-style-type: none"> Incentivize EV deployment by local governments via parking, workplace incentives, etc. Check in with auto dealers about availability/desire for electric vehicles...for example, I understand that a local dealer has something like 200 pre-orders for the new electric F150 Municipalities could require a "lifetime cost" comparison for gas vs electric vehicles through ERR programs to understand when e vehicles actually have a lower lifetime cost. 	<ul style="list-style-type: none"> https://www.prtpo.org/ev-resources for battery charging stations.
Increase alternative modes of transportation routes. (See: Increase inter-community transportation accessibility goal in Transportation Resiliency & Adaptation).	<ul style="list-style-type: none"> Biggest pollution to Makah creeks in Ozette Lake watershed are logging roads—it will be a challenge between buildings more roads and having more impacts on ecology. One of the primary air quality pollutants is vessels in the Sound. More stringent regulations across the Peninsula. The challenges with passenger ferries as sustainable transportation is that they are very high passenger capacity, so their efficiency depends on a lot of demand for the route. I don't think we have that demand yet for Port Angeles (but I haven't looked at the PSRC study results (link above)). 	<ul style="list-style-type: none"> Adaptation co-benefits. Commuter trips in SOVs need to be reduced. For Jamestown S'Klallam Tribe, highest portion of GHG emissions. Consider vessel traffic that can bring people, water, food, etc. between Port Angeles, Port Townsend, Neah Bay, points in between using retrofitted old boats (EV) 	<ul style="list-style-type: none"> Port Angeles to be considered in the ferry study, but I haven't looked at the results. https://www.psrc.org/passenger-ferry-study PNNL would be interested to talk with folks interested in maritime vessel decarbonization
Increase public transit options using alternative fuels (i.e., electric, hydrogen).	<ul style="list-style-type: none"> Unsure if there is sufficient funding to supply EVs for public transit. 	<ul style="list-style-type: none"> Regional workshop focused on rural transit with experts on rural transportation. Invest in on-demand transportation and carpooling programs 	<ul style="list-style-type: none"> Clallam Transit has a van pool program, mostly used by Clallam Bay Corrections Center employees. That dial-up service will be coming to Sequim and Forks through Clallam Transit this fall. (Replacing the inefficient Forks Shuttle and Sequim Shuttle routes.)

Goal #1: Reduce regional transportation emissions in an equitable way.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
			<ul style="list-style-type: none"> • https://www.prtpo.org • https://www.clallamtransit.com/vanpool
Increase EV charging capacity and availability across the region.	<ul style="list-style-type: none"> • Locations may be somewhat limited—requires a lot of energy to charge vehicles. • Most people who own EVs charge them at home. It's tourists who will use these stations, and they don't need them too much right now. • City of Sequim EV charger station averages 1.9 transactions per day. i.e. demand is not high. • Lake Crescent and Kalaloch Lodge chargers are used all the time. There is variability across the region. Makah has two chargers, consider which chargers are compatible with which EVs. • Cost of EVs are going down—it's important to get ahead of it. Chargers installed and coming in Port Angeles—will be useful for tourists coming in and out of Hurricane Ridge • Chargers planned and coming in Blyn and surrounding area 		<ul style="list-style-type: none"> • Energy NW working through a Dept of Commerce grant to install high-capacity chargers in Sequim, Forks, Port Angeles as part of Hwy 101 electrification program. Targeted toward tourism. • There is funding for installing car battery charging stations around the 101 loop now. Contact Thera Black at PRTPo, see https://www.prtpo.org/ev-resources
Modify land use policies to reduce need for transportation (See: Increase intra-community transportation accessibility goal in Transportation Resiliency & Adaptation).	<ul style="list-style-type: none"> • There is a lack of infrastructure to give people the ability to use alternative modes of transportation (such as shoulders, bikeable roads, sidewalks, etc.) 	<ul style="list-style-type: none"> • Adaptation co-benefits. • Coordination between jurisdictions to ensure compliance with Growth Management Plans 	<ul style="list-style-type: none"> • Recommend folks spend some time looking at this report: https://www.pmel.noaa.gov/co2/stories/WA+State+Emissions • Peninsula Regional Transportation Planning Organization. https://www.prtpo.org/

Goal #2: Decrease emissions from tourism.			
Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Encourage tourists to utilize public transit options.	<ul style="list-style-type: none"> This will likely be a long-term solution, after public transit options are expanded. Need to invest in public transit infrastructure (more buses, more stations, etc.) before this becomes feasible or a reality. Tourists to ONP do want to see better public transit options The park brings in over 3 million folks a year to our area. A shuttle study at the park found the problem was nearly all shuttle systems across the NPS are subsidized as commercial runs are usually not economically feasible. But the Hoh would be logical given the full parking lot and long summer waits to get in now, something that never used to happen. Perhaps the possible temporary transportation planner will be addressing the Hoh too. 	<ul style="list-style-type: none"> Coordination with tourism industry and local governments. Perhaps the Port of Seattle would incentivize EV car rentals, which would cut a lot of visitor emissions. Consider a shuttle route up the Hoh Road (like Clallam Transit Hurricane Ridge Route) 	<ul style="list-style-type: none"> Port Angeles has bus that runs up to Hurricane Ridge. Clallam Transit's Hurricane Ridge pilot route info is live at https://www.clallamtransit.com/ National Park looking into potential funding for temporary transportation coordinator. Also discussed carbon offset options for tourists but that system is fraught with verification
Reduce emissions from airline travel to/from the North Olympic Peninsula.	<ul style="list-style-type: none"> Maybe not enough airline travel to Fairchild Airport for this to be meaningful. Do we have an idea of the percentage of GHG that comes from local transportation vs. tourism? How much "bang for the buck" do we get for tourism vs. local policy? We plant a lot of trees on Peninsula, possible to connect to offset concept? 		<ul style="list-style-type: none"> Some recent information on carbon offsets associated with air travel: https://www.nationalgeographic.com/travel/article/should-you-buy-carbon-offsets-for-your-air-travel

TRANSPORTATION ADAPTATION AND RESILIENCY

There is much more **support across the board** for these goals.

Goals	Considerations	Revised Goals
Goal #1: Increase the response capacity of the region if transportation routes are disrupted.	<ul style="list-style-type: none"> Will be really expensive. May not be able to add more routes. 	No revisions.
Goal #2: Fortify vulnerable transit routes and corridors. More corridors could lead to more sprawl as well. Want to reduce VMT and increase adaptation resiliency.	<ul style="list-style-type: none"> Will be really expensive. Could be combined with Goal #1. 	No revisions.
Goal #3: Increase inter-community transportation accessibility.	<ul style="list-style-type: none"> Transportation and broadband are not top concerns. 	No revisions.

Goal #4: Increase intra-community transportation accessibility.	<ul style="list-style-type: none"> This is not an important issue for regional coordination. 	No revisions.
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IMPLEMENTATION AND COORDINATION STRATEGIES TABLE

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Goal #1: Increase the response capacity of the region if transportation routes are disrupted.			
Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Identify and/or increase redundancy of transportation corridors.	<ul style="list-style-type: none"> Currently there's network of roads by state and federal agencies, but people may not know which ones are functional. Will be really expensive. More corridors could lead to more sprawl. We live on a peninsula that is mountainous with little opportunities for transportation corridors, which can increase the potential for urban sprawl. Reduce miles traveled and increase public travel. But if we're talking about increasing routes, we're going to have disruptions. Not sure if we're pretending we're not on peninsula or figuring out how to make transportation work better for people. Rather than building new roads, looking at existing Forest Service roads that can be improved. Forest service roads won't have development or sprawl. We need to get really creative with alternative routes when people are cut off. 	<ul style="list-style-type: none"> May have other travel options that aren't reliant on road vehicles (e.g., ferries/boats). Identify network of roads that can be alternatives if a main route is disrupted Focus on roads that are critical – 112, 101, 113. 	<ul style="list-style-type: none"> Makah Tribe working with Governor's Office and House Transportation Committee to find long-term solutions for remote Tribes.
Identify network of roads that can be alternatives if a main route is disrupted.		<ul style="list-style-type: none"> Utilize existing channels (e.g., WSDOT twitter, Facebook groups, text message alert system, AM Radio) to push out messages. Identify new ways to communicate during extreme events/disasters, especially for more remote communities. 	
Increase communication channels to drivers and transit users.			

Goal #2: Fortify vulnerable transit routes and corridors in an ecologically beneficial way.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Identify vulnerable routes and fortify those routes.	<ul style="list-style-type: none"> Original NODC climate report identified some vulnerable roads due to climate change. Not going to stop storm events or climate change, so need to find troubled spots. Will be really expensive. May be in conflict with fish habitat and passage. 	<ul style="list-style-type: none"> Identify, prioritize, and fund projects that fortify and increase robustness of transportation routes (e.g., floodplains next to roads, landslide barriers). 	

Goal #3: Increase inter-community transportation accessibility.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Increase broadband to minimize need for inter-regional transit.	<ul style="list-style-type: none"> Many communities need to travel for things like work, doctor's appointments, etc. If have broadband, can reduce some of these needs. Broadband and public transit not big issues in Clallam County survey. I estimate that the 1600 rural broadband connections for which we have secured funding should result in a reduction of more than 7 million miles driven/year. 	<ul style="list-style-type: none"> Increase access to more nuanced health resources (virtual visits, health-specific transportation options). 	
Promote more public transit options between communities.	<ul style="list-style-type: none"> Some current transit stops are hard to access for residents. For example, in western Port Angeles, some stops are near steep roads or have no shoulder, which prevent people from accessing these transit stops. For Jamestown S'Klallam Tribe, a bunch of people are traveling in/out to/from the same place. However, job shifts may affect timing during the day (e.g., some people work nights). Public transit options may not work for isolated communities (e.g., Neah Bay). Can focus on amplifying health benefits and outcomes (e.g., service access, air quality near highways). 	<ul style="list-style-type: none"> Focus on a transit system that prioritizes transportation of people to health services. Institute rideshare or commuting options, so people are less reliant on single-occupancy cars for commuting. <ul style="list-style-type: none"> Look into accessible and easy-to-use coordination around carpooling opportunities Invest in creating transport hubs across the region. Use a public education campaign to increase adoption of public transit options. (Re)-invest in a regional rail system. Survey the public about transit modes and access to get a baseline understanding. 	<ul style="list-style-type: none"> WSDOT has new funding options for EV rideshare. Forth Mobility is providing technical assistance to apply for this funding. Federal infrastructure bill also focuses on public transit investments. Forks has a good transit system with a mainline into PA. Shifting to a call-on-demand local system in Forks. PA used to have trolley system.
Identify innovative ways to reduce need for transportation.	<ul style="list-style-type: none"> When 112 landslides happened, people commuting to Clallam Bay were affected. Got permission to bring camper vans so don't need to commute back and forth around landslides. 		<ul style="list-style-type: none"> See Clallam Bay example.

Goal #4: Increase intra-community transportation accessibility.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Minimize sprawl within communities to increase walkability of communities.	<ul style="list-style-type: none"> Currently within communities, most people are reliant on cars. Even if local routes are damaged, this can promote local resilience within communities. 	<ul style="list-style-type: none"> This will be a long-term strategy. Amend local land-use policies that prioritize 10-minute communities. Develop the urban growth area (UGA) and reduce the sprawl and density outside the UGA. Under GMA, rural areas may have more limited options. 	<ul style="list-style-type: none"> Makah Tribe is thinking of food sovereignty to rely less on external transit routes that import non-cultural foods.
Promote micro-transit options within communities.	<ul style="list-style-type: none"> Some current transit stops are hard to access for residents. For example, in western Port Angeles, some stops are near steep roads or have no shoulder, which prevent people from accessing these transit stops. Need to consider transit in relation to housing affordability. 	<ul style="list-style-type: none"> Focus on last mile options to get people from their homes to transit stops. Increase bikability. Support maintenances of roads to ensure smooth pavement for bikes and e-scooters. 	

Consensus Discussion #3: Energy Resiliency, Redundancy, and Independence & Wildfires and Wildfire Smoke

ENERGY RESILIENCY, REDUNDANCY, AND INDEPENDENCE

Generally, a lot of support for goals in this topic area.

Goals	Considerations	Revised Goals
Goal #1: Improve and bolster resiliency of existing energy infrastructure.	<ul style="list-style-type: none"> Concerns of some renewable energy. 	No revisions.
Goal #2: Increase capacity of local jurisdictions to participate in long-term energy resiliency planning.	<ul style="list-style-type: none"> Need to expand from planning to implementation. Resiliency is too ambiguous. 	Increase capacity of local jurisdictions to plan and implement energy projects.

REACTIONS, REFLECTIONS, QUESTIONS

- Don't the 'capacity' goals really depend almost exclusively on political will?

IMPLEMENTATION AND COORDINATION STRATEGIES TABLE

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Goal #1: Improve and bolster resiliency of existing energy infrastructure.			
Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Work with BPA and local PUDs to understand current limits and issues related to energy infrastructure.	<ul style="list-style-type: none"> There are state mandates associated with the Clean Energy Transformation Act. All utilities need to achieve carbon neutrality by 2030 and have no emitting sources by 2045. As of now, due to the Energy Independence Act of 2006, Clallam PUD procured renewable energy credits and technically achieved carbon neutrality already, but they still have to work toward being carbon-free. Future challenges: conversion of transportation sector to EV. Distributed energy from private renewable energy sources is generally not a problem until a certain percentage is reached that creates mitigation problems. There is still substantial room to bring on net meter loads. 	<ul style="list-style-type: none"> Arrange workshops between PUDs, BPA, Department of Commerce, and local governments to understand what is being done, identify local vulnerabilities (e.g., energy supply), and identify local options (e.g., energy demand reduction, increased storage). <ul style="list-style-type: none"> Clallam PUD would be willing to give a presentation on this. Implement smart inverters Understand the peaking load and how to lower the height of that peak 	<ul style="list-style-type: none"> Improve and bolster resiliency of existing energy infrastructure.

Goal #1: Improve and bolster resiliency of existing energy infrastructure.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Coordinate a regional renewable energy plan that prioritizes local generation, storage, and distribution. Increase local means of renewable energy by 10% within 10 years.	<ul style="list-style-type: none"> Unsure what the current percentage comes from renewable energy. Currently, heavy reliance on hydropower via BPA. While “renewable”, unsure if this is the route that the region wants to continue. 	<ul style="list-style-type: none"> Conduct an audit/review of energy purchases and recommend options and recommendations. Encourage micro-turbine generation. Incentive community solar installations. Concern about off-shore wind energy. PUDs prioritizes a Clean Energy Implementation plan that incorporates all of this. 	
Catalog current opportunities and incentives to improve energy efficiency and conservation.		<ul style="list-style-type: none"> PUDs already required to do this under state statute. Please add solar thermal (hot water heating) to the conservation/ efficiency blocks as it's more efficient than PV and works well here in summer particularly. 	<ul style="list-style-type: none"> Clallam PUD is required to support low-income households and weatherization
Prioritize the energy resiliency of critical facilities (e.g., hospitals, fire stations, community centers).		<ul style="list-style-type: none"> Place energy and/or battery storage capacity at critical facilities. They can act as electricity microgrids. PUD Emergency Response and Restoration Plan already catalogues and prioritizes critical facilities and restoration. 	
Keep energy purchases local and more independent.		<ul style="list-style-type: none"> PUD contractually required to procure from BPA. However, does purchase energy from 400 existing or new small solar, wind, and hydroelectric generators under net metering agreements. Assess wave energy – Makah Tribe is currently modeling this. 	<ul style="list-style-type: none"> Preliminary information available on tidal energy–PNNL has this on their radar. Port of Port Angeles has shore power for freighters at one dock (talking about big power loads).

Goal #1: Improve and bolster resiliency of existing energy infrastructure.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
		<ul style="list-style-type: none"> Explore middle wind energy sources Expand community solar projects 	<ul style="list-style-type: none"> Clallam PUD has low-income community solar programs and opportunities coming.

Goal #2: Increase capacity of local jurisdictions to plan and implement energy projects.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Facilitate regional capacity to support local governments in planning and implementing energy resiliency projects.	<ul style="list-style-type: none"> Most governmental bodies don't have an energy person/expert on staff, so there is limited capacity to engage with these discussions. Energy-related working groups may not be thinking of climate change projections. Unsure what is currently being done by other organizations. <ul style="list-style-type: none"> Clallam PUD already participates in workshops with State and regional entities. Need to consider equity implications of new renewable energy development (e.g., siting). Don't the "capacity" goals really depend almost exclusively on political will? 	<ul style="list-style-type: none"> Arrange workshops between PUDs, BPA, Department of Commerce, and local governments to understand what is being done, identify local vulnerabilities (e.g., energy supply), and identify local options (e.g., energy demand reduction, increased storage). Identify case studies and examples of lessons learned from previous efforts. NODC partnering with PNNL to increase implementation capacity for microgrids. Support a tribal consortium on regional tribal energy coordination. Local EDCs prioritize local energy generation so not completely reliant on BPA. 	<ul style="list-style-type: none"> PNNL has energy storage for social equity technical assistance program. They are willing to provide info and resources via workshops, events, etc: https://www.pnnl.gov/sustainable-energy Makah Tribe is part of first cohort to assess feasibility. NODC is working on "energy resiliency summit" with partners—coming in fall.

WILDFIRE SMOKE

General support for topic area and goals

Goals	Considerations	Revised Goals
Goal #1: Reduce wildfire risk in forests and the wildland-urban interface.	<ul style="list-style-type: none"> Unsure if the region can meaningfully address that isn't already being done by other entities. 	No revisions.
Goal #2: Increase capacity and understanding to respond to wildfires.		No revisions.

Goal #3: Increase capacity to respond to wildfire smoke events.	<ul style="list-style-type: none"> Will be expensive and unsure how to fund it. 	No revisions.
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IMPLEMENTATION AND COORDINATION STRATEGIES TABLE

Content added based on the consensus surveys is **colored blue**. Content added during the meeting is **colored red**.

Goal #1: Reduce wildfire risk in forests and the wildland-urban interface.			
Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Utilize programs such as FireWise to promote and incentivize behaviors that reduce wildfire risk.	<ul style="list-style-type: none"> The areas most likely to be at risk for wildfire (urban/wildland interface) are in the unincorporated counties, so county planning and permitting could help reduce danger. 	<ul style="list-style-type: none"> Incentive and encourage behaviors, such as increasing defensible space. Educate builders about practices around fire preventing and protection structures (e.g., building materials, filtration systems). Implement county planning and permitting processes for the urban/wildland interface of unincorporated counties Build and remodel structures with fire-preventative materials 	
Partner with federal and state agencies to improve science-based forest management strategies that reduce wildfire risk.	<ul style="list-style-type: none"> Concerns about cross laminated timber. Consider forest conditions (mature forests burn less intensely) 	<ul style="list-style-type: none"> Potentially partner with regional Tribes on this objective. Port Gamble – Roma Call – working on prairie burns for wildfire risk management. Ensure sustainable logging practices that minimizes wildfire risk or post-fire disasters (landslides). Work with small private landowners as well as large landowners to develop a wildfire plan Establish a publicly-supported forester at a local agency, such as a forester on county staff 	<ul style="list-style-type: none"> http://chickadeeforestry.com/index.html

Goal #2: Increase capacity and understanding to respond to wildfires.			
Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Promote behaviors that prepare households and businesses for wildfire response.	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Incentivize or educate households and businesses about collecting rainwater for fire protection. Reserve some cisterns for wildfire response (the water level at the height of wildfire season, after the growing season, is typically low) 	
Increase firefighting capacity to respond	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Enhance water delivery systems for fighting fires. 	

Goal #2: Increase capacity and understanding to respond to wildfires.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
to projected increased in wildfire risk.		<ul style="list-style-type: none"> Ensure accessibility for firefighting equipment can be accessed via roads. Lobby DNR to continue expanding firefighting capabilities. 	
Update or create wildfire prevention and preparedness plans that account for climate change.	<ul style="list-style-type: none"> Will be expensive potentially. Prevention of human-caused fires is still important and local forest management companies can help by closing/gating their lands when fire danger is elevated (something already done), but also USFS lands, DNR and continuing ed for recreational users. There are cooperative agreements between park, forest and state and usually synchronized fire bans, etc. 	<ul style="list-style-type: none"> Identify evacuation protocols and routes. Update Coordinated Water Plan with a focus on water needs for wildfire response. Develop regional resilience hubs. Enhanced education for recreational users about human-caused fire 	

Goal #3: Increase capacity to respond to wildfire smoke events.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Provide and distribute air filtration technologies.	<ul style="list-style-type: none"> Also need to consider heat relief in addition to smoke relief. 	<ul style="list-style-type: none"> Provide, distribute, and/or promote HEPA filters and heat pumps. Educate households about at-home protection methods (e.g., box filter fans). This has worked really well—it doesn't have to be expensive and can be done at a regular household level. 	
Provide shelters that have clean air quality during wildfire smoke days.		<ul style="list-style-type: none"> Open up local community centers, schools, or libraries that have air filtration systems. — Resilience hubs. 	
Identify priority households or community groups to provide air filtration resources.	<ul style="list-style-type: none"> Challenge in how to identify where these people reside (voluntary registry?). Include folks such as elderly people, unhoused individuals, etc. 	<ul style="list-style-type: none"> Engage federal and state agencies about funding and research to fund and implement this strategy. Work on cross-jurisdictional knowledge sharing to share best practices. 	

Consensus Discussion #4: Local Food Systems and Agriculture & Shoreline Management, Planning, and Land Use

LOCAL FOOD SYSTEMS AND AGRICULTURE

Goals	Considerations	Revised Goals
Goal #1: Promote resiliency of regional agriculture sector to climate change to ensure economic viability in the long-term.	<ul style="list-style-type: none"> Organic does not mean better. Unsure how local governments can affect this goal. 	No revisions.
Goal #2: Ensure resiliency of regional marine food systems to future climate change.	<ul style="list-style-type: none"> Ensure this doesn't infringe on fisheries management and Treaty Rights. 	No revisions.
Goal #3: Promote economic and market viability of all local food systems.	<ul style="list-style-type: none"> This goal should be a cornerstone of this priority area. 	No revisions.

IMPLEMENTATION AND COORDINATION STRATEGIES TABLE

Content added based on the consensus surveys is *colored blue*. Content added during the meeting is *colored red*.

Goal #1: Promote resiliency of regional agriculture sector to climate change to ensure economic viability in the long-term.			
Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Diversify agricultural infrastructure (e.g., greenhouses).	<ul style="list-style-type: none"> Climate projections predict more frost and changes in growing seasons and also increased pests. Infrastructure investments could help prepare for some of these impacts. Unsure the role of local governments in this area. Local government does have a role to play. For example, city and county government programs that invest in the agriculture sector and provide support to local economic development agencies to promote agriculture sectors. 		<ul style="list-style-type: none"> Build off regional work done by NODC, WSU Extension, Land Trusts, and Conservation Districts. Port of Skagit has done interesting things to support local agriculture. I hope that the Conservation Futures program - which will help us to protect working farmland itself - will be an important aspect to promoting the resilience of the ag sector. I would add that the school district has done this in the past and those efforts need to be restarted. Local foods for students.
Promote organic farming to minimize runoff pollution.	<ul style="list-style-type: none"> Organic farming doesn't mean less pollution. 	<ul style="list-style-type: none"> Address on-site pollution with feeding, parasite, and fecal contamination. 	
Encourage local, household, and community gardens to reduce reliance on food imports.			

Goal #1: Promote resiliency of regional agriculture sector to climate change to ensure economic viability in the long-term.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Work with farmers to increase self-sufficiency to store crops and products.	<ul style="list-style-type: none"> Farmers currently dependent on transportation and mass food storage. 	<ul style="list-style-type: none"> Provide education and information to local farmers about climate change impacts, projected changes, and tools to prepare. 	
Conserve farmland and promote sustainable agricultural practices.		<ul style="list-style-type: none"> Utilize Comprehensive Plans to implement. 	
Improve irrigation efficiency (see: Promote water usage conservation and efficiency to prepare for future water shortages and droughts goal in Water Supply and Availability).			

Goal #2: Ensure resiliency of regional marine food systems to future climate change.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Utilize sustainable marine food harvesting methods.		<ul style="list-style-type: none"> Work with regional Tribes on fisheries-related strategies. 	<ul style="list-style-type: none"> Regional hatcheries already exist.
Focus on low environmental impact but high protein food	<ul style="list-style-type: none"> Strong opposition to net pens. Is there a way to do fish farming and net pens well? We need to understand what those impacts are. fish farming can be terrestrially based too 	<ul style="list-style-type: none"> Work with regional Tribes on fisheries-related strategies. Use BMPs and compatible species that don't harm local marine systems and species. 	

Goal #2: Ensure resiliency of regional marine food systems to future climate change.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
production, such as fish farming or hatchery operations.		<ul style="list-style-type: none"> Leverage things like kelp farms for blue carbon benefits. 	
Identify options for species and new marine industries (e.g., new fisheries, aquaculture, etc.) that could be viable under future climate change scenarios.	<ul style="list-style-type: none"> Fisheries management is outside the scope of this project, so need to be cognizant of Tribal rights and treaties. 	<ul style="list-style-type: none"> Work with regional Tribes on fisheries-related strategies. Partnership with OCNMS and OASeS 	

Goal #3: Promote economic and market viability of all local food systems.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Support direct markets between local food producers and local users/vendors.	<ul style="list-style-type: none"> There are already projects and programs and organizations that are involved in regional food security and vitality. Is there a better way to review and catalogue current efforts and identify where gaps may be? Potential benefit: promoting more local growing and consumption can eliminate GHG emissions related to supply chains and imports. There is increasing energy and funding for building contracts between food banks and farmers to achieve this goal 	<ul style="list-style-type: none"> Encourage local contracting amendments and preferences (e.g., between restaurants or farmers markets with local producers). Set up local food contracts between producers and consumers, where consumers can 'buy' a contract for farmers/fishers, guaranteeing them revenue for a year. 	<ul style="list-style-type: none"> Local contracts between producers and consumers were done in Washington County, OR.
Improve technology to ensure fishing fleets can be more sustainable and conserve fuel.		<ul style="list-style-type: none"> Work with regional Tribes on fisheries-related strategies. Electric propulsion systems and marina charging capacity. 	

Goal #3: Promote economic and market viability of all local food systems.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Increase food storage capacity for local foods.	<ul style="list-style-type: none"> Local café and co-ops need storage for basics. This can allow for more forward buying or purchasing staples to prepare for shortages and/or price changes. Consider role of regional food banks 		<ul style="list-style-type: none"> The co-op has been doing some forward buying, purchasing staples so that they can prepare for shortages and/or price changes.
Support local farms to access and/or subsidize lands.	<ul style="list-style-type: none"> Currently, large farms have more access to federal subsidies than smaller farms. 	<ul style="list-style-type: none"> Against NODC providing subsidies. 	

SHORELINE MANAGEMENT, LAND USE, AND PLANNING

Generally, a lot of support for these three goals.

Goals	Considerations	Revised Goals
Goal #1: Find alternatives to hard armoring on shorelines.	<ul style="list-style-type: none"> Hardening shorelines is a mechanism to adapt to coastal flooding and sea level rise. 	No revisions.
Goal #2: Move facilities – especially critical facilities – out of vulnerable areas.	<ul style="list-style-type: none"> Funding for this will happen locally. 	No revisions.
Goal #3: Explore blue carbon and carbon sequestration opportunities.	<ul style="list-style-type: none"> Needs to be evaluated scientifically and economically. This goal should be a cornerstone of this priority area. 	No revisions.

IMPLEMENTATION AND COORDINATION STRATEGIES TABLE

Content added based on the consensus surveys is colored blue. Content added during the meeting is colored red.

Goal 1: Find alternatives to hard armoring on shorelines.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Show examples of communities that have found alternative	<ul style="list-style-type: none"> Will be expensive to do. Hardening seems like a good way to prevent coastal flooding. 		<ul style="list-style-type: none"> Strait ERN may have some case studies. LIOs came together a couple weeks ago to look at policy barriers and reasons hard armoring is

Goal 1: Find alternatives to hard armoring on shorelines.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
armoring options that promote coastal resiliency.	<ul style="list-style-type: none"> ○ It will prevent coastal flooding, but can also cause a lot of other issues. Not the best environmental solution • Differentiate between hard armoring and soft armoring—soft armoring can provide ecological benefits 		still being permitted. Currently writing a report, can be shared out soon.

Goal 2: Move facilities – especially critical facilities – out of vulnerable areas.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Continue to conduct regional SLR vulnerability assessments.	<ul style="list-style-type: none"> • Increased storm events and SLR will affect shoreline infrastructure. 	<ul style="list-style-type: none"> • Identify areas that are currently in the coastal flood zone and how it will expand due to climate change across the next 100-years. Every jurisdiction should have one of these. 	<ul style="list-style-type: none"> • City of Port Townsend is currently doing this via their technical assistance.
Work with local businesses and chambers of commerce to prepare for future SLR and coastal flooding.		<ul style="list-style-type: none"> • Communicate results from the SLR vulnerability assessments. 	
Protect wastewater treatment systems and sewer lift stations along coastline.	<ul style="list-style-type: none"> • Will be expensive to do. 	<ul style="list-style-type: none"> • Potentially move this to water supply systems. 	

Goal 3: Explore environmentally-sound blue carbon and carbon sequestration opportunities.

Objective(s)	Challenges & Needs	Potential Strategies & Considerations	Case Studies or Funding Options
Encourage blue carbon projects – such as kelp beds – to serve as carbon sinks and mitigate other impacts (e.g., ocean acidification).		<ul style="list-style-type: none"> OCNMS and Tribes can be a good partner for this. Might also have examples already. Consider business opportunities for things like kelp farming. Consider kelp markets! 	<ul style="list-style-type: none"> The new WA cap-and-invest program will start generating revenue for carbon capture projects next year: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.65.260 Next session legislatures talking about qualified projects. TNC also looking into blue carbon and carbon credit tradings between WA counties.

Wrap Up + Next Steps

Before wrapping up the meeting, Mike opened the floor one last time for participants to provide any additional input, particularly on anything that might be missing, that would help the project team moving forward. Participants added the following statements:

- I appreciate the conversation, my concern is all this planning gets turned into implementation. Too many things have been planned and not gone that way. We've identified the right areas and things being done. Right now we need to find the support, funding, and resources to get it done.
- I suspect there are many missing ongoing projects that could be added to this list as we share it more broadly.
- Speaking of funding, Strait ERN recovery has been following infrastructure bill really closely—what that will fund, how we can come together. Things like this that lay out really specific actions can really help us tap into some of that.
- NODC has a few different ongoing projects, including a disaster resiliency project happening concurrently with this project. Part of that is diving deep into the infrastructure bill that is investing federal funding into communities to support these types of projects.
- There are any number of these strategies that can be implemented relatively easily, and there are others, especially with staff capacity issues, that require sufficient political will to make that happen. Can we organize these into different buckets or prioritize them in a way to set ourselves up for success in terms of having some actionable result?. Where can we take action under existing political will and what will require going out to the people to help them understand what the issues are and what their options are?
- We want to acknowledge the comments saying a lot of this is related to public political will. This is why NODC wants to use a consensus-style model to agree on actions. Hopefully consensus across jurisdictions gives a strong message to continue pushing this forward regardless if they participated in this project or not.

Mike thanked participants for their input and continued contribution to this process. He also identified next steps which include an opportunity to provide final input on the strategies, considerations, funding resources and case studies discussed in this meeting, as well as an upcoming meeting focused on funding opportunities. Participants provided some final comments, listed below:

- Thank you, Mike, you've been a remarkable, calm facilitator and a great guide. It's a privilege to be a part of. We're all involved in the political will in a big way. If we can reach a critical mass by informing as many people as possible, great things can happen. One thing I've noticed is there is a sea of three- and four-letter acronyms that stand for really important things. How do we align all the nonprofits and non-governmental entities in our asks for funding? This would be a useful directory as we try to coordinate information in the broadest way with our brilliant community.
- Thanks everyone for your patience with this process as we tried out some things. The results are more than we could've expected, it shows what we can do when we put our heads together and think well. The proof will be when we actually implement things. The next meeting will bring funders together to understand how to move forward. Hopefully if we can get folks from big funding departments, we can be a model for how rural areas can respond. So let's go do that!
- Bill Nye the Science guy says we've had cheap stuff for a long time, it's going to cost us to do it right, so just pay up!



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