

MEMORANDUM

January 31, 2025

To: Robby Eckroth, Senior Planner
Tara Satushek, Senior Planner
Skagit County, Washington

From: Heidi Rous Climate Director, Kimley-Horn

RE: SUMMARY OF CLIMATE HAZARDS AND POLICY GAPS & OPPORTUNITIES, CLIMATE ELEMENT AND RESILIENCY SUB-ELEMENT 2025 COMP PLAN UPDATE, SKAGIT COUNTY

Purpose

This memorandum summarizes potential climate impacts to Skagit County assets and potential policy opportunities to address climate impacts. The memorandum further informs the new Climate Element and Resiliency Sub-Element, consistent with House Bill 1181 (“HB 1181”) and Washington State’s Growth Management Act (“GMA”). A memorandum summarizing climate vulnerability and risks of identified assets will be provided separately. This memorandum and the memorandum summarizing climate vulnerability and risk of identified assets work cohesively to inform potential priority climate risks to the identified critical assets of the County. Under HB 1181 and the GMA ([RCW 36.70A.070\(9\)](#)) for Skagit County, a resiliency sub element must, among other things, equitably enhance resiliency to, and avoid or substantially reduce the adverse impacts of, climate change in human communities and ecological systems through goals, policies, and programs consistent with the best available science and scientifically credible climate projections and impact scenarios [RCW 36.70A.070\(9\)\(e\)\(i\)](#).

Scope

Critical infrastructure located within the County are identified and assessed for exposure to climate hazard scenarios (see “Analysis” section below). Assets identified are located within Skagit County and are either owned and operated by the County, quasi-public agencies, or private entities. Assets include administrative buildings, transportation infrastructure and facilities, natural preserves, historical buildings, radio communication, and emergency management facilities that are owned and managed by the County. Other critical facilities operating under a special purpose district, public utility district, and private entities were assessed including educational institutions, water, sewer, and energy facilities. Identifying local assets owned or managed by non-County entities provides an opportunity to coordinate with responsible agencies and protect critical facilities and communities against climate hazards. Other assets may include community groups, places, and services which will be identified through community stakeholder interviews in mid-June of this year. Other assets identified by stakeholders will be updated in the workbook and incorporated into Climate Element goals and policies.

Methodology

Under the Washington State Department of Commerce’s Intermediate Planning Guidance document¹, Section 3: Resilience Sub-element provides step-by-step guidance for developing a new climate and resiliency element, as shown below:

1. Explore Climate Impacts
2. Audit Plan and Policies
3. Assess Vulnerability and Risk
4. Pursue Pathways
 - a. Select and/or adapt existing goals and policies
 - b. Develop new goals and policies
 - c. Update and adopt hazard mitigation plan
5. Integrate Goals and Policies

Following the guidance document, the Climate Element Workbook was utilized (See **Appendix A: Skagit County Climate Element Workbook**). The intermediary tasks within Steps 1-5 are included below and are further detailed in the Analysis section.

1. Identifying and organizing County and community assets under specific sectors;
2. Identifying potential climate hazards per sector;
3. Pairing assets and hazards;
4. Describing potential climate impacts, asset exposure, non-climate stressors, and climate impact consequences of each asset-hazard pair;
5. Identifying priority climate hazards affecting the County; and
6. Reviewing existing plans for climate gaps and opportunities.

The Climate & Resilience Element is required to have one (1) goal and supportive policy for each climate-exacerbated hazard which is relevant to the County, as required by FEMA and HB 1181. Recommendations include new measures that enhances beneficial opportunities among the eleven sectors which are not typically included in a FEMA-approved hazard mitigation plan.

Analysis

Identify Community Assets

Over 80 County assets were identified, including administrative and civic buildings, parks, recreation facilities, transportation infrastructure and facilities, farms, natural preserves, solid waste facilities, water distribution infrastructure, radio communication infrastructure, water wells and reservoirs, and other critical facilities co-managed with special districts i.e., fire stations, hydroelectrical dams, telecommunication facilities, etc. Many of these assets are located sparsely throughout the County with some having distinct boundaries. For instance, the unincorporated County includes four neighborhoods: Neighborhood #1 (Fidalgo), Neighborhood #2 (Lower Elevation), Neighborhood #3 (Higher Elevation), Neighborhood #4 (Wildlands)². The Fidalgo includes all portions of

¹ Washington State Department of Commerce, *Intermediate Planning Guidance*, <https://deptofcommerce.app.box.com/s/fpg3h0lbwln2ctqjg7jg802h54ie19jx>, accessed January 2025

² Neighborhoods were identified by grouping common characteristics of natural hazard exposure to residential areas together. This was done during the Jurisdiction-Specific Vulnerability Assessment (Mitigation Goals and Strategies) process of the Hazard Mitigation Plan in order to streamline analyses due to the large extent of the County. These are not officially designated districts and are identified for

unincorporated County lying westerly of the Swinomish Channel including Fidalgo Island, Guemes Island, Cypress Island, and Sinclair Island. The Lower Elevation includes all portions of the unincorporated County below 500 feet in elevation and lying westerly of Range 7 East, Willamette Meridian, and easterly of the Swinomish Channel. The Higher Elevation includes all portions of unincorporated County below 500 feet in elevation and lying easterly of Range 6 East, Willamette Meridian to the crest of the Cascades. The Wildlands includes all portions of the unincorporated County above 500 feet in elevation. In addition to the assets listed above with distinct boundaries, assets co-managed and located sparsely include transmission pipelines, roads (e.g. Interstate 5, State Highway, etc.) For more detail regarding identified assets, refer to **Appendix A**.

The assets were pulled from existing reports, documents, and the County website. Existing reports and documents include:

- 2024-2029 Capital Facilities Plan
- 2024 Seattle City Light Wildfire Risk Reduction Strategy
- 2023 Skagit County Flood Book
- 2023 Skagit River Delta Flood Drainage Project Flood Modeling, Mapping, and Mitigation Analysis
- 2023 Puget Sound Energy Electric Progress Report Chapters 1-9
- 2023 Skagit County Multi-Jurisdictional Natural Hazard Mitigation Plan
- 2021 Skagit County Comprehensive Emergency Management Plan, Basin Plan
- 2019 Skagit County Community Wildfire Protection Plan
- 2016 -2036 Skagit County Comprehensive Plan
- 2016 Skagit County Drainage Utility Annual Report
- 2014 Skagit County Natural Hazard Mitigation Plan
- 2010 Skagit County Climate Action Plan

It is important to note that the 2023 Skagit County Multi-Jurisdictional Natural Hazard Mitigation Plan as mentioned above, was last revised in May 2023; therefore, major changes to this plan are not anticipated and was utilized for this analysis. In addition, the latest update regarding the Skagit County Shoreline Master Program (“program”), was found to be in February 2022 classified as a public hearing draft; thus, the program was not utilized for this analysis. The community assets were thematically grouped and generalized under a singular term such as “buildings”, “transportation”, “utilities”, “parks”, and such. Each term was subsequently assigned a sector based on definitions provided in the Guidance document. One asset may be applicable in multiple sectors; for example, farms are applicable in agriculture and food systems and economic development sectors.

Exploration of Hazards and Changes in the Climate

Hazards, climate indicators, and climate impacts specific to Skagit County were identified for each sector utilizing the Climate Mapping for a Resilient Washington (“CMRW”) webtool. The CMRW tool provided a long list of climate indicators within various sectors such as agriculture, buildings and energy, cultural resources and practices, economic development, ecosystems, emergency management, human health, transportation, waste management, water resources, and zoning and development. Within these sectors, hazards such as drought, extreme heat, extreme precipitation, flooding, reduced snowpack, sea level rise, and wildfire were analyzed under the higher greenhouse gas scenario (RCP 8.5) with its respective climate indicator. The RCP 8.5 scenario was utilized as

planning purposes only. See [“Jurisdiction-Specific Vulnerability Assessment & Mitigation Strategies Overview”](#) under Unincorporated Skagit County for additional details.

compared to the lower greenhouse gas scenario (RCP 4.5) as the scenarios do not differ significantly prior to 2050. Selected climate hazards and indicators can be found in **Appendix A**.

Pairing Assets and Hazards

Approximately 143 asset-hazard pairs were identified by selecting the sector in the CMRW tool, which automatically populated select hazard data that would impact the sector. For example, Agricultural & Food Systems sector yielded hazard data for drought, extreme heat, extreme precipitation, reduced snowpack, and wildfire, but not for flooding or sea level rise and are marked as “N/A”. Asset hazard pairs with “N/A” indicates that there is no significant change of climate projections from the baseline, which is the historical 30-year average. However, no significant variations in climate projections does not exclude the asset from being assessed for impacts under climate scenarios; therefore, local studies were used to further assess vulnerability and risk and is further described in a separate memo, as previously mentioned.

Assets which were grouped with each hazard data; for example, farms (identified within the Agricultural and Food Systems sector) would be listed as “Farms – Drought” and “Farms– Extreme Heat”. Asset hazard pairs can also be listed under more than one sector. For example, farms in Skagit County are found to be important to the community because it provides produce on a national and international scale, and as a result renders significant revenue. The asset-hazard pairs were then assessed for climate impacts focusing on how the hazard particularly impacted the asset within the sectors (i.e., “Farms – Wildfire” is analyzed under two different sectors: Agricultural & Food Systems and Economic Development), how each asset is exposed to the hazard, non-climate stressors that may exacerbate climate impacts, and past/future consequences of previous factors that are specific to the County asset. This exercise builds off the previous two exercises of identifying County assets and potential climate hazards.

Exposure, Impacts, Stressors, Consequences

Climate impacts to the appropriate County assets were assessed based on disruptions to the specific sector under the RCP 8.5 climate scenario.

The following summarizes key take-aways:

- Wildfire, extreme heat, drought, and flooding were the most recurring hazards when paired with assets.
- Skagit County is anticipated to experience a decrease below 75% of the historical normal summer precipitation by mid-century.
- Warmer summers are expected to increase physiological stress for some plants and animals. For example, cold water fish such as Coastal cutthroat trout and yellow perch that rely on lower summer temperatures. Many fisheries are in transition zones: Beaver Lake, Big Lake, Clear Lake, Lake Erie, Lake Cambell, Lake McMurray, Lake Cavanaugh, Lake Shannon, Pass Lake, Whistle Lake, could potentially be exposed.
- Anticipated increase in summer (June to August) maximum temperature from 5.1° Fahrenheit for mid-century to 10.7° Fahrenheit at the end of the century. The historical baseline is 69° Fahrenheit. Warmer ambient temperatures can increase concentrations of air pollutants such as ozone and introduce secondary impacts such as vector-borne illnesses. In addition, the County is expected to experience an overall decrease in heating degree days, meaning energy demand for heating is anticipated to decrease by 18 days and is similar to statewide trends.
- There is an anticipated decrease in heating degree days with a historical baseline of 109 days used for heating a building (7089 ° Fahrenheit-days). A decrease in both mid-century and end of century

projections compared to the historical baseline of 65° F is 18 days (1199 ° Fahrenheit-days) and 38 days (2467 ° Fahrenheit-days) less for heating a building, respectively. ³

- The historical baseline of April 1st snowpack is 22 inches. Projections for mid century and end of century are anticipated to be a decrease in 53% and 79%, respectively. This may lead to transportation routes in mountainous areas may experience more damage from heavier rainfall and associated flooding, erosion, and washouts.
- Numerous County infrastructure are located in remote areas and are at higher risk of exposure to climate impacts, including roads, bridges, radio towers, transportation facilities, and utility substations.
- Non-climate stressors such as increased impervious surfaces, housing and population increases, aging infrastructure, limited personnel and equipment capabilities, incompatible land uses, invasive species, development in WUI zones, and others can exacerbate climate impacts.
- Snowmelt is projected to shift 3 to 4 weeks earlier than the 20th century average, impacting wildlife migration patterns and hydroelectricity demands.
- Summer stream flows are expected to substantially diminish due to changing snowmelt patterns, shifting energy supply to other sectors or industries.
- Roadways such as State Route 20 at Sharps Corner faces increased risks from climate change due to its critical role in supporting the movement of people and goods across Skagit County.
- Wildland urban interface (WUI) intermix and interface zones are located along the Skagit River Valley, Samish Valley/hillsides along State Route 9, Alger, Humphrey Hill, outer regions of incorporated areas, Skagit River, and Samish River basins.

The list is non-exhaustive and may expand based on the best available science and community input. Future community engagement events may identify other assets such as community groups, places, and services that will be analyzed for climate hazard impacts provided in an updated workbook and memo. A community engagement plan and community engagement summary report will be provided as a separate appendix with the updated memo.

Identify Priority Climate Hazards

Priority climate hazards were identified based on the County's existing plans and anecdotal information. The existing plans include the Comprehensive Plan, Shoreline Master Program, 2023 Natural Hazard Mitigation Plan, and Countywide Planning Policies. The climate hazards most relevant to the County include:

- Drought
- Extreme Precipitation
- Flooding
- Reduced snowpack
- Sea level rise

Other hazards such as earthquakes, volcanos, and avalanches are relevant to the jurisdiction. However, the impacts of climate change on earthquake and volcanic activity probability cannot be confirmed; thus, such hazards are not assessed for gaps and opportunities.

³ A historical baseline of 7089 ° Fahrenheit (i.e. a baseline of 65 ° Fahrenheit) as referenced from the CMRW tool is used to calculate the heating degree days for mid- century and end of century projections. Thus, the historical baseline of heating degree days is 7089 ° Fahrenheit divided by 65 ° Fahrenheit to 109 heating degree days. Using the same calculation, there is drastic decrease of heating degree days for mid century and end of century of approximately 19 and 38 heating degree days, respectively.

Policy Audit – Climate Gaps and Opportunities

Existing plans were reviewed to identify gaps, opportunities, and barriers to climate resiliency. Staff identified 60 goals, policies (“measure”), or initiatives that implicitly or explicitly support climate resilience⁴, including related sectors, climate indicators, hazards, climate impacts, and assets affected for each measure. The measure was assessed in the context of climate impacts as to whether the measure can be amended or supplemented to better address local climate hazards and impacts.

The existing measures needed specificity to better address climate hazards and impacts. Next steps were identified for each measure to amend, consolidate, add, or keep the existing measure. Staff recommends the following:

- Amend existing Comprehensive Plan measures to consider climate impacts and add amended measures to the new Climate Resiliency Element.
- Amend existing Shoreline Master Program measures to consider climate impacts or leave as-is and integrate into new climate resiliency element.
- Amend existing Natural Hazard Mitigation Plan initiatives to consider climate impacts or leave as-is and integrate into new climate resiliency element.

New Climate Element measures should remain consistent throughout the Comprehensive Plan. The recommendations include actions to enhance resiliency among all sectors and to advance environmental justice through economic development and land use while ensuring consistency with the Natural Hazard Mitigation Plan, Shoreline Master Program, and Countywide Planning Policies.

Sincerely,

Heidi Rous,
Kimley-Horn

On Behalf of:
County of Skagit, Washington State

⁴ Resilience is defined as "The on-going process of anticipating, preparing for, and adapting to changes in climate and minimizing negative impacts to our natural systems, infrastructure, and communities."

References:

1. Raymond, C., M. Rogers, 2022. Climate Mapping for a Resilient Washington. Prepared by the Climate Impacts Group, University of Washington, Seattle and Research Data & Computing Services, University of Idaho, Moscow.

Task 1.1: Identify community assets

Sectors	Assets <i>(examples below; revise list as desired)</i>
Agriculture & Food Systems	Farms
Buildings & Energy	Administrative buildings, Electricity generating stations, Residential neighborhoods, Gas pipelines, Flood pump stations, Baker dam, Petroleum gas refinery
Cultural Resources & Practices	Fisheries
Economic Development	Port, Farms, Commercial forests, Industrial businesses
Ecosystems	Rivers, Fisheries, Nature preserves
Emergency Management	Flood management infrastructure (levees/dikes/pumps/tidegates), Fire station, Emergency staging areas, Hospital
Health & Well-being	Community centers
Transportation	Roadways, Bridges, Railroad, Public transit (Sea ferry, bus, shuttles), Port, Airport
Waste Management	Solid waste facility, Private septic tanks
Water Resources	Water treatment facility, Reservoirs
Zoning & Development	Museum, Schools, Radio towers

Task 1.2: Explore hazards and changes in the climate

Sector (Use the CMRW webtool and other resources, as needed, to fill out this column.)	Climate Indicator (Use the CMRW webtool and other resources, as needed, to fill out this column.)	Hazard (Use the CMRW webtool and other resources, as needed, to fill out this column.)	Climate Impacts (Use the CMRW webtool's "Understanding the Importance" tab, Figure 5 of the climate element planning guidance, and other information sources to fill out this column.)	Notes (Note the emissions scenario(s) and time periods you explored. You may also wish to identify potential information gaps that might warrant further analysis.)
Agriculture & Food Systems	Increase in precipitation drought	Drought	<p>Importance: Washington State's legal definition of drought for a declaration and associated response is 75% of normal water supply and hardship. Summer precipitation is one component of water supply considered in the determination. A greater likelihood of below normal summer precipitation indicates a greater likelihood of drought in any year.</p> <p>Exposure: Most of Washington state already receives little summer precipitation; areas that receive more summer precipitation currently will be more exposed to changes in the frequency of precipitation droughts.</p> <p>Sensitivity: The degree to which agricultural production in your county or community will be affected by changes in the frequency of precipitation drought will depend on the proportion of irrigated vs. non-irrigated agriculture and the types of water sources for irrigation.</p> <p>Impact: More frequent and severe droughts due to low summer precipitation will reduce the amount of water available for livestock and irrigation during the same time that warmer temperatures and longer growing seasons are expected to increase the demand for irrigation water.</p>	<p>High emissions scenario. Mid century baseline (2040-2069). End of century baseline (2070-2099).</p> <p>Any given year in the future 30-year period will have total summer precipitation (June-August) below 75% of the historical normal summer precipitation. The historical normal summer precipitation is the average total summer precipitation for 1980-2009. For example, a value of 0.20 means that there is a 20% chance that a year in the selected 30-year period will have summer precipitation at or below 75% of normal.</p> <p>Historical baseline is 0. Steady increase of likelihood of a year with summer precipitation below 75% ranges from 0.26 mid century to 0.39 end of century. The closer the value is to 1, the higher likelihood of snowpack drought; value closer to 0 area lower likelihood.</p>
Agriculture & Food Systems	Increase in summer maximum temperature	Extreme Heat	<p>Importance: Warming is expected to be greatest in summer months. Warmer summers directly affect the health and well-being of people and stress and water availability for crops and ecosystems.</p> <p>Exposure: Exposure to increases in summer temperatures does not vary substantially across Washington State. In your county or community, the exposure of agriculture will depend on local land use features that ameliorate or exacerbate high summer temperatures.</p> <p>Sensitivity: The degree to which agricultural crops and producers in your county or community will be affected by higher summer temperatures will depend on the physiological tolerances of crops and the timing of their growing season.</p> <p>Impact: Warmer summers are expected to increase the potential for heat stress on some crops and livestock and decrease crop yields. Some agricultural pests are expected to have greater survival rates and population size with warming. Warmer summer temperatures are expected to increase demand for irrigation water.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>A value of 4.0 means that the average summer maximum temperature is expected to increase by 4.0 degrees Fahrenheit for the county. The change in average summer maximum temperature is an indicator of heat stress for people, ecosystems and infrastructure.</p> <p>Increase in summer maximum temperature from 5.1 deg F for mid century to 10.7 deg F. end of century. Historical baseline is 69 deg F.</p>
Agriculture & Food Systems	Increase in heavy precipitation magnitude	Extreme Precipitation	<p>Importance: Change in the intensity of heavy precipitation events are more likely to cause damages to infrastructure and agricultural operations than changes in seasonal and annual precipitation.</p> <p>Exposure: In your county or community, agricultural land and infrastructure located in low-lying areas, within or near current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to an increase in heavy precipitation.</p> <p>Sensitivity: The degree to which agricultural crops, land and infrastructure in your county or community will be affected by flooding will depend on the tolerances of different crops, the timing of the growing season, and the extent of existing flood protection.</p> <p>Impact: Heavier precipitation is expected to intensify flooding and inundation of agricultural lands, which can delay spring planting, affect crop quality and quantity, increase erosion and runoff, and increase susceptibility to root diseases.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>A heavy precipitation day is the maximum daily precipitation that occurs with the 2-year storm, or on average once every two years. For example, a value of 15% means a county is expected to experience an increase in the total precipitation of the 2-year storm of 15%. Heavy precipitation is an indicator of flooding that can affect infrastructure and operations.</p> <p>Increase in heavy precipitation magnitude from 8% for mid century to 21% for end of century. Historical baseline was not recorded.</p>
Agriculture & Food Systems	N/A	Flooding	N/A	N/A

Agriculture & Food Systems	Increase in Streamflow Timing	Reduced Snowpack	<p>Importance: The ratio of winter to spring streamflow is an indicator of the change in the seasonal timing of streamflow. The timing of snowmelt and streamflow influences the seasonal availability of water for hydropower generation and irrigation.</p> <p>Exposure: Middle-elevation watersheds strongly influenced by both rain and snow are expected to have the largest changes in streamflow timing. In your county or community, the exposure of agriculture will depend on the location of water sources for crops and livestock.</p> <p>Sensitivity: The degree to which agricultural production in your county or community will be affected by changes in streamflow timing will depend on types of crops and timing of the growing season, the sources of water for irrigation, and the seniority and timing of water rights. Surface water sources will be more affected, as will junior water rights holders and producers with greater late season water demands.</p> <p>Impact: A shift in streamflow timing, with more streamflow in winter and early spring, will change the timing of water available for irrigated agriculture. This may or may not align with changes in the timing of the growing season for different crops.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The percent of stream lengths in a county that fall within each category of the winter (November - February) to spring (March - June) streamflow timing ratio for 30-year future periods. For example, 10% of the stream segments in the 0.5 to 1 category means that 10% of the streams in the county will have a winter to spring streamflow ratio between 0.5 and 1. All streamflow values here are natural flows, and do not include any influence from withdrawals or hydropower projects. The ratio of winter to spring streamflow is an indicator of the timing of streamflow during the year, which affects the seasonal availability of water for hydropower and irrigation. An increase in the ratio in the future means an increase in streamflow in winter and a decrease in spring. Middle elevation streams are expected to experience the most change in streamflow timing, with a shift to higher streamflow in winter.</p> <p>Steady increase of percentage of stream lengths in Skagit County winter to spring streamflow timing ratio. Historical baseline ratio for 1.0 to 1.5 is 6.1%. Mid century ratio for 1.0 to 1.5 is 13.6% and end of century 1.0 to 1.5 ratio is 51.3 percent.</p>
Agriculture & Food Systems	N/A	Sea Level Rise	N/A	N/A
Agriculture & Food Systems	Increase in Wildfire Likelihood	Wildfire	<p>Importance: An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Exposure: In your county or community, agricultural lands and infrastructure located in the wildland-urban interface and areas with high wildfire risk historically will be most exposed to increases in the likelihood of wildfire.</p> <p>Sensitivity: The degree to which agricultural infrastructure and crops in your county or community will be affected by wildfire depends on the sensitivity of crop quality to smoke and the systems in place to support wildfire loss and recovery. Industries that depend more heavily on outdoor laborers are likely to be more affected.</p> <p>Impact: More frequent wildfires have the potential to increase damage to crops, livestock, agriculture infrastructure and operations. Wildfire smoke may reduce the quality of some crops and adversely affect farm workers and other outdoor laborers in the industry.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The likelihood of climate and fuel conditions favorable for wildfire in the county for future 30-year periods. For example, a value of 0.50 means that there is a 50% chance that a year in that time period will have climate and fuel conditions that are favorable for wildfire. The likelihood of wildfire is simulated using a fire process model. An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.</p>
Buildings & Energy	N/A	Drought	N/A	N/A
Buildings & Energy	Decrease in heating Degree Days	Extreme Heat	<p>Importance: A decrease in heating degree days indicates lower potential energy demand for heating buildings in winter.</p> <p>Exposure: In your county or community, buildings and utilities located in areas with mild winter climates will be most exposed to decreases in heating degree days.</p> <p>Sensitivity: The degree to which utilities will be affected by decreases in energy demand for heating will depend on current seasonal patterns of demand. Energy utilities with a higher dependence on revenue from winter sales will be more sensitive to this change.</p> <p>Impact: A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The change in heating degree days for future 30-year periods compared to 1980-2009. heating degree days are the annual number of degree-days below a threshold of average daily temperature of 65°F. The change in the number of heating degree days is an indicator of change in potential energy demand for heating buildings.</p> <p>Steady decrease in heating degree days. Historical baseline of 7089 deg F heating days. Mid century and end of century projected to be a decrease in 1199 deg F heating days and 2467 deg F heating days.</p>
Buildings & Energy	N/A	Extreme Precipitation	N/A	N/A
Buildings & Energy	N/A	Flooding	N/A	N/A
Buildings & Energy	N/A	Reduced Snowpack	N/A	N/A
Buildings & Energy	N/A	Sea Level Rise	N/A	N/A

Buildings & Energy	Increase in Wildfire Likelihood	Wildfire	<p>Importance: An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Exposure: In your county or community, buildings and energy infrastructure located in the wildland-urban interface and areas with high wildfire risk historically will be most exposed to increases in the likelihood of wildfire.</p> <p>Sensitivity: Energy infrastructure built to standards that do not account for wildfire risk, such as untreated wooden poles, or with inadequate vegetation management along transmission and distribution lines will be more sensitive. Building design and codes can affect sensitivity to wildfire, including age, construction materials and degree of fire resistance. Older and less well maintained buildings may be more affected by poor air quality from wildfire smoke.</p> <p>Impact: More frequent wildfires have the potential to affect energy transmission by damaging infrastructure and interrupting transmission and distribution. More frequent wildfires are expected to cause property damage and loss. Poor air quality due to wildfire smoke could increase demand for air filtration systems in buildings.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The likelihood of climate and fuel conditions favorable for wildfire in the county for future 30-year periods. For example, a value of 0.50 means that there is a 50% chance that a year in that time period will have climate and fuel conditions that are favorable for wildfire. The likelihood of wildfire is simulated using a fire process model. An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.</p>
Cultural Resources & Practices	Increase in Low Streamflow	Drought	<p>Importance: The 7Q2 is the minimum seven day streamflow that occurs on average every two years. The 7Q2 is an indicator of low streamflows that are important for aquatic habitat quality.</p> <p>Exposure: The largest decrease in water during low flow periods in summer is projected for middle-elevation watersheds strongly influenced by both rain and snow. Streams on the western slopes of the Cascade and Olympic mountains are most exposed to the change, with streams in the Columbia basin exposed later in the century. In your county or community, the exposure of cultural and historical resources will depend on presence in these areas.</p> <p>Sensitivity: The degree to which aquatic cultural resources will be affected by lower flows will depend on the resources of concern and their individual sensitivity to low flow conditions. Streams affected by non-climatic stressors that also contributed to lower flows, such as water withdrawals, will be more sensitive to changes due to climate change.</p> <p>Impact: Lower streamflows in summer are expected to reduce habitat quantity and quality for salmonids and other aquatic species that are culturally important to Northwest Tribes.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The percent of stream lengths in a county that fall within a category of change from 1980-2009 low streamflow in summer (June-September). For example, 10% of the stream segments in the -50 to -30 category means that 10% of the streams in the county will have 50% to 30% less streamflow on average during their low summer streamflow. All streamflow values here are natural flows, and do not include any influence from withdrawals or hydropower projects. Less summer streamflow is an indicator of potential stress for fish and aquatic ecosystems due to reduced water availability.</p> <p>Historical baseline: 100% change of stream lengths in low stream flow category (-10 to 10). Indicates 100% of the streams in the county will have 10% less streamflow on average during low summer streamflows. Mid century and end of century baseline is 25.4% and 7.7%.</p>
Cultural Resources & Practices	Increase in august stream temperature	Extreme Heat	<p>Importance: Stream temperature during August, which is typically the hottest month for most streams, is an indicator of water quality for salmon and other species that depend on cold water.</p> <p>Exposure: In your county or community, the exposure of water bodies to increasing temperatures will vary locally depending on elevation and surrounding land use. Water bodies located at lower elevations with limited input from snowmelt and glaciers and in more developed areas will be more exposed to warming.</p> <p>Sensitivity: The degree to which aquatic resources will be affected by increases in summer water temperatures will depend on historical conditions relative to thresholds for salmon and other cold-water species. Streams affected by non-climatic stressors that also increase water temperature will be more sensitive to warming due to climate change.</p> <p>Impact: Warmer stream temperatures are expected to reduce habitat quality for salmonids and other aquatic species that depend on cold water. This reduces the abundance of and access to these culturally important species for Northwest Tribes.</p>	<p>Moderate emissions scenario (A1B) only available. Historical baseline (1993-2011). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The percentage of stream lengths in categories of average August stream temperature for future 30-year periods. For example, 10% of the stream segments in the 18 to 20C category means that 10% of the stream length in the county have an average August stream temperature value between 18 and 20C. An increase in August stream temperature is an indicator of water quality for salmon and other species that depend on cold water.</p> <p>Historical baseline of august stream temperature: 3.4% increase in range 16-18 deg C. 16.1% increase in range 14-16 deg C. 21.9% increase in range 12-14 deg C. 23.9% increase below 8 deg C.</p> <p>Mid Century: 13.2% increase in range 16-18 deg C. 20.9% increase in range 14-16 deg C. 21.2% increase in range 12-14 deg C. 15% increase in range 10-12 deg C. 15.2% increase in range below 8 deg C.</p> <p>End of Century: 15.4% increase in range 16-18 deg C. 21.7% increase in range 14-16 deg C. 18.8% increase in range 12-14 deg C. 12.3% increase in range 10-12 deg C. 8% increase in range below 8 deg C.</p>
Cultural Resources & Practices	N/A	Extreme Precipitation	N/A	N/A

Cultural Resources & Practices	Decrease in peak streamflow	Flooding	<p>Importance: An increase in the annual peak streamflow indicates a potential for higher streamflows and larger areas inundated every year at high flows.</p> <p>Exposure: Middle and high-elevation streams that currently receive a large fraction of winter precipitation as snow, rather than rain, will be more exposed to increases in high streamflows with warming.</p> <p>Sensitivity: The degree to which aquatic cultural resources will be affected by higher peak flows depends on habitat quality for salmon and other cold-water species under historical flow conditions. Streams affected by non-climatic stressors that also increase flows will be more sensitive to climate changes.</p> <p>Impact: Higher streamflows are expected to directly affect salmonid populations and alter salmonid habitat, reducing the quantity of a culturally important species for Northwest Tribes.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2050-2079). End of century baseline (2070-2099).</p> <p>Data shows the percent of stream lengths in a county that fall within a category of change from 1980-2009 peak streamflow. For example, 10% of the stream segments in the 50 to 30 category means that 10% of the streams in the county will have 50% to 30% more streamflow on the day of the year with the highest streamflow. All streamflow values here are natural flows, and do not include any influence from withdrawals or hydropower projects. More peak streamflow is an indicator of flood potential and larger areas inundated every year at high flows.</p> <p>Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for -10 to 10 is 100. Mid century and end of century projections are 19.3 and 4.4, respectively.</p>
Cultural Resources & Practices	N/A	Reduced Snowpack	N/A	N/A
Cultural Resources & Practices	Increase in likely sea level rise	Sea Level Rise	<p>Importance: Relative sea level rise indicates how much the average water level is expected to rise due to the combined effects of climate change and movement of the land.</p> <p>Exposure: In your county or community, exposure of cultural and historical resources to sea level rise will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion will vary based on shoreline topography and characteristics.</p> <p>Sensitivity: Indigenous people with many coastal-dependent cultural practices, resources, and sites will be more sensitive to sea level rise impacts.</p> <p>Impact: Moderate sea level rise will increase the frequency and extent of coastal flooding. Sea level rise is expected to increase beach and bluff erosion in some areas. Increasing coastal hazards have the potential to damage cultural and historical sites and buildings, reducing access to these areas.</p>	<p>High emissions scenario. Historical baseline (1991-2009). Mid century baseline 2050. End of century baseline 2100.</p> <p>Data shows relative sea level rise with a 50% likelihood of occurring for future 30-year periods compared to the average sea level in 1991-2009. For example, a value of 2.0 means that there is a 50% chance that the county will experience 2.0 feet of relative sea level rise. Puget Sound and the central and southern outer coast on the Pacific Ocean are likely to experience more sea level rise than the northwest Olympia Peninsula due to differences in vertical movement of the land, sedimentation, and current coastal storm patterns. Increasing sea level contributes to future flooding, inundation, and coastal erosion.</p> <p>Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.</p>
Cultural Resources & Practices	Increase in Wildfire Likelihood	Wildfire	<p>Importance: An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Exposure: In your county or community, cultural and historical sites located in the wildland-urban interface and areas with high wildfire risk historically will be most exposed to increases in the likelihood of wildfire.</p> <p>Sensitivity: Cultural or historical resources and sites that cannot easily be protected from wildfire will be more affected by increases in wildfire likelihood.</p> <p>Impact: More frequent wildfires have the potential to damage cultural and historical sites, buildings, and cultural resources. More frequent wildfires can also reduce access to culturally important sites and resources for Northwest Tribes.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The likelihood of climate and fuel conditions favorable for wildfire in the county for future 30-year periods. For example, a value of 0.50 means that there is a 50% chance that a year in that time period will have climate and fuel conditions that are favorable for wildfire. The likelihood of wildfire is simulated using a fire process model. An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.</p>

Economic Development	Decrease in snowpack	Drought	<p>Importance: Snowpack in the mountains in the beginning of spring indicates the amount of natural water storage in snowpack that will be available in the melt season. April 1st snowpack (snow water equivalent) is one source of water for uses including hydropower generation, drinking water, irrigation, and instream flows for ecosystems.</p> <p>Exposure: Snowpack exposure to warming varies by elevation. In your county or community, the exposure of snow-dependent businesses and industries will depend on elevation. The low-elevation Cascade and Olympic foothills will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing. By the end of the century, snowpack is expected to remain relatively unaffected only in the high-elevations of the Northern Cascade Mountains.</p> <p>Sensitivity: The degree to which economic development in your county or community will be affected by reduced snowpack depends on the economic importance of outdoor recreation to the local economy and the flexibility of the industry to seasonal demand changes.</p> <p>Impact: Reductions in snowpack are expected to decrease opportunities for winter outdoor recreation and shorten the winter recreation season, with adverse effects on the economy and character of some communities. Warm season outdoor recreation opportunities may increase, shifting tourism from one recreation sector to another and into different seasons.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The percent change in April 1st snowpack for future 30-year periods compared to the 1980-2009 average. April 1st snowpack is used as an indicator for the amount of stored water that becomes available during the melt season. A decrease in April 1st snowpack indicates that less stored water will be available to supply streams, soil, and reservoirs during the melt season.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>
Economic Development	Increase in summer maximum temperature	Extreme Heat	<p>Importance: Warming is expected to be greatest in summer months. Warmer summers directly affect the health and well-being of people and stress and water availability for crops and ecosystems.</p> <p>Exposure: Exposure to increases in summer temperatures does not vary substantially across Washington State. In your county or community, exposure of the recreation industry or other outdoor industries will depend on local features that can ameliorate or exacerbate the effects of high summer temperature on residents and visitors.</p> <p>Sensitivity: The degree to which businesses and economic development in your county or community will be affected by warmer summer temperatures will depend on the importance of outdoor recreation to the local economy and the current temperature range, with hotter areas being more adversely affected.</p> <p>Impact: Warmer summer temperatures could decrease opportunities for warm season recreation activities in some areas and increase them in others.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>A value of 4.0 means that the average summer maximum temperature is expected to increase by 4.0 degrees Fahrenheit for the county. The change in average summer maximum temperature is an indicator of heat stress for people, ecosystems and infrastructure.</p> <p>Increase in summer maximum temperature from 5.1 deg F for mid century to 10.7 deg F. end of century. Historical baseline is 69 deg F.</p>
Economic Development	Increase in heavy precipitation magnitude	Extreme Precipitation	<p>Importance: Change in the intensity of heavy precipitation events are more likely to cause damages to infrastructure and agricultural operations than changes in seasonal and annual precipitation.</p> <p>Exposure: In your county or community, businesses located in low-lying areas, within current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to an increase in heavy precipitation.</p> <p>Sensitivity: The degree to which businesses and economic development in your county or community will be affected by heavier precipitation will depend on the extent of flood protection infrastructure, the capacity of stormwater systems, and relative isolation of communities susceptible to flooding.</p> <p>Impact: Heavier precipitation is expected to intensify flooding in low-lying areas and require higher capacity storm water drainage systems.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>A heavy precipitation day is the maximum daily precipitation that occurs with the 2-year storm, or on average once every two years. For example, a value of 15% means a county is expected to experience an increase in the total precipitation of the 2-year storm of 15%. Heavy precipitation is an indicator of flooding that can affect infrastructure and operations.</p> <p>Increase in heavy precipitation magnitude from 8% for mid century to 21% for end of century. Historical baseline was not recorded.</p>

Economic Development	Increase in return interval of 25-year Peak Streamflow	Flooding	<p>Importance: The 25-year peak streamflow is the streamflow that occurs on average every 25 years, similar to the 100-year high flow but more frequent. The return interval of the historical 25-year peak streamflow indicates how much more frequently streamflows of this magnitude are expected to occur in the future with heavier precipitation and more rain in the winter.</p> <p>Exposure: In your county or community, businesses located in low-lying areas and in or near current and historical flood zones will be most exposed to projected increases in the frequency of high streamflows.</p> <p>Sensitivity: The degree to which businesses and economic development in your county or community will be affected by more frequent flooding will depend on the extent of flood protection infrastructure, the capacity of stormwater systems, and relative isolation of communities susceptible to flooding.</p> <p>Impact: More frequent high streamflows are expected to increase the frequency of flooding impacts to businesses and the economy by disrupting travel and shipping routes and damaging property. More frequent flooding has the potential to increase insurance premiums or make some properties more difficult to insure.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The percent of stream lengths in a county that fall within a category of future frequency of high streamflow for future 30-year periods using the 1980-2009 high streamflow value. The high streamflow value is the daily maximum streamflow that occurs, on average, once every twenty-five years. For example, 10% of the stream segments in the 10 to 16 category means that 10% of the streams in the county will have their historical peak streamflow occur on average once every 10 to 16 years, rather than once every 25 years. All streamflow values here are natural flows, and do not include any influence from withdrawals or hydropower projects. The future frequency of high annual streamflow is an indicator of flooding potential.</p> <p>Historical baseline for 10 to 20 percentage of stream lengths in Skagit County is 0. Mid century and end of century projections are 28.5% and 14.5%.</p>
Economic Development	Decrease in snowpack	Reduced Snowpack	<p>Importance: Snowpack in the mountains in the beginning of spring indicates the amount of natural water storage in snowpack that will be available in the melt season. April 1st snowpack (snow water equivalent) is one source of water for uses including hydropower generation, drinking water, irrigation, and instream flows for ecosystems.</p> <p>Exposure: Snowpack exposure to warming varies by elevation. In your county or community, the exposure of snow-dependent businesses and industries will depend on elevation. The low-elevation Cascade and Olympic foothills will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing. By the end of the century, snowpack is expected to remain relatively unaffected only in the high-elevations of the Northern Cascade Mountains.</p> <p>Sensitivity: The degree to which economic development in your county or community will be affected by reduced snowpack depends on the economic importance of outdoor recreation to the local economy and the flexibility of the industry to seasonal demand changes.</p> <p>Impact: Reductions in snowpack are expected to decrease opportunities for winter outdoor recreation and shorten the winter recreation season, with adverse effects on the economy and character of some communities. Warm season outdoor recreation opportunities may increase, shifting tourism from one recreation sector to another and into different seasons.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The percent change in April 1st snowpack for future 30-year periods compared to the 1980-2009 average. April 1st snowpack is used as an indicator for the amount of stored water that becomes available during the melt season. A decrease in April 1st snowpack indicates that less stored water will be available to supply streams, soil, and reservoirs during the melt season.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>
Economic Development	Increase in likely sea level rise	Sea Level Rise	<p>Importance: Relative sea level rise indicates how much the average water level is expected to rise due to the combined effects of climate change and movement of the land.</p> <p>Exposure: In your county or community, exposure to sea level rise will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion will vary based on shoreline topography and characteristics.</p> <p>Sensitivity: The degree to which businesses and economic development will be affected by sea level rise in your county or community depends on the extent of flood protection, and the effects of other economic drivers in coastal business centers.</p> <p>Impact: Moderate sea level rise will intensify coastal flooding during storms or extreme weather events, which can disrupt business operations and damage property.</p>	<p>High emissions scenario. Historical baseline (1991-2009). Mid century baseline 2050. End of century baseline 2100.</p> <p>Data shows relative sea level rise with a 50% likelihood of occurring for future 30-year periods compared to the average sea level in 1991-2009. For example, a value of 2.0 means that there is a 50% chance that the county will experience 2.0 feet of relative sea level rise. Puget Sound and the central and southern outer coast on the Pacific Ocean are likely to experience more sea level rise than the northwest Olympia Peninsula due to differences in vertical movement of the land, sedimentation, and current coastal storm patterns. Increasing sea level contributes to future flooding, inundation, and coastal erosion.</p> <p>Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.</p>

Economic Development	Increase in wildfire danger	Wildfire	<p>Importance: More high fire danger days indicates a greater potential for wildfire activity, assuming ignition sources and sufficient fuels are present.</p> <p>Exposure: In your county or community, the exposure of business located in the wildland-urban interface and areas with high wildfire risk historically will be most exposed to increases in the likelihood of wildfire.</p> <p>Sensitivity: The degree to which economic development in your county or community will be affected by more days with high fire danger depends on the economic importance of outdoor industries operating during the fire season.</p> <p>Impact: More days with high wildfire danger are expected to affect businesses through more frequent closures of recreation areas and restrictions on outdoor activities during the wildfire season. More high fire danger days will interrupt timber operations and outdoor recreation.</p>	<p>High emissions scenario. Historical baseline (1971-2000). Mid century baseline (2010-2039). End of century baseline (2070-2099).</p> <p>A high fire danger day is a day in which 100-hour fuel moisture is less than the historical 20th percentile. For example, a value of 2 means that there are 2 additional days in which 100-hour fuel moisture is less than the 20th percentile in the county. An increase in high fire danger days indicates greater potential for wildfire danger to damage infrastructure, interrupt businesses, and affect public health and well-being.</p> <p>Steady increase in change in high fire danger days. Historical baseline is 48 days of high fire danger days. Mid century and end of century change in additional high fire danger days is 6 and 11, respectively.</p>
Ecosystems	Decrease in late summer precipitation	Drought	<p>Importance: Summer precipitation affects water availability for non-irrigated agriculture and fuel moisture during the height of the fire season.</p> <p>Exposure: Most of Washington State already receives little summer precipitation, areas that receive more summer precipitation currently will be more exposed to changes.</p> <p>Sensitivity: Plants species growing at the lower end of their range for water availability will be more affected by decreases in summer precipitation. Species that are currently affected by non-climatic stressors, such as invasive species, development, and changes in land use will be more sensitive to warming.</p> <p>Impact: Less summer precipitation is expected to affect ecosystem types differently. In freshwater ecosystems, less summer precipitation will contribute to lower streamflows, reduce water quality, and increase water temperatures. In terrestrial ecosystems, less summer precipitation will contribute to drought stress and reduce the growth and productivity of some plants.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2050-2079). End of century baseline (2070-2099).</p> <p>Data shows percent change in total late summer (July 15th - September 15) precipitation for future 30-year periods compared to the 1980-2009 average. The change in late summer precipitation indicates changes to available water for multiple uses during the period that is typically driest and low fuel moistures during fire season.</p> <p>Steady decrease in percent change in total precipitation for July 15-September 15. Historical baseline is 3 inches of late summer precipitation. Mid century and end of century negative percentage changes are 10.7% and 11.9 percent, respectively.</p>
Ecosystems	Increase in summer maximum temperature	Extreme Heat	<p>Importance: Warming is expected to be greatest in summer months. Warmer summers directly affect the health and well-being of people and stress and water availability for crops and ecosystems.</p> <p>Exposure: Exposure of ecosystems to extreme heat is expected to be greater in transitional zones between ecosystems and where plant and animal species are already living at temperature margins of suitable habitat. In your county or community, the exposure of ecosystems to increases in summer temperatures will depend on the presence of critical habitats or sensitive species.</p> <p>Sensitivity: The degree to which ecosystems and species are affected by warmer summers depends on the physiological tolerances of species to hot temperatures. Species living at the upper edge of their temperature ranges will be more sensitive to warmer summers. Species that are currently affected by non-climatic stressors, such as invasive species and habitat fragmentation, will be more affected by warming.</p> <p>Impact: Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>A value of 4.0 means that the average summer maximum temperature is expected to increase by 4.0 degrees Fahrenheit for the county. The change in average summer maximum temperature is an indicator of heat stress for people, ecosystems and infrastructure.</p> <p>Increase in summer maximum temperature from 5.1 deg F for mid century to 10.7 deg F. end of century. Historical baseline is 69 deg F.</p>
Ecosystems	N/A	Extreme Precipitation	N/A	N/A

Ecosystems	Decrease in peak streamflow	Flooding	<p>Importance: An increase in the annual peak streamflow indicates a potential for higher streamflows and larger areas inundated every year at high flows. An increase in the annual peak streamflow indicates a potential for higher streamflows and larger areas inundated every year at high flows.</p> <p>Exposure: Middle and high-elevation streams that currently receive a large fraction of winter precipitation as snow, rather than rain, will be more exposed to increases in high streamflows with warming.</p> <p>Sensitivity: The degree to which aquatic species and habitats are affected by higher peak streamflows depends on the physiological tolerances of species to high flows and the extent of non-climatic stressors that increase high flows, such as paved surfaces. Streams in which flow regimes are already susceptible to high flows will be more sensitive to the change.</p> <p>Impact: Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2050-2079). End of century baseline (2070-2099).</p> <p>Data shows the percent of stream lengths in a county that fall within a category of change from 1980-2009 peak streamflow. For example, 10% of the stream segments in the 50 to 30 category means that 10% of the streams in the county will have 50% to 30% more streamflow on the day of the year with the highest streamflow. All streamflow values here are natural flows, and do not include any influence from withdrawals or hydropower projects. More peak streamflow is an indicator of flood potential and larger areas inundated every year at high flows.</p> <p>Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for -10 to 10 is 100. Mid century and end of century projections are 19.3 and 4.4, respectively.</p>
Ecosystems	Decrease in snowpack	Reduced Snowpack	<p>Importance: The ratio of winter to spring streamflow is an indicator of the change in the seasonal timing of streamflow. The timing of snowmelt and streamflow influences the seasonal availability of water for hydropower generation and irrigation.</p> <p>Exposure: Middle-elevation watersheds strongly influenced by both rain and snow are expected to have the largest changes in streamflow timing.</p> <p>Sensitivity: The degree to which aquatic species will be sensitive to changes in the timing of seasonal streamflow will depend on life stages that are timed with seasonal streamflow.</p> <p>Impact: Earlier spring snowmelt and associated changes in streamflow timing are expected to alter migration timing and survival rates for salmonids.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The percent change in April 1st snowpack for future 30-year periods compared to the 1980-2009 average. April 1st snowpack is used as an indicator for the amount of stored water that becomes available during the melt season. A decrease in April 1st snowpack indicates that less stored water will be available to supply streams, soil, and reservoirs during the melt season.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>
Ecosystems	Increase in likely sea level rise	Sea Level Rise	<p>Importance: Relative sea level rise indicates how much the average water level is expected to rise due to the combined effects of climate change and movement of the land.</p> <p>Exposure: Exposure of ecosystems and coastal habitats to sea level rise will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion will vary based on shoreline topography and characteristics.</p> <p>Sensitivity: The degree to which coastal habitats are affected by sea level rise depends on the physiological tolerances of species to salt water, waves, erosion, and coastal flooding. Coastal habitats adjacent to development, shoreline armoring, or steep slopes that prevent habitats from migrating inland are expected to be more sensitive to sea level rise.</p> <p>Impact: Moderate sea level rise is expected to increase beach and bluff erosion and the frequency of flooding in coastal marshes and tidal flats. Changes in coastal ecosystems can reduce habitats for some aquatic, wildlife, and plant species.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The percent change in April 1st snowpack for future 30-year periods compared to the 1980-2009 average. April 1st snowpack is used as an indicator for the amount of stored water that becomes available during the melt season. A decrease in April 1st snowpack indicates that less stored water will be available to supply streams, soil, and reservoirs during the melt season.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>
Ecosystems	Increase in Wildfire Likelihood	Wildfire	<p>Importance: An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Exposure: Ecosystem exposure to changes in wildfire likelihood will depend on historical wildfire frequency and the presence of critical resources and habitats.</p> <p>Sensitivity: The degree to which species and ecosystems will be affected by an increased likelihood of wildfire depends on current species adaptations to wildfire and the extent of non-climatic factors that reduce ecosystem health, such as invasive species, habitat fragmentation, and low diversity.</p> <p>Impact: More frequent wildfires have the potential to reduce timber, non-timber forest products, carbon storage, and forest habitat for some wildlife. Wildfires also increase establishment of invasive species. More frequent wildfires have the potential to increase runoff and sediment to streams, which can reduce aquatic habitat quality.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The likelihood of climate and fuel conditions favorable for wildfire in the county for future 30-year periods. For example, a value of 0.50 means that there is a 50% chance that a year in that time period will have climate and fuel conditions that are favorable for wildfire. The likelihood of wildfire is simulated using a fire process model. An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.</p>

Emergency Management	Increase in precipitation drought	Drought	<p>Importance: Washington State's legal definition of drought for a declaration and associated response is 75% of normal water supply and hardship. Summer precipitation is one component of water supply considered in the determination. A greater likelihood of below normal summer precipitation indicates a greater likelihood of drought in any year.</p> <p>Exposure: Most of Washington state already receives little summer precipitation; areas that receive more summer precipitation currently will be more exposed to changes in the frequency of precipitation droughts.</p> <p>Sensitivity: The degree to which your county or community is affected by drought-related water emergencies will depend on the sources of drinking water and the types and condition of drinking water systems.</p> <p>Impact: More frequent and severe droughts due to low summer precipitation are expected to increase the need for emergency services to plan, prepare, and respond to water shortages.</p>	<p>High emissions scenario. Mid century baseline (2040-2069). End of century baseline (2070-2099).</p> <p>Any given year in the future 30-year period will have total summer precipitation (June-August) below 75% of the historical normal summer precipitation. The historical normal summer precipitation is the average total summer precipitation for 1980-2009. For example, a value of 0.20 means that there is a 20% chance that a year in the selected 30-year period will have summer precipitation at or below 75% of normal.</p> <p>Steady increase of likelihood of a year with summer precipitation below 75% ranges from 0.26 mid century to 0.39 end of century. The closer the value is to 1, the higher the likelihood of snowpack drought; value closer to 0 area lower likelihood. The baseline is 0.</p>
Emergency Management	Increase in 90 deg F Max Humidex Days	Extreme Heat	<p>Importance: An increase in days over a maximum humidex of 90° is an indicator of day-time heat stress for people.</p> <p>Exposure: In your county or community, exposure of people to extreme heat will vary locally based on features that exacerbate or ameliorate extreme heat, such as the extent of paved surfaces, tree canopy for shade, or proximity to water bodies.</p> <p>Sensitivity: Emergency management services with limited capacity and those that serve communities with more vulnerable populations and less social cohesion will be more affected by increases in the demand for services related to extreme heat emergencies.</p> <p>Impact: More frequent extreme daytime heat events are expected to increase the demand for emergency services to plan, prepare, and respond to human health impacts. Extreme heat may also impact emergency services due to transportation and travel disruptions such as warped and buckling pavement on roads.</p>	<p>High emissions scenario. Mid century baseline (2040-2069). End of century baseline (2070-2099). Historical baseline is 1980-2009.</p> <p>Data shows the change in annual 90°F maximum humidex days, or the average number of days in a year with a maximum humidex greater than 90°F in a 30-year period compared to the 1980-2009 average. The humidex is a measure of experienced heat conditions, and takes into consideration both temperature and humidity. The change in the number of 90°F maximum humidex days is an indicator of stress on public health.</p> <p>Steady increase of 90 deg F Max Humidex Days from 2 days for the historical baseline. Mid century and end of century projected to be an increase of 21.6 days and 34.0 days, respectively.</p>
Emergency Management	Increase in extreme precipitation magnitude	Extreme Precipitation	<p>Importance: Changes in the intensity of extreme precipitation events are more likely to cause damages to infrastructure and agricultural operations than changes in seasonal and annual precipitation.</p> <p>Exposure: In your county or community, emergency services that serve people located in low-lying areas, within current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to the impacts of heavier precipitation events.</p> <p>Sensitivity: Emergency management services with limited capacity and those that serve communities with more vulnerable populations and less social cohesion will be more affected by the demand for services related to increases in flooding and associated hazards.</p> <p>Impact: Heavier precipitation has the potential to increase the demand for emergency response services by intensifying flood events and increasing other emergencies associated with heavy precipitation.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>A heavy precipitation day is the maximum daily precipitation that occurs with the 2-year storm, or on average once every two years. For example, a value of 15% means a county is expected to experience an increase in the total precipitation of the 2-year storm of 15%. Heavy precipitation is an indicator of flooding that can affect infrastructure and operations.</p> <p>Increase in heavy precipitation magnitude from 8% for mid century to 30% for end of century. Historical baseline was not recorded.</p>
Emergency Management	Decrease in peak streamflow	Flooding	<p>Importance: An increase in the annual peak streamflow indicates a potential for higher streamflows and larger areas inundated every year at high flows.</p> <p>Exposure: In your county or community, people and infrastructure located in river valleys and in or near current and historical flood zones will be most exposed to increases in high streamflows that can cause flooding and increase the need for emergency services.</p> <p>Sensitivity: Emergency management services with limited capacity and those that serve communities with more vulnerable populations and less social cohesion will be more affected by the demand for services related to larger floods and associated hazards.</p> <p>Impact: Higher streamflows are expected to increase riverine flooding within existing floodplains and could expand flooding to new areas not currently in existing floodplains. More flooding has the potential to increase the demand for emergency services to plan, prepare, and respond to flood events.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2050-2079). End of century baseline (2070-2099).</p> <p>Data shows the percent of stream lengths in a county that fall within a category of change from 1980-2009 peak streamflow. For example, 10% of the stream segments in the 50 to 30 category means that 10% of the streams in the county will have 50% to 30% more streamflow on the day of the year with the highest streamflow. All streamflow values here are natural flows, and do not include any influence from withdrawals or hydropower projects. More peak streamflow is an indicator of flood potential and larger areas inundated every year at high flows.</p> <p>Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for -10 to 10 is 100. Mid century and end of century projections are 19.3 and 4.4, respectively.</p>
Emergency Management	N/A	Reduced Snowpack	N/A	N/A

Emergency Management	Increase in likely sea level rise	Sea Level Rise	<p>Importance: Relative sea level rise indicates how much the average water level is expected to rise due to the combined effects of climate change and movement of the land.</p> <p>Exposure: In your county or community, exposure will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion will vary based on shoreline topography and characteristics. Emergency management serving low-lying coastal communities will be most exposed to the impacts of more coastal flooding.</p> <p>Sensitivity: Emergency management services with limited capacity and those that serve communities with more vulnerable populations and infrastructure will be more affected by more frequent coastal hazards.</p> <p>Impact: Moderate sea level rise is expected to inundate some coastal land and intensify coastal flooding during storms, which could increase the need for emergency services to plan, respond to and recover from coastal flooding.</p>	<p>High emissions scenario. Historical baseline (1991-2009). Mid century baseline 2050. End of century baseline 2100.</p> <p>Data shows relative sea level rise with a 50% likelihood of occurring for future 30-year periods compared to the average sea level in 1991-2009. For example, a value of 2.0 means that there is a 50% chance that the county will experience 2.0 feet of relative sea level rise. Puget Sound and the central and southern outer coast on the Pacific Ocean are likely to experience more sea level rise than the northwest Olympia Peninsula due to differences in vertical movement of the land, sedimentation, and current coastal storm patterns. Increasing sea level contributes to future flooding, inundation, and coastal erosion.</p> <p>Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.</p>
Emergency Management	Increase on wildfire danger	Wildfire	<p>Importance: More high fire danger days indicates a greater potential for wildfire activity, assuming ignition sources and sufficient fuels are present.</p> <p>Exposure: In your county or community, people and infrastructure located in the wildland-urban interface and areas with high wildfire risk historically will be most exposed to increases in the likelihood of wildfire.</p> <p>Sensitivity: Emergency management services with limited capacity and those that serve communities with more vulnerable populations and less social cohesion will be more affected by an increase in demand for services related to higher fire danger.</p> <p>Impact: More days with high fire danger will increase the need for fire bans and associated enforcement and capacity to respond to wildfires.</p>	<p>High emissions scenario. Historical baseline (1971-2000). Mid century baseline (2010-2039). End of century baseline (2070-2099).</p> <p>A high fire danger day is a day in which 100-hour fuel moisture is less than the historical 20th percentile. For example, a value of 2 means that there are 2 additional days in which 100-hour fuel moisture is less than the 20th percentile in the county. An increase in high fire danger days indicates greater potential for wildfire danger to damage infrastructure, interrupt businesses, and affect public health and well-being.</p> <p>Steady increase in change in high fire danger days. Historical baseline is 48 days of high fire danger days. Mid century and end of century change in additional high fire danger days is 6 and 11, respectively.</p>
Health & Well-being	N/A	Drought	N/A	N/A
Health & Well-being	Increase in summer maximum temperature	Extreme Heat	<p>Importance: Warming is expected to be greatest in summer months. Warmer summers directly affect the health and well-being of people and stress and water availability for crops and ecosystems.</p> <p>Exposure: In your county or community, the exposure of people to warmer summers and associated ozone and vector-borne illnesses will vary locally based on features that exacerbate or ameliorate these conditions. Areas with existing poor air or water quality will be more exposed.</p> <p>Sensitivity: Certain populations in your county or community are expected to be more affected by health impacts associated with warmer summers. The elderly, very young, and people with preexisting health conditions are more likely to be affected.</p> <p>Impact: Warmer summers are expected to increase concentrations of air pollutants, such as ozone and some vector-borne illnesses, such as West Nile virus.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>A value of 4.0 means that the average summer maximum temperature is expected to increase by 4.0 degrees Fahrenheit for the county. The change in average summer maximum temperature is an indicator of heat stress for people, ecosystems and infrastructure.</p> <p>Increase in summer maximum temperature from 5.1 deg F for mid century to 10.7 deg F. end of century. Historical baseline is 69 deg F.</p>
Health & Well-being	N/A	Extreme Precipitation	N/A	N/A
Health & Well-being	N/A	Flooding	N/A	N/A
Health & Well-being	N/A	Reduced Snowpack	N/A	N/A
Health & Well-being	N/A	Sea Level Rise	N/A	N/A

Health & Well-being	Increase in Wildfire Likelihood	Wildfire	<p>Importance: An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Exposure: In your county or community, people living in the wildland-urban interface and areas with high wildfire risk historically will be most exposed to increases in the likelihood of wildfire.</p> <p>Sensitivity: Certain populations in your county or community are expected to be more affected by an increased likelihood of wildfires and associated smoke. Low-income and non-English speaking populations, people with preexisting health conditions, and people living in substandard housing are more likely to be affected by evacuations, property damage, and poor air quality.</p> <p>Impact: More frequent wildfires are expected to reduce human health through loss of life, injury and reduced mental health associated with displacement. Poor air quality due to more wildfire smoke can cause adverse respiratory health effects.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The likelihood of climate and fuel conditions favorable for wildfire in the county for future 30-year periods. For example, a value of 0.50 means that there is a 50% chance that a year in that time period will have climate and fuel conditions that are favorable for wildfire. The likelihood of wildfire is simulated using a fire process model. An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.</p>
Transportation	Decrease in snowpack	Drought	<p>Importance: Snowpack in the mountains in the beginning of spring indicates the amount of natural water storage in snowpack that will be available in the melt season. April 1st snowpack (snow water equivalent) is one source of water for uses including hydropower generation, drinking water, irrigation, and instream flows for ecosystems.</p> <p>Exposure: Snowpack exposure to warming varies by elevation. In your county or community, the exposure of transportation routes and infrastructure will depend on elevation with assets in mountainous areas more exposed. The low-elevation Cascade and Olympic foothills will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing. By the end of the century, snowpack is expected to remain relatively unaffected only in the high-elevations of the Northern Cascade Mountains.</p> <p>Sensitivity: The degree to which transportation systems and assets in your county or community will be affected by reduced snowpack depends on design standards for winter temperature and precipitation.</p> <p>Impact: Reductions in snowpack have the potential to reduce snow-related road maintenance, road closures, and transportation delays. However, as more cold-season precipitation falls as rain rather than snow, transportation routes in mountainous areas may experience more damage from heavier winter rainfall and associated flooding, erosion, and washouts.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The percent change in April 1st snowpack for future 30-year periods compared to the 1980-2009 average. April 1st snowpack is used as an indicator for the amount of stored water that becomes available during the melt season. A decrease in April 1st snowpack indicates that less stored water will be available to supply streams, soil, and reservoirs during the melt season.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>
Transportation	Increase in hot days	Extreme Heat	<p>Importance: Days with a temperature over 100°F is an indicator of potential damage to transportation infrastructure such as roads and bridges.</p> <p>Exposure: In your county or community, the exposure of road surfaces to extreme heat will vary locally based on features that exacerbate or ameliorate extreme heat such as the extent of urban heat islands and tree canopy cover for shade.</p> <p>Sensitivity: The degree to which road surfaces and bridges in your county or community will be sensitive to extreme heat will depend on the age and condition of assets, materials, and heat-related design standards.</p> <p>Impact: More very hot days have the potential to damage the surfaces of roads and bridges, leading to greater maintenance and repair costs and more frequent traffic and service disruptions.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>Data shows the change in the number of annual hot days, or the average number of days per year with a maximum temperature greater than 100°F, in a county for future 30-year periods compared to the 1980-2009 average. For example, a value of 4.0 means that the number of annual hot days in the county is expected to increase by 4 days. An increase in the number of days above 100°F is an indication of more stress on transportation infrastructure.</p> <p>Steady increase in hot days above 100 deg F. Historical baseline is 4 days. Mid century and end of century is projected to be an increase of 22.7 days and 34.2 days, respectively.</p>

Transportation	Increase in heavy precipitation magnitude	Extreme Precipitation	<p>Importance: Change in the intensity of heavy precipitation events are more likely to cause damages to infrastructure and agricultural operations than changes in seasonal and annual precipitation.</p> <p>Exposure: In your county or community, transportation routes and infrastructure located in low-lying areas, within or near current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to an increase in heavy precipitation.</p> <p>Sensitivity: The degree to which transportation systems and assets in your county or community will be affected by increases in heavy precipitation depends on the current infrastructure condition and age, design standards, and redundancy in the system. Older assets or those built to older design standards are likely to be more affected by heavier precipitation.</p> <p>Impact: Heavier precipitation events are expected to intensify flooding, landslides, and erosion, which can interrupt transportation routes, damage infrastructure, and increase maintenance and repair costs.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>A heavy precipitation day is the maximum daily precipitation that occurs with the 2-year storm, or on average once every two years. For example, a value of 15% means a county is expected to experience an increase in the total precipitation of the 2-year storm of 15%. Heavy precipitation is an indicator of flooding that can affect infrastructure and operations.</p> <p>Increase in heavy precipitation magnitude from 8% for mid century to 21% for end of century. Historical baseline was not recorded.</p>
Transportation	Decrease in peak streamflow	Flooding	<p>Importance: Change in the intensity of heavy precipitation events are more likely to cause damages to infrastructure and agricultural operations than changes in seasonal and annual precipitation.</p> <p>Exposure: In your county or community, transportation routes and infrastructure located in low-lying areas, within or near current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to an increase in heavy precipitation.</p> <p>Sensitivity: The degree to which transportation systems and assets in your county or community will be affected by increases in heavy precipitation depends on the current infrastructure condition and age, design standards, and redundancy in the system. Older assets or those built to older design standards are likely to be more affected by heavier precipitation.</p> <p>Impact: Heavier precipitation events are expected to intensify flooding, landslides, and erosion, which can interrupt transportation routes, damage infrastructure, and increase maintenance and repair costs.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2050-2079). End of century baseline (2070-2099).</p> <p>Data shows the percent of stream lengths in a county that fall within a category of change from 1980-2009 peak streamflow. For example, 10% of the stream segments in the 50 to 30 category means that 10% of the streams in the county will have 50% to 30% more streamflow on the day of the year with the highest streamflow. All streamflow values here are natural flows, and do not include any influence from withdrawals or hydropower projects. More peak streamflow is an indicator of flood potential and larger areas inundated every year at high flows.</p> <p>Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for -10 to 10 is 100. Mid century and end of century projections are 19.3 and 4.4, respectively.</p>
Transportation	Decrease in snowpack	Reduced Snowpack	<p>Importance: Snowpack in the mountains in the beginning of spring indicates the amount of natural water storage in snowpack that will be available in the melt season. April 1st snowpack (snow water equivalent) is one source of water for uses including hydropower generation, drinking water, irrigation, and instream flows for ecosystems.</p> <p>Exposure: Snowpack exposure to warming varies by elevation. In your county or community, the exposure of transportation routes and infrastructure will depend on elevation with assets in mountainous areas more exposed. The low-elevation Cascade and Olympic foothills will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing. By the end of the century, snowpack is expected to remain relatively unaffected only in the high-elevations of the Northern Cascade Mountains.</p> <p>Sensitivity: The degree to which transportation systems and assets in your county or community will be affected by reduced snowpack depends on design standards for winter temperature and precipitation.</p> <p>Impact: Reductions in snowpack have the potential to reduce snow-related road maintenance, road closures, and transportation delays. However, as more cold-season precipitation falls as rain rather than snow, transportation routes in mountainous areas may experience more damage from heavier winter rainfall and associated flooding, erosion, and washouts.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The percent change in April 1st snowpack for future 30-year periods compared to the 1980-2009 average. April 1st snowpack is used as an indicator for the amount of stored water that becomes available during the melt season. A decrease in April 1st snowpack indicates that less stored water will be available to supply streams, soil, and reservoirs during the melt season.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>

Transportation	Increase in likely sea level rise	Sea Level Rise	<p>Importance: Relative sea level rise indicates how much the average water level is expected to rise due to the combined effects of climate change and movement of the land.</p> <p>Exposure: In your county or community, exposure to sea level rise will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion will vary based on shoreline topography and characteristics. Transportation routes and infrastructure located in low-lying coastal zones or near coastal bluffs will be more exposed.</p> <p>Sensitivity: The degree to which transportation systems and assets in your county or community will be affected by sea level rise and associated coastal flooding and erosion depends on how much design standards can accommodate these hazards. A lack of redundancy in transportation networks in coastal areas is likely to increase overall system sensitivity to sea level rise.</p> <p>Impact: With moderate sea level rise, Washington's seaports and the connected distribution networks are expected to flood more often. Coastal transportation infrastructure may be subject to more frequent closures due to coastal flooding and erosion, and require more frequent maintenance and repairs.</p>	<p>High emissions scenario. Historical baseline (1991-2009). Mid century baseline 2050. End of century baseline 2100.</p> <p>Data shows relative sea level rise with a 50% likelihood of occurring for future 30-year periods compared to the average sea level in 1991-2009. For example, a value of 2.0 means that there is a 50% chance that the county will experience 2.0 feet of relative sea level rise. Puget Sound and the central and southern outer coast on the Pacific Ocean are likely to experience more sea level rise than the northwest Olympia Peninsula due to differences in vertical movement of the land, sedimentation, and current coastal storm patterns. Increasing sea level contributes to future flooding, inundation, and coastal erosion.</p> <p>Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.</p>
Transportation	Increase in Wildfire Likelihood	Wildfire	<p>Importance: An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Exposure: In your county or community, transportation routes and infrastructure wildland-urban interface and areas with high wildfire risk historically will be most exposed to increases in the likelihood of wildfire.</p> <p>Sensitivity: The degree to which transportation systems and assets in your county or community will be affected by an increased likelihood of wildfire depends on redundancy in the transportation network.</p> <p>Impact: More frequent wildfires, and related smoke, can disrupt travel, increase road closures and delay construction projects. Wildfire smoke has the potential to affect labor in the transportation sector because of health effects on outdoor laborers. More roadside brush fires can create safety hazards and disrupt transportation.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The likelihood of climate and fuel conditions favorable for wildfire in the county for future 30-year periods. For example, a value of 0.50 means that there is a 50% chance that a year in that time period will have climate and fuel conditions that are favorable for wildfire. The likelihood of wildfire is simulated using a fire process model. An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.</p>
Waste Management	N/A	Drought	N/A	N/A
Waste Management	N/A	Extreme Heat	N/A	N/A
Waste Management	Increase in extreme precipitation magnitude	Extreme Precipitation	<p>Importance: Changes in the intensity of extreme precipitation events are more likely to cause damages to infrastructure and agricultural operations than changes in seasonal and annual precipitation.</p> <p>Exposure: In your county or community, waste management services that serve people located in low-lying areas, within current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to the impacts of heavier precipitation events.</p> <p>Sensitivity: The degree to which waste management services will be affected by increases in debris and waste will depend on current capacity.</p> <p>Impact: Heavier precipitation has the potential to increase storm damage to infrastructure and generate more waste and debris. More waste will strain municipal cleanup and refuse capacity.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>Data shows the percent change in total precipitation for a day with extreme precipitation for future 30-year periods compared to 1980-2009. An extreme precipitation day is the maximum daily precipitation that occurs with the 25-year storm, or on average once every two years. For example, a value of 15% means a county is expected to experience an increase in the total precipitation of the 25-year storm of 15%. Heavy precipitation is an indicator of flooding that can affect infrastructure and operations.</p> <p>Historical baseline not recorded. Mid century and end of century projected to be 8% and 30%, respectively.</p>

Waste Management	Increase in return interval of 25-year Peak Streamflow	Flooding	<p>Importance: The 25-year peak streamflow is the streamflow that occurs on average every 25 years, similar to the 100-year high flow but more frequent. The return interval of the historical 25-year peak streamflow indicates how much more frequently streamflows of this magnitude are expected to occur in the future with heavier precipitation and more rain in the winter.</p> <p>Exposure: In your county or community, waste management services that serve development located in low-lying areas and in current and historical flood zones will be most exposed to projected increases in the frequency of high streamflows that can cause flooding and generate more waste.</p> <p>Sensitivity: The degree to which waste management services will be affected by increases in debris and waste will depend on current capacity. Facilities with older design standards or standards that do not account for flooding will be more affected.</p> <p>Impact: More frequent high streamflows are expected to increase flooding, which can generate more debris and waste. More waste will strain municipal cleanup and refuse capacity. Flooding of waste management facilities can release contaminants and hazardous materials.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The percent of stream lengths in a county that fall within a category of future frequency of high streamflow for future 30-year periods using the 1980-2009 high streamflow value. The high streamflow value is the daily maximum streamflow that occurs, on average, once every twenty-five years. For example, 10% of the stream segments in the 10 to 16 category means that 10% of the streams in the county will have their historical peak streamflow occur on average once every 10 to 16 years, rather than once every 25 years. All streamflow values here are natural flows, and do not include any influence from withdrawals or hydropower projects. The future frequency of high annual streamflow is an indicator of flooding potential.</p> <p>Historical baseline for 10 to 20 percentage of stream lengths in Skagit County is 0. Mid century and end of century projections are 28.5% and 14.5%.</p>
Waste Management	N/A	Reduced Snowpack	N/A	N/A
Waste Management	N/A	Sea Level Rise	N/A	N/A
Waste Management	Increase in Wildfire Likelihood	Wildfire	<p>Importance: An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Exposure: In your county or community, waste management facilities that serve areas in the wildland-urban interface will be more exposed to increases in waste with more wildfire.</p> <p>Sensitivity: The degree to which waste management services will be affected by increases in debris and waste will depend on current capacity.</p> <p>Impact: More frequent wildfires have the potential to generate greater amounts of debris and waste. More waste will strain municipal cleanup and refuse capacity.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The likelihood of climate and fuel conditions favorable for wildfire in the county for future 30-year periods. For example, a value of 0.50 means that there is a 50% chance that a year in that time period will have climate and fuel conditions that are favorable for wildfire. The likelihood of wildfire is simulated using a fire process model. An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.</p>
Water Resources	Increase in total annual precipitation	Drought	<p>Importance: Total annual precipitation is the total input of water each year which limits the overall amount of water available for human uses and ecosystems.</p> <p>Exposure: The exposure of water resources to changes in annual precipitation in your county or community depends on the presence of critical groundwater aquifer recharge areas and the location of wells.</p> <p>Sensitivity: The degree to which water resources in your county or community will be affected by changes in annual precipitation will depend on the sources of water and the effects of non-climatic stressors on water supplies. Groundwater sources are sensitive to changes in annual precipitation. Non-climatic stressors that increase demand, such as population growth and development, will increase the sensitivity of water resources to changes in annual precipitation.</p> <p>Impact: Increases in annual precipitation have the potential to increase groundwater recharge. Changes in the timing and intensity of precipitation and increases in water demand and evaporation are expected to offset increases in groundwater recharge due to more annual precipitation.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The likelihood of climate and fuel conditions favorable for wildfire in the county for future 30-year periods. For example, a value of 0.50 means that there is a 50% chance that a year in that time period will have climate and fuel conditions that are favorable for wildfire. The likelihood of wildfire is simulated using a fire process model. An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Steady increase in percent change in total annual precipitation. Historical baseline recorded to be 80 inches. Mid century and end of century projected to be 5.3% and 10%, respectively.</p>
Water Resources	N/A	Extreme Heat	N/A	N/A
Water Resources	N/A	Extreme Precipitation	N/A	N/A
Water Resources	N/A	Flooding	N/A	N/A

Water Resources	Decrease in snowpack	Reduced Snowpack	<p>Importance: Snowpack in the mountains in the beginning of spring indicates the amount of natural water storage in snowpack that will be available in the melt season. April 1st snowpack (snow water equivalent) is one source of water for uses including hydropower generation, drinking water, irrigation, and instream flows for ecosystems.</p> <p>Exposure: Snowpack exposure to warming varies by elevation. In your county or community, the exposure of water resources will depend on the location of water sources. The low-elevation Cascade and Olympic foothills will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing. By the end of the century, snowpack is expected to remain relatively unaffected only in the high-elevations of the Northern Cascade Mountains.</p> <p>Sensitivity: The degree to which water and energy resources in your county or community will be affected by reduced snowpack depends on sources of water and energy. Surface water sources and hydropower are sensitive to changes in snowpack. A lack of redundancy in sources, limited storage, high demand, and less efficient infrastructure will increase sensitivity of water resources to reduced snowpack.</p> <p>Impact: Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The percent change in April 1st snowpack for future 30-year periods compared to the 1980-2009 average. April 1st snowpack is used as an indicator for the amount of stored water that becomes available during the melt season. A decrease in April 1st snowpack indicates that less stored water will be available to supply streams, soil, and reservoirs during the melt season.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>
Water Resources	Increase in likely sea level rise	Sea Level Rise	<p>Importance: Relative sea level rise indicates how much the average water level is expected to rise due to the combined effects of climate change and movement of the land.</p> <p>Exposure: In your county or community, exposure will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion will vary based on shoreline topography and characteristics. Shallow aquifers and wells located in low-lying coastal zones will be more exposed to saltwater intrusion.</p> <p>Sensitivity: The degree to which water resources in your county or community will be affected by sea level rise depends on the type of water sources and the redundancy in sources.</p> <p>Impact: Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.</p>	<p>High emissions scenario. Historical baseline (1991-2009). Mid century baseline 2050. End of century baseline 2100.</p> <p>Data shows relative sea level rise with a 50% likelihood of occurring for future 30-year periods compared to the average sea level in 1991-2009. For example, a value of 2.0 means that there is a 50% chance that the county will experience 2.0 feet of relative sea level rise. Puget Sound and the central and southern outer coast on the Pacific Ocean are likely to experience more sea level rise than the northwest Olympia Peninsula due to differences in vertical movement of the land, sedimentation, and current coastal storm patterns. Increasing sea level contributes to future flooding, inundation, and coastal erosion.</p> <p>Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.</p>
Water Resources	Increase in Wildfire Likelihood	Wildfire	<p>Importance: An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Exposure: In your county or community, the local exposure of water resources to increases in wildfire will depend on the extent of water distribution infrastructure and water resources located in the wildland-urban interface or wildlands.</p> <p>Sensitivity: The degree to which water resources in your county or community will be affected by an increased likelihood of wildfire depends on the current condition of water treatment and distribution infrastructure. Surface water sources and systems with limited treatment will be more sensitive to wildfire-related changes in water quality. Older infrastructure with a lack of redundancy will be more sensitive to wildfire damage.</p> <p>Impact: More frequent wildfires have the potential to damage water distribution infrastructure and reduce water quality in reservoirs due to more runoff, erosion, and turbidity. Changes in water quality could increase the need for water treatment and filtration.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The likelihood of climate and fuel conditions favorable for wildfire in the county for future 30-year periods. For example, a value of 0.50 means that there is a 50% chance that a year in that time period will have climate and fuel conditions that are favorable for wildfire. The likelihood of wildfire is simulated using a fire process model. An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.</p>

Zoning & Development	Decrease in snowpack	Drought	<p>Importance: Snowpack in the mountains in the beginning of spring indicates the amount of natural water storage in snowpack that will be available in the melt season. April 1st snowpack (snow water equivalent) is one source of water for uses including hydropower generation, drinking water, irrigation, and instream flows for ecosystems.</p> <p>Exposure: Snowpack exposure to warming varies by elevation. In your county or community, the exposure of snow-dependent businesses and industries will depend on elevation. The low-elevation Cascade and Olympic foothills will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing. By the end of the century, snowpack is expected to remain relatively unaffected only in the high-elevations of the Northern Cascade Mountains.</p> <p>Sensitivity: The degree to which development in your county or community will be affected by reductions in snowpack will vary based on the dependence of the recreation sector to snowpack and seasons, as well as flexibility to shift among seasons.</p> <p>Impact: Reductions in snowpack are expected to decrease opportunities for winter outdoor recreation and shorten the winter recreation season with adverse effects on the economy and character of some communities. Warm season outdoor recreation opportunities are expected to increase, shifting tourism revenue from one recreation sector to another.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The percent change in April 1st snowpack for future 30-year periods compared to the 1980-2009 average. April 1st snowpack is used as an indicator for the amount of stored water that becomes available during the melt season. A decrease in April 1st snowpack indicates that less stored water will be available to supply streams, soil, and reservoirs during the melt season.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>
Zoning & Development	Increase in august stream temperature	Extreme Heat	<p>Importance: Stream temperature during August, which is typically the hottest month for most streams, is an indicator of water quality for salmon and other species that depend on cold water.</p> <p>Exposure: Undefined.</p> <p>Sensitivity: The degree to which water bodies and compliance with water temperature standards are affected by warmer water temperatures depends on the extent of non-climatic stressors that also increase water temperatures.</p> <p>Impact: Warmer stream temperatures have the potential to reduce the ability to meet water quality standards and the effluent limits (amount discharge to the water body) set on existing wastewater treatment facilities.</p>	<p>Moderate emissions scenario (A1B) only available. Historical baseline (1993-2011). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The percentage of stream lengths in categories of average August stream temperature for future 30-year periods. For example, 10% of the stream segments in the 18 to 20C category means that 10% of the stream length in the county have an average August stream temperature value between 18 and 20C. An increase in August stream temperature is an indicator of water quality for salmon and other species that depend on cold water.</p> <p>Historical baseline of august stream temperature: 3.4% increase in range 16-18 deg C. 16.1% increase in range 14-16 deg C. 21.9% increase in range 12-14 deg C. 23.9% increase below 8 deg C.</p> <p>Mid Century: 13.2% increase in range 16-18 deg C. 20.9% increase in range 14-16 deg C. 21.2% increase in range 12-14 deg C. 15% increase in range 10-12 deg C. 15.2% increase in range below 8 deg C.</p> <p>End of Century: 15.4% increase in range 16-18 deg C. 21.7% increase in range 14-16 deg C. 18.8% increase in range 12-14 deg C. 12.3% increase in range 10-12 deg C. 8% increase in range below 8 deg C.</p>
Zoning & Development	Increase in heavy precipitation magnitude	Extreme Precipitation	<p>Importance: Change in the intensity of heavy precipitation events are more likely to cause damages to infrastructure and agricultural operations than changes in seasonal and annual precipitation.</p> <p>Exposure: In your county or community, certain land uses and development located in low-lying areas, within current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to an increase in heavy precipitation.</p> <p>Sensitivity: The degree to which development is affected by increases in precipitation intensity depends on the type of land use, building codes in flood and steep slope zones, and the capacity of stormwater systems.</p> <p>Impact: Heavier precipitation events are expected to intensify urban flooding and demands on storm water systems, which can affect zoning restrictions on new buildings, and require revised building codes for development in more frequently flooded areas.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>A heavy precipitation day is the maximum daily precipitation that occurs with the 2-year storm, or on average once every two years. For example, a value of 15% means a county is expected to experience an increase in the total precipitation of the 2-year storm of 15%. Heavy precipitation is an indicator of flooding that can affect infrastructure and operations.</p> <p>Increase in heavy precipitation magnitude from 8% for mid century to 21% for end of century. Historical baseline was not recorded.</p>

Zoning & Development	Decrease in peak streamflow	Flooding	<p>Importance: An increase in the annual peak streamflow indicates a potential for higher streamflows and larger areas inundated every year at high flows.</p> <p>Exposure: In your county or community, development located in river valleys and in or near current and historical flood zones will be most exposed to projected increases in high streamflows that cause flooding.</p> <p>Sensitivity: The degree to which development in your county or community is affected by higher streamflows that can cause more flooding depends on the types of land use in flood zones and the extent of flood protection.</p> <p>Impact: Higher streamflows are expected to increase damage to all types of infrastructure in flood zones and could expand the flood zone in some areas leading to damage of development not currently in flood zones.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2050-2079). End of century baseline (2070-2099).</p> <p>Data shows the percent of stream lengths in a county that fall within a category of change from 1980-2009 peak streamflow. For example, 10% of the stream segments in the 50 to 30 category means that 10% of the streams in the county will have 50% to 30% more streamflow on the day of the year with the highest streamflow. All streamflow values here are natural flows, and do not include any influence from withdrawals or hydropower projects. More peak streamflow is an indicator of flood potential and larger areas inundated every year at high flows.</p> <p>Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for -10 to 10 is 100. Mid century and end of century projections are 19.3 and 4.4, respectively.</p>
Zoning & Development	Decrease in snowpack	Reduced Snowpack	<p>Importance: Snowpack in the mountains in the beginning of spring indicates the amount of natural water storage in snowpack that will be available in the melt season. April 1st snowpack (snow water equivalent) is one source of water for uses including hydropower generation, drinking water, irrigation, and instream flows for ecosystems.</p> <p>Exposure: Snowpack exposure to warming varies by elevation. In your county or community, the exposure of snow-dependent businesses and industries will depend on elevation. The low-elevation Cascade and Olympic foothills will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing. By the end of the century, snowpack is expected to remain relatively unaffected only in the high-elevations of the Northern Cascade Mountains.</p> <p>Sensitivity: The degree to which development in your county or community will be affected by reductions in snowpack will vary based on the dependence of the recreation sector to snowpack and seasons, as well as flexibility to shift among seasons.</p> <p>Impact: Reductions in snowpack are expected to decrease opportunities for winter outdoor recreation and shorten the winter recreation season with adverse effects on the economy and character of some communities. Warm season outdoor recreation opportunities are expected to increase, shifting tourism revenue from one recreation sector to another.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The percent change in April 1st snowpack for future 30-year periods compared to the 1980-2009 average. April 1st snowpack is used as an indicator for the amount of stored water that becomes available during the melt season. A decrease in April 1st snowpack indicates that less stored water will be available to supply streams, soil, and reservoirs during the melt season.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>
Zoning & Development	Increase in likely sea level rise	Sea Level Rise	<p>Importance: Relative sea level rise indicates how much the average water level is expected to rise due to the combined effects of climate change and movement of the land.</p> <p>Exposure: In your county or community, exposure to sea level rise will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion will vary based on shoreline topography and characteristics. Development located in low-lying coastal zones or near coastal bluffs will be more exposed.</p> <p>Sensitivity: The degree to which development in your county or community is affected by sea level rise and associated coastal hazards depends on the types of land use in coastal flood zones and the extent of flood protection.</p> <p>Impact: Moderate sea level rise is expected to inundate some coastal land and intensify coastal flooding of infrastructure. Sea level rise is expected to increase beach and bluff erosion in some areas. Increasing coastal hazards are expected to decrease the area of coastal land that is suitable for some types of development and increase the need for relocation.</p>	<p>High emissions scenario. Historical baseline (1991-2009). Mid century baseline 2050. End of century baseline 2100.</p> <p>Data shows relative sea level rise with a 50% likelihood of occurring for future 30-year periods compared to the average sea level in 1991-2009. For example, a value of 2.0 means that there is a 50% chance that the county will experience 2.0 feet of relative sea level rise. Puget Sound and the central and southern outer coast on the Pacific Ocean are likely to experience more sea level rise than the northwest Olympia Peninsula due to differences in vertical movement of the land, sedimentation, and current coastal storm patterns. Increasing sea level contributes to future flooding, inundation, and coastal erosion.</p> <p>Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.</p>

Zoning & Development	Increase in Wildfire Likelihood	Wildfire	<p>Importance: An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Exposure: In your county or community, the extent of development and the types of land use in the wildland-urban interface will affect local exposure to increases in the likelihood of wildfire.</p> <p>Sensitivity: The degree to which development will be affected by increases in wildfire depends on the types of land use in the wildland-urban interface. Other non-climatic factors affecting development, such as population growth, will also affect sensitivity of development to wildfire.</p> <p>Impact: More frequent wildfires are expected to increase damage to homes and infrastructure and displace residents.</p>	<p>High emissions scenario. Historical baseline (1980-2009). Mid century baseline (2030-2059). End of century baseline (2070-2099).</p> <p>The likelihood of climate and fuel conditions favorable for wildfire in the county for future 30-year periods. For example, a value of 0.50 means that there is a 50% chance that a year in that time period will have climate and fuel conditions that are favorable for wildfire. The likelihood of wildfire is simulated using a fire process model. An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.</p> <p>Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.</p>
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Task 1.3: Pair assets and hazards, and describe exposure and consequences

Number	Asset-Hazard Pair (Note applicable sector(s) in parenthesis.)	Climate Indicator (Use the CMRW webtool and other resources, as needed, to fill out this column.)	Climate Impacts (Use the CMRW webtool and other resources, as needed, to fill out this column.)	Exposure (Describe how each asset is exposed to the hazard, utilizing information from the CMRW webtool's "Understanding the Importance" tab, local knowledge, and other resources)	Non-Climate Stressors (Describe non-climate stressors that may exacerbate climate impacts.)	Consequences (Describe the consequences of the climate impacts, factoring in exposure, non-climate stressors, and your knowledge of how this hazard has impacted your community in the past. You may find it useful to divide consequences into past and future.)
1	Farms-Drought (Ag & Food Systems)	Increase in precipitation drought	Total summer precipitation (June-August) is anticipated to be below 75% of the historical normal summer precipitation by mid-century under high emissions scenario (RCP8.5). Steady increase of likelihood of a year with summer precipitation below 75% ranges from 0.26 mid century to 0.39 end of century. More frequent and severe droughts due to low summer precipitation will reduce the amount of water available for livestock and irrigation during the same time that warmer temperatures and longer growing seasons are expected to increase the demand for irrigation water.	Skagit County has a rich agricultural industry and many important ecosystems, historically shaped by the unconfined Skagit River delta. Approximately 90% of the county's farmgate value is produced on around 60,000 acres in the Skagit and Samish Deltas, areas that rely on specialized diking, drainage, and irrigation districts to maintain productivity. This transformation of marsh and floodplains into productive farmland has made Skagit County one of the largest agricultural communities west of the Cascade Mountains, generating approximately \$261 million annually. The land is primarily cultivated by large and mid-scale farms that support critical practices such as crop rotation and land-sharing agreements.	Economic constraints, logistical limitations, additional water use during land preparation or harvest	Projected warmer temperatures and changing precipitation patterns are likely to raise water demand for irrigation by mid-century, adding strain on already limited water resources, particularly during peak growing seasons.
2	Farms-Extreme Heat (Ag & Food Systems)	Increase in summer max temperature	Warmer summers are expected to increase the potential for heat stress on some crops and livestock and decrease crop yields. Some agricultural pests are expected to have greater survival rates and population size with warming. Warmer summer temperatures are expected to increase demand for irrigation water. Increase in summer maximum temperature from 5.1 deg F for mid century to 10.7 deg F, end of century. Historical baseline is 69 deg F.	Skagit County has a rich agricultural industry and many important ecosystems, historically shaped by the unconfined Skagit River delta. Approximately 90% of the county's farmgate value is produced on around 60,000 acres in the Skagit and Samish Deltas, areas that rely on specialized diking, drainage, and irrigation districts to maintain productivity. This transformation of marsh and floodplains into productive farmland has made Skagit County one of the largest agricultural communities west of the Cascade Mountains, generating approximately \$261 million annually. The land is primarily cultivated by large and mid-scale farms that support critical practices such as crop rotation and land-sharing agreements. Although farm labor in Skagit County is significantly smaller than in the rest of the state, the region still cultivates labor-intensive crops, resulting in a compressed labor market. The H-2A guest worker program has become increasingly relied upon as a labor source; however, the overall migrant farmworker population is shrinking, with a notable shift toward more resident migrant populations	Economic constraints, logistical limitations, employment constraints	Projected warmer temperatures and changing precipitation patterns are likely to raise water demand for irrigation by mid-century, adding strain on already limited water resources, particularly during peak growing seasons.
3	Farms-Extreme precipitation (Ag & Food Systems)	Increase in heavy precipitation magnitude	Heavier precipitation is expected to intensify flooding and inundation of agricultural lands, which can delay spring planting, affect crop quality and quantity, increase erosion and runoff, and increase susceptibility to root diseases. Increase in heavy precipitation magnitude from 8% for mid century to 21% for end of century. Historical baseline was not recorded.	Skagit County has a rich agricultural industry and many important ecosystems, historically shaped by the unconfined Skagit River delta. Approximately 90% of the county's farmgate value is produced on around 60,000 acres in the Skagit and Samish Deltas, areas that rely on specialized diking, drainage, and irrigation districts to maintain productivity. This transformation of marsh and floodplains into productive farmland has made Skagit County one of the largest agricultural communities west of the Cascade Mountains, generating approximately \$261 million annually. The land is primarily cultivated by large and mid-scale farms that support critical practices such as crop rotation and land-sharing agreements.	Economic constraints, logistical limitations, additional water use during land preparation or harvest	Projected warmer temperatures and changing precipitation patterns are likely to raise water demand for irrigation by mid-century, adding strain on already limited water resources, particularly during peak growing seasons.
4	Farms-Reduced snowpack (Ag & Food Systems)	Increase in streamflow timing	A shift in streamflow timing, with more streamflow in winter and early spring, will change the timing of water available for irrigated agriculture. This may or may not align with changes in the timing of the growing season for different crops. Steady increase of percentage of stream lengths in Skagit County winter to spring streamflow timing ratio. Historical baseline ratio for 1.0 to 1.5 is 6.1%. Mid century ratio for 1.0 to 1.5 is 13.6% and end of century 1.0 to 1.5 ratio is 51.3 percent.	Skagit County has a rich agricultural industry and many important ecosystems, historically shaped by the unconfined Skagit River delta. Approximately 90% of the county's farmgate value is produced on around 60,000 acres in the Skagit and Samish Deltas, areas that rely on specialized diking, drainage, and irrigation districts to maintain productivity. This transformation of marsh and floodplains into productive farmland has made Skagit County one of the largest agricultural communities west of the Cascade Mountains, generating approximately \$261 million annually. The land is primarily cultivated by large and mid-scale farms that support critical practices such as crop rotation and land-sharing agreements.	Economic constraints, logistical limitations, additional water use during land preparation or harvest	Projected warmer temperatures and changing precipitation patterns are likely to raise water demand for irrigation by mid-century, adding strain on already limited water resources, particularly during peak growing seasons.
5	Farms-Wildfire (Ag & Food Systems)	Increase in wildfire likelihood	More frequent wildfires have the potential to increase damage to crops, livestock, agriculture infrastructure and operations. Wildfire smoke may reduce the quality of some crops and adversely affect farm workers and other outdoor laborers in the industry. Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	Skagit County has a rich agricultural industry and many important ecosystems, historically shaped by the unconfined Skagit River delta. Approximately 90% of the county's farmgate value is produced on around 60,000 acres in the Skagit and Samish Deltas, areas that rely on specialized diking, drainage, and irrigation districts to maintain productivity. This transformation of marsh and floodplains into productive farmland has made Skagit County one of the largest agricultural communities west of the Cascade Mountains, generating approximately \$261 million annually. The land is primarily cultivated by large and mid-scale farms that support critical practices such as crop rotation and land-sharing agreements. Although farm labor in Skagit County is significantly smaller than in the rest of the state, the region still cultivates labor-intensive crops, resulting in a compressed labor market. The H-2A guest worker program has become increasingly relied upon as a labor source; however, the overall migrant farmworker population is shrinking, with a notable shift toward more resident migrant populations	Economic constraints, logistical limitations, employment constraints	Increased risk of wildfires, exacerbated by higher temperatures, can lead to smoke stress and respiratory problems, further impacting farmers' ability to work during periods of smoke or high heat.
6	Administrative Buildings - Extreme Heat (Buildings & Energy)	Decrease in heating degree days	A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations. Steady decrease in heating degree days. Historical baseline of 7089 def F heating days (109 days for heating). Mid century and end of century projected to be a decrease in 1199 deg F heating days (-18 days) and 2467 deg F heating days (-38 days).	Buildings and utilities located in areas with mild winter climates will be most exposed to decreases in heating degree days. Skagit county is expected to experience -1199 °F-days in heating degree days by mid-century under RCP8.5 scenarios, meaning there will be a decrease in total annual degree-days below an average daily temperature of 65°F. The Cascades mountain region in eastern County is anticipated to experience more decrease in total annual degree-days, indicating that the region will experience more warming other parts of the County.	Increased personnel; Increased impervious surfaces/urban development; Work environment (work from home vs. in office)	Longer durations of heating and cooling degree days are expected to occur. An increase in cooling degree days is expected to increase energy demand for air conditioning and industrial cooling systems in summer when regional hydropower supply is expected to decrease, increasing demand on external energy sources and causing potential widespread power outages (Source: CMRW tool). Power outages may inhibit the County from administering services and emergency relief
7	Administrative Buildings - Wildfire (Buildings & Energy)	Increased likely wildfire	More frequent wildfires have the potential to affect energy transmission by damaging infrastructure and interrupting transmission and distribution. More frequent wildfires are expected to cause property damage and loss. Poor air quality due to wildfire smoke could increase demand for air filtration systems in buildings. Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	Skagit County has a low likelihood of wildfire (0.04) with 4% likelihood that conditions exist to support wildfire events, including assumptions of ignition presence and suppression methods. Infrastructure located in the wildland-urban interface and areas with high wildfire risk historically will be most exposed to increases in the likelihood of wildfire. County administrative buildings are mainly located in incorporated areas surrounded by urban development, and are more likely to experience secondary hazards such as smoke, ash, loss of power, etc.	Limited personnel; Development in WUI zone	Wildfires are anticipated to occur more frequently. More frequent wildfires are expected to cause property damage and loss, and building filtration upgrades.
8	Electricity generating stations - Extreme Heat (Buildings & Energy)	Decrease in heating degree days	A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations. Steady decrease in heating degree days. Historical baseline of 7089 def F heating days (109 days for heating). Mid century and end of century projected to be a decrease in 1199 deg F heating days (-18 days) and 2467 deg F heating days (-38 days).	County is anticipated to experience decreases in total annual degree-days below an average daily temperature of 65°F, reducing demand on electricity for heating. Exposure of generating stations to decreased heating degree days may reduce electricity generating efficiencies due to warming effects.	Increased population; Increased development; Lack of technology; Lack of capital expenditure funds	Prolonged exposure to extreme heat can reduce output, aka derating, generation capacity, and transmission efficiency and capacity, resulting in systematic energy losses. Turbines and power plants reliant on cool water can become less efficient due to a lower proportional thermal conversion. Extreme heat can also cause overhead lines to sag through thermal expansion, heightening wildfire risk and increasing voluntary power shutoffs and forced blackouts. Impacts to residents with preexisting health conditions can lead to increased emergency response services.

9	Electricity generating stations - Wildfire (Buildings & Energy)	Increased likely wildfire	<p>More frequent wildfires have the potential to affect energy transmission by damaging infrastructure and interrupting transmission and distribution. More frequent wildfires are expected to cause property damage and loss. Poor air quality due to wildfire smoke could increase demand for air filtration systems in buildings.</p> <p>Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.</p>	<p>Skagit County has a low likelihood of wildfire (0.04) with 4% likelihood that conditions exist to support wildfire events, including assumptions of ignition presence and suppression methods. Generating stations that are located in forested areas/WUI zones are more exposed to wildfire likelihood and wildfire events.</p>	<p>Increased development; Lack of technology; Lack of capital expenditure funds; Site constraints</p>	<p>Prolonged exposure to extreme heat can reduce output, aka derating, generation capacity, and transmission efficiency and capacity, resulting in systematic energy losses. Turbines and power plants reliant on cool water can become less efficient due to a lower proportional thermal conversion. Extreme heat can also cause overhead lines to sag through thermal expansion, heightening wildfire risk and increasing voluntary power shutoffs and forced blackouts. Impacts to residents with preexisting health conditions can lead to increased emergency response services.</p>
10	Residential Neighborhood 1 - Drought	Summer precipitation	<p>Under an RCP8.5 scenario, the likelihood of a year with summer precipitation below 75% of the historical normal is projected to be 20% by mid-century (2040-2069).</p>	<p>Neighborhoods 1, 3, and 4 are located outside of the 100-year floodplain and can be more susceptible to summer drought conditions and wildland fires because a high percentage of homes are located in timbered interface areas. Almost 20,000 residents reside in these hazard mitigation neighborhoods, making them more exposed to climate-related risks such as drought, fires, and landslides. Those areas most vulnerable to drought situations are Fidalgo Island and Guemes Island in western Skagit County. Guemes Island relies totally on an island aquifer for domestic water. There are only a small number of full-time residents living on Guemes Island; however, a lot of residents live on rural Fidalgo Island rely on private, stand-alone water systems for their domestic water supply.</p>	<p>Housing development patterns and development standards.</p>	<p>With increased drought conditions and wildfire likelihood in WUI zones, housing communities will likely become more vulnerable and susceptible to structural damage. Higher temperatures and reduced moisture levels during droughts increase the likelihood of regional wildfires. These fires can degrade air quality, posing health risks to residents.</p> <p>A severe or long-term drought situation could severely impact a large number of citizens living and working on Fidalgo Island. A severe or long-term drought would subject persons living on Guemes Island and portions of Fidalgo Island to a significant fire risk.</p>
11	Residential Neighborhood 3 - Drought	Summer precipitation	<p>Under an RCP8.5 scenario, the likelihood of a year with summer precipitation below 75% of the historical normal is projected to be 20% by mid-century (2040-2069).</p>	<p>Neighborhoods 1, 3, and 4 are located outside of the 100-year floodplain and can be more susceptible to summer drought conditions and wildland fires because a high percentage of homes are located in timbered interface areas. Almost 20,000 residents reside in these hazard mitigation neighborhoods, making them more exposed to climate-related risks such as drought, fires, and landslides.</p>	<p>Housing development patterns and development standards.</p>	<p>With increased drought conditions and wildfire likelihood in WUI zones, housing communities will likely become more vulnerable and susceptible to structural damage. Higher temperatures and reduced moisture levels during droughts increase the likelihood of regional wildfires. These fires can degrade air quality, posing health risks to residents.</p>
12	Residential Neighborhood 4 - Drought	Summer precipitation	<p>Under an RCP8.5 scenario, the likelihood of a year with summer precipitation below 75% of the historical normal is projected to be 20% by mid-century (2040-2069).</p>	<p>Neighborhoods 1, 3, and 4 are located outside of the 100-year floodplain and can be more susceptible to summer drought conditions and wildland fires because a high percentage of homes are located in timbered interface areas. Almost 20,000 residents reside in these hazard mitigation neighborhoods, making them more exposed to climate-related risks such as drought, fires, and landslides.</p>	<p>Housing development patterns and development standards.</p>	<p>With increased drought conditions and wildfire likelihood in WUI zones, housing communities will likely become more vulnerable and susceptible to structural damage. Higher temperatures and reduced moisture levels during droughts increase the likelihood of regional wildfires. These fires can degrade air quality, posing health risks to residents.</p>
13	Residential Neighborhood 1 - Extreme Heat	Decrease in heating degree days	<p>A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations.</p> <p>Steady decrease in heating degree days. Historical baseline of 7089 def F heating days (109 days for heating). Mid century and end of century projected to be a decrease in 1199 deg F heating days (-18 days) and 2467 deg F heating days (-38 days).</p>	<p>Buildings and utilities located in areas with mild winter climates will be most exposed to decreases in heating degree days.</p> <p>Within Skagit County, there are four hazard mitigation neighborhoods (1 through 4) which have distinct boundaries. Almost 20,000 residents reside in these hazard mitigation neighborhoods, making them more exposed to climate-related risks such as drought, fires, and landslides. Poor living conditions and substandard housing are associated with poor public health outcomes. In Skagit County, 30.4% of housing units are built prior to 1960 and 70.3% are owner-occupied.</p>	<p>Increase in population (more demand on energy use); More impervious surface development</p>	<p>County residents may experience increased vulnerability to climate threats as housing-related hazards such as lead paint (houses built prior to 1960), asbestos, and poor filtration may amplify public health concerns due to increased extreme heat days.</p> <p>Extreme heat events exacerbate the hot, dry conditions that help wildfires catch and spread. Thus, extreme heat and wildfire smoke can heighten poor air quality, human heart and respiratory issues, and overall hospitalizations.</p>
14	Residential Neighborhood 2 - Extreme Heat	Decrease in heating degree days	<p>A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations.</p> <p>Steady decrease in heating degree days. Historical baseline of 7089 def F heating days (109 days for heating). Mid century and end of century projected to be a decrease in 1199 deg F heating days (-18 days) and 2467 deg F heating days (-38 days).</p>	<p>Buildings and utilities located in areas with mild winter climates will be most exposed to decreases in heating degree days.</p> <p>Within Skagit County, there are four hazard mitigation neighborhoods (1 through 4) which have distinct boundaries. Almost 20,000 residents reside in these hazard mitigation neighborhoods, making them more exposed to climate-related risks such as drought, fires, and landslides. Poor living conditions and substandard housing are associated with poor public health outcomes. In Skagit County, 30.4% of housing units are built prior to 1960 and 70.3% are owner-occupied.</p>	<p>Increase in population (more demand on energy use); More impervious surface development</p>	<p>County residents may experience increased vulnerability to climate threats as housing-related hazards such as lead paint (houses built prior to 1960), asbestos, and poor filtration may amplify public health concerns due to increased extreme heat days.</p> <p>Extreme heat events exacerbate the hot, dry conditions that help wildfires catch and spread. Thus, extreme heat and wildfire smoke can heighten poor air quality, human heart and respiratory issues, and overall hospitalizations.</p>
15	Residential Neighborhood 3 - Extreme Heat	Decrease in heating degree days	<p>A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations.</p> <p>Steady decrease in heating degree days. Historical baseline of 7089 def F heating days (109 days for heating). Mid century and end of century projected to be a decrease in 1199 deg F heating days (-18 days) and 2467 deg F heating days (-38 days).</p>	<p>Buildings and utilities located in areas with mild winter climates will be most exposed to decreases in heating degree days.</p> <p>Within Skagit County, there are four hazard mitigation neighborhoods (1 through 4) which have distinct boundaries. Almost 20,000 residents reside in these hazard mitigation neighborhoods, making them more exposed to climate-related risks such as drought, fires, and landslides. Poor living conditions and substandard housing are associated with poor public health outcomes. In Skagit County, 30.4% of housing units are built prior to 1960 and 70.3% are owner-occupied.</p>	<p>Increase in population (more demand on energy use); More impervious surface development</p>	<p>County residents may experience increased vulnerability to climate threats as housing-related hazards such as lead paint (houses built prior to 1960), asbestos, and poor filtration may amplify public health concerns due to increased extreme heat days.</p> <p>Extreme heat events exacerbate the hot, dry conditions that help wildfires catch and spread. Thus, extreme heat and wildfire smoke can heighten poor air quality, human heart and respiratory issues, and overall hospitalizations.</p>
16	Residential Neighborhood 4 - Extreme Heat	Decrease in heating degree days	<p>A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations.</p> <p>Steady decrease in heating degree days. Historical baseline of 7089 def F heating days (109 days for heating). Mid century and end of century projected to be a decrease in 1199 deg F heating days (-18 days) and 2467 deg F heating days (-38 days).</p>	<p>Buildings and utilities located in areas with mild winter climates will be most exposed to decreases in heating degree days.</p> <p>Within Skagit County, there are four hazard mitigation neighborhoods (1 through 4) which have distinct boundaries. Almost 20,000 residents reside in these hazard mitigation neighborhoods, making them more exposed to climate-related risks such as drought, fires, and landslides. Poor living conditions and substandard housing are associated with poor public health outcomes. In Skagit County, 30.4% of housing units are built prior to 1960 and 70.3% are owner-occupied.</p>	<p>Increase in population (more demand on energy use); More impervious surface development</p>	<p>County residents may experience increased vulnerability to climate threats as housing-related hazards such as lead paint (houses built prior to 1960), asbestos, and poor filtration may amplify public health concerns due to increased extreme heat days.</p> <p>Extreme heat events exacerbate the hot, dry conditions that help wildfires catch and spread. Thus, extreme heat and wildfire smoke can heighten poor air quality, human heart and respiratory issues, and overall hospitalizations.</p>

17	Residential Neighborhood 2 - Flooding	Increase in peak streamflow frequency	Similarly, storms, high tides, and extreme precipitation may exacerbate flooding events due to sea level rise, isolating specific neighborhoods and compromising residential septic tank infrastructure, private water wells, aerobic systems, and energy systems. Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for 10 to 10 percent is 100. Meaning 100% of stream segments experience 25-year peak volumes once every 20 to 30 years. Mid century and end of century projections are 19.3 and 4.4, respectively, of river segments with little to no change in peak streamflow, whereas 80.4 and 29.5 river segments are projected to experience 25-year peak volumes once every 10 to 20 years. Meaning peak streamflow will occur more frequently.	Neighborhood 2 comprises of the Skagit River delta and Puget Sound coast that follows the boundaries of the river floodplain and can be at greater risk of sea level rise and flood events.	Housing development patterns and development standards.	Extreme precipitation and sea level rise can increase the risk of coastal erosion and flooding, thus undermining the foundations of buildings, leading to structural damage and eventual destruction. The combined effects of high tides, peak riverine streamflow, and sea level rise can cause widespread flooding from temporary extreme high-water levels fanning out over the delta's broad and low-lying geography, exposing residential development along shoreline areas. Neighborhood 2 follows the boundaries of the 100-year floodplain of the Skagit River and can be exposed to flooding from sea level rise and Skagit River flood events. There are three different types of phase floods: - Phase 1 flooding inundates low areas near the Skagit River and generally does not cause significant damage in the Skagit River Valley. - Phase 2 flooding inundates a broader area and may cause significant damage. - Phase 3 flooding can cause catastrophic damage in the valley
18	Residential Neighborhood 2 - Sea Level Rise	Likely sea level rise	Sea levels are anticipated to increase by mid-century, causing widespread shallow flooding along the Samish and Skagit Deltas	Neighborhood 2 comprises of the Skagit River delta and Puget Sound coast that follows the boundaries of the river floodplain and can be at greater risk of sea level rise and flood events.	Housing development patterns and development standards.	Sea level rise can increase the risk of coastal erosion and flooding, thus undermining the foundations of buildings, leading to structural damage and eventual destruction. The combined effects of high tides, peak riverine streamflow, and sea level rise can cause widespread flooding from temporary extreme high-water levels fanning out over the delta's broad and low-lying geography, exposing residential development along shoreline areas.
19	Residential Neighborhood 1 - Wildfire	Increased likely wildfire	More frequent wildfires have the potential to affect energy transmission by damaging infrastructure and interrupting transmission and distribution. More frequent wildfires are expected to cause property damage and loss. Poor air quality due to wildfire smoke could increase demand for air filtration systems in buildings. Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	Neighborhoods 1, 3, and 4 are located outside of the 100-year floodplain and can be more susceptible to summer drought conditions and wildland fires because a high percentage of homes are located in timbered interface areas. Housing along Highway 20, Highway 530, Highway 9, Cedardale, Lake Cavanaugh, northeast Burlington, and island communities in western Skagit County exhibit high susceptibility to wildfire threats.	Housing development patterns and development standards.	With increased drought conditions and wildfire likelihood in WUI zones, housing communities will likely become more vulnerable and susceptible to structural damage. Higher temperatures and reduced moisture levels during droughts increase the likelihood of regional wildfires. These fires can degrade air quality, posing health risks to residents
20	Residential Neighborhood 3 - Wildfire	Increased likely wildfire	More frequent wildfires have the potential to affect energy transmission by damaging infrastructure and interrupting transmission and distribution. More frequent wildfires are expected to cause property damage and loss. Poor air quality due to wildfire smoke could increase demand for air filtration systems in buildings. Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	Neighborhoods 1, 3, and 4 are located outside of the 100-year floodplain and can be more susceptible to summer drought conditions and wildland fires because a high percentage of homes are located in timbered interface areas. Housing along Highway 20, Highway 530, Highway 9, Cedardale, Lake Cavanaugh, northeast Burlington, and island communities in western Skagit County exhibit high susceptibility to wildfire threats.	Housing development patterns and development standards.	With increased drought conditions and wildfire likelihood in WUI zones, housing communities will likely become more vulnerable and susceptible to structural damage. Higher temperatures and reduced moisture levels during droughts increase the likelihood of regional wildfires. These fires can degrade air quality, posing health risks to residents
21	Residential Neighborhood 4 - Wildfire	Increased likely wildfire	More frequent wildfires have the potential to affect energy transmission by damaging infrastructure and interrupting transmission and distribution. More frequent wildfires are expected to cause property damage and loss. Poor air quality due to wildfire smoke could increase demand for air filtration systems in buildings. Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	Neighborhoods 1, 3, and 4 are located outside of the 100-year floodplain and can be more susceptible to summer drought conditions and wildland fires because a high percentage of homes are located in timbered interface areas. Housing along Highway 20, Highway 530, Highway 9, Cedardale, Lake Cavanaugh, northeast Burlington, and island communities in western Skagit County exhibit high susceptibility to wildfire threats.	Housing development patterns and development standards.	With increased drought conditions and wildfire likelihood in WUI zones, housing communities will likely become more vulnerable and susceptible to structural damage. Higher temperatures and reduced moisture levels during droughts increase the likelihood of regional wildfires. These fires can degrade air quality, posing health risks to residents
22	Petroleum refineries - Extreme Heat	Decrease in heating degree days	A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations. Steady decrease in heating degree days. Historical baseline of 7089 def F heating days (109 days for heating). Mid century and end of century projected to be a decrease in 1199 deg F heating days (-18 days) and 2467 deg F heating days (-38 days).	Petroleum is processed at refineries near Anacortes and delivered via transmission pipelines to Western County. Liquid gas is provided by Northwest Pipeline, BP Olympic Pipeline Company, and Trans Mountain Pipeline, which runs north to south along the Samish and Skagit deltas.	Increase in population (more demand on energy use); More impervious surface development	Refineries are typically designed to operate between 32 and 95 degree Fahrenheit, extreme temperatures could cause the plant to become inefficient, shut down, or create potentially dangerous working conditions.
23	Natural gas pipelines - Extreme Heat	Decrease in heating degree days	A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations. Steady decrease in heating degree days. Historical baseline of 7089 def F heating days (109 days for heating). Mid century and end of century projected to be a decrease in 1199 deg F heating days (-18 days) and 2467 deg F heating days (-38 days).	Cascade Natural Gas provides natural gas and has a large transmission pipeline that extends from Anacortes in the west to Sedro-Woolley. Cascade Natural Gas serves over 260,000 customers. 82.6% of occupied housing units in Skagit County use utility gas and electricity as primary heating sources with the second highest use being wood.	Increase in population (more demand on energy use); More impervious surface development	Natural gas pipelines may face reduced operational efficiency, potential pipeline damage due to thermal expansion, increased demand for cooling, and disruptions to gas production facilities.
24	Electric Utilities - Extreme Heat	Decrease in heating degree days	A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations. Steady decrease in heating degree days. Historical baseline of 7089 def F heating days (109 days for heating). Mid century and end of century projected to be a decrease in 1199 deg F heating days (-18 days) and 2467 deg F heating days (-38 days).	Large utility providers such as Puget Sound Energy (PSE) serve 65,000 customers. PSE has approximately 1,015 miles of overhead wire, 744 miles of underground cables, and 24 substations that serve more than 60,000 customers (84% residential, 15% commercial, and 1% industrial). 82.6% of occupied housing units in Skagit County use utility gas and electricity as primary heating sources with the second highest use being wood.	Increase in population (more demand on energy use); More impervious surface development and demand.	More frequent severe weather events can damage utility assets, resulting in widespread power outages, lengthier response times, and increased public safety power shutoffs. Extreme heat days may exacerbate the hot dry conditions that help wildfires catch and spread. However, with a decrease in heating degree days, these consequences may be less likely to occur. Extreme heat can also cause overhead lines to sag through thermal expansion, heightening wildfire risk and increasing voluntary power shutoffs and forced blackouts. Blackouts may leave many consumers vulnerable to the impacts of extreme heat during elongated periods, as the outdoor ambient temperature is directly associated with the amount of electricity consumed.
25	Baker River Hydroelectric Project - Extreme Heat	Decrease in heating degree days	A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations. Steady decrease in heating degree days. Historical baseline of 7089 def F heating days (109 days for heating). Mid century and end of century projected to be a decrease in 1199 deg F heating days (-18 days) and 2467 deg F heating days (-38 days).	The Baker River Hydroelectric Project is located on a tributary of the Skagit River in northwest Skagit County and is one of the largest sources of hydroelectricity. Lake Shannon reservoir, which supplies water to the Lower Baker dam in the County, has a storage capacity of 160,000 acre-feet of water that can be used for electricity during low streamflow and high energy demand seasons.	Increase in population (more demand on energy use); More impervious surface development	Changes in extreme heat may reduce hydropower production potential; thus, the production and supply of electricity and energy may be significantly impacted.

26	Electric Utilities - Wildfire	Increase in wildfire likelihood	Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	Large utility providers such as Puget Sound Energy (PSE) serve 65,000 customers. PSE has approximately 1,015 miles of overhead wire, 744 miles of underground cables, and 24 substations that serve more than 60,000 customers (84% residential, 15% commercial, and 1% industrial). 82.6% of occupied housing units in Skagit County use utility gas and electricity as primary heating sources with the second highest use being wood.	Increase in population (more demand on energy use); More impervious surface development	Blackouts may leave many consumers vulnerable to the impacts of extreme heat during elongated periods, as the outdoor ambient temperature is directly associated with the amount of electricity consumed.
27	Natural Gas Pipelines - Wildfire	Increase in wildfire likelihood	Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	Cascade Natural Gas provides natural gas and has a large transmission pipeline that extends from Anacortes in the west to Sedro-Woolley. Cascade Natural Gas serves over 260,000 customers. 82.6% of occupied housing units in Skagit County use utility gas and electricity as primary heating sources with the second highest use being wood.	Increase in population (more demand on energy use); More impervious surface development	Natural gas pipelines may face direct damage from exposure of extreme heat from increased wildfires. Pipelines may also face potential leaks, ruptures, and displacement.
28	Petroleum refineries - Wildfire	Increase in wildfire likelihood	Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	Petroleum is processed at refineries near Anacortes and delivered via transmission pipelines to Western County. Liquid gas is provided by Northwest Pipeline, BP Olympic Pipeline Company, and Trans Mountain Pipeline, which runs north to south along the Samish and Skagit deltas.	Increase in population (more demand on energy use); More impervious surface development	Refineries may face reductions in oil production and significant damage to critical infrastructure due to wildfire.
29	Baker River Hydroelectric Project - Wildfire	Increase in wildfire likelihood	Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	The Baker River Hydroelectric Project is located on a tributary of the Skagit River in northwest Skagit County and is one of the largest sources of hydroelectricity. Lake Shannon reservoir, which supplies water to the Lower Baker dam in the County, has a storage capacity of 160,000 acre-feet of water that can be used for electricity during low streamflow and high energy demand seasons.	Increase in population (more demand on energy use); More impervious surface development	However, as energy demand shifts to summer months throughout the century, hydropower sources may reduce if consecutive and prolonged seasons of reduced snowmelt persist. Skagit County is more likely to experience a shift in hydropower supply from snowmelt to precipitation.
30	Fisheries-Drought (Cultural Resources)	Increase in Low streamflow	Lower streamflows in summer are expected to reduce habitat quantity and quality for salmonids and other aquatic species that are culturally important to Northwest Tribes. Historical baseline: 100% change of stream lengths in low stream flow category (-10 to 10). Indicates 100% of the streams in the county will have 10% less streamflow on average during low summer streamflow's. Mid century and end of century baseline is 25.4% and 7.7%.	The largest decrease in water during low flow periods in summer is projected for middle-elevation watersheds strongly influenced by both rain and snow. Streams on the western slopes of the Cascade and Olympic mountains are most exposed to the change, with streams in the Columbia basin exposed later in the century.	Economic constraints; Competing land use; Traditional ecological knowledge gaps	Traditional Salish tribe fishing grounds and methods along Skagit riverbanks and river basin would be impacted due to decreased quality and quantity of fisheries. Fishing seasons may be more restricted due to low populations.
31	Fisheries-Extreme Heat	Increase in August stream temperature	Warmer stream temperatures are expected to reduce habitat quality for salmonids and other aquatic species that depend on cold water. This reduces the abundance of and access to these culturally important species for Northwest Tribes.	Skagit basin and shoreline areas with wide, low-lying topography is more exposed to increased stream temperatures. Increased temperatures increase likelihood of hypoxia.	Economic constraints; Site constraints; Competing land use; Traditional ecological knowledge gaps	Lower streamflows in summer and increased summer temperatures are expected to cause hypoxic conditions that reduce habitat quality and quality for salmonids and other aquatic species that are culturally important to coastal Salish tribes and recreational anglers.
32	Fisheries-Flooding	Decrease in peak streamflow	A decrease in the annual peak streamflow indicates a potential for lower streamflows and less areas inundated every year at high flows. Higher streamflows are expected to directly affect salmonid populations and alter salmonid habitat, reducing the quantity of a culturally important species for Northwest Tribes. Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for 10 to 10 is 100. Mid century and end of century projections are 19.3 and 4.4, respectively. Meaning annual maximum streamflow for 19.3% of stream segments Countywide will not change by mid century (hence decrease from 100 to 19.3%), while 80.4% of stream segments Countywide will be 10 to 30% greater than the 1980-2009 average annual maximum streamflow by mid century.	Middle and high-elevation streams that currently receive a large fraction of winter precipitation as snow, rather than rain, will be more exposed to increases in high streamflows with warming. Downstream flooding along Skagit basin is anticipated to increase while upstream flooding remains relatively stable. Fisheries and aquatic farming operations are anticipated to experience increased exposure to flooding and sedimentation. Increased sedimentation impacts quality of fisheries, reducing consumption, economic activity, and cultural practices.	Economic constraints; Site constraints; Competing land use; Traditional ecological knowledge gaps	Decrease in peak streamflow would lead to more intense, intermittent flows during spring time, washing out habitat and reducing fish populations that impacts traditional ecological knowledge of indigenous peoples and fishermen.
33	Fisheries-Sea Level Rise	Increase in likely sea level rise	Moderate sea level rise will increase the frequency and extent of coastal flooding. Sea level rise is expected to increase beach and bluff erosion in some areas. Increasing coastal hazards have the potential to damage cultural and historical sites and buildings, reducing access to these areas. Steady increase in likely sea level rise as mid century and end of century projections are 0.7 feet and 2.1 feet, respectively.	Exposure of cultural and historical resources to sea level rise will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion varies based on shoreline topography and characteristics. Skagit basin is wide and low-lying, extent of SLR would be over a relatively large area, impacting fisheries and aquatic farming operations. Operations depend on water quality, temperature, sedimentation, dissolved oxygen, and other conditions.	Economic constraints; Site constraints; Competing land use; Traditional ecological knowledge gaps	SLR inundation and storm surges in coastal and low-lying areas such as the river basin can erode unstable areas, impacting fish habitat and decreasing population, habitat quality.
34	Fisheries-Wildfire	Increase in wildfire likelihood	More frequent wildfires have the potential to damage cultural and historical sites, buildings, and cultural resources. More frequent wildfires can also reduce access to culturally important sites and resources for Northwest Tribes. Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	Skagit County is anticipated to experience 4% increase in wildfire likelihood supporting dry conditions prone to wildfire events. Cultural and historical sites located in the wildland-urban interface and areas with high wildfire risk historically will be most exposed to increases in the likelihood of wildfire. Fisheries in upstream areas near forest are more exposed than downstream areas i.e., basin, coast.	Competing land use; Increased deforestation	Secondary hazards to fisheries include sedimentation and reduced fisheries quality/presence, decreasing population that impacts cultural resources, and subsistence fishing. In addition, wildfire may lead to reduced recreational fishing; thus, economic activity related to recreational fishing may decrease.
35	Farms-Drought (Economic Development)	Decrease in snowpack	Reductions in snowpack are expected to decrease opportunities for winter outdoor recreation and shorten the winter recreation season, with adverse effects on the economy and character of some communities. Warm season outdoor recreation opportunities may increase, shifting tourism from one recreation sector to another and into different seasons. Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.	Skagit County has a rich agricultural industry and many important ecosystems, historically shaped by the unconfined Skagit River delta. Approximately 90% of the county's farmgate value is produced on around 60,000 acres in the Skagit and Samish Deltas, areas that rely on specialized diking, drainage, and irrigation districts to maintain productivity. This transformation of marsh and floodplains into productive farmland has made Skagit County one of the largest agricultural communities west of the Cascade Mountains, generating approximately \$261 million annually. The land is primarily cultivated by large and mid-scale farms that support critical practices such as crop rotation and land-sharing agreements.	Competing land use; Policy changes; Economic constraints; Site constraints; Lack of investments or funds	Farms may have to explore crop rotation opportunities (i.e., drought resistant crops) and research other adaptation strategies.
36	Farms-Extreme Heat	Increase in summer max temperature	Warmer summer temperatures could alter crop varieties and increase outsourcing of produce that reduces value and revenue for locally sourced products. Increase in summer maximum temperature from 5.1 deg F for mid century to 10.7 deg F. end of century. Historical baseline is 69 deg F.	Skagit County has a rich agricultural industry and many important ecosystems, historically shaped by the unconfined Skagit River delta. Approximately 90% of the county's farmgate value is produced on around 60,000 acres in the Skagit and Samish Deltas, areas that rely on specialized diking, drainage, and irrigation districts to maintain productivity. This transformation of marsh and floodplains into productive farmland has made Skagit County one of the largest agricultural communities west of the Cascade Mountains, generating approximately \$261 million annually. The land is primarily cultivated by large and mid-scale farms that support critical practices such as crop rotation and land-sharing agreements. Although farm labor in Skagit County is significantly smaller than in the rest of the state, the region still cultivates labor-intensive crops, resulting in a compressed labor market. The H-2A guest worker program has become increasingly relied upon as a labor source; however, the overall migrant farmworker population is shrinking, with a notable shift toward more resident migrant populations	Competing land use; Policy changes; Economic constraints; Site constraints; Lack of investments or funds	Farms may have to explore crop rotation opportunities (i.e., drought resistant crops) and research other adaptation strategies.

37	Farms-Extreme precipitation	Increase in heavy precipitation magnitude	<p>Heavier precipitation is expected to intensify flooding in low-lying areas and require higher capacity storm water drainage systems. Impacts also include use of crops that require more water or are resilient to water logged soils.</p> <p>Increase in heavy precipitation magnitude from 8% for mid century to 21% for end of century. Historical baseline was not recorded.</p>	<p>Skagit County has a rich agricultural industry and many important ecosystems, historically shaped by the unconfined Skagit River delta. Approximately 90% of the county's farmgate value is produced on around 60,000 acres in the Skagit and Samish Deltas, areas that rely on specialized diking, drainage, and irrigation districts to maintain productivity. This transformation of marsh and floodplains into productive farmland has made Skagit County one of the largest agricultural communities west of the Cascade Mountains, generating approximately \$261 million annually. The land is primarily cultivated by large and mid-scale farms that support critical practices such as crop rotation and land-sharing agreements. However, it is important to note current dike and drainage infrastructure may be at or near full capacity.</p>	Policy changes; Site constraints; Lack of investments or funds	Farms may have to explore crop rotation opportunities (i.e., drought resistant crops) and research other adaptation strategies.
38	Farms-Flooding	Decrease from baseline of streams with return interval of 25-yr peak streamflow	<p>More frequent high streamflow's are expected to increase the frequency of flooding impacts to businesses and the economy by disrupting travel and shipping routes and damaging property. More frequent flooding has the potential to increase insurance premiums or make some properties more difficult to insure.</p> <p>Historical baseline is 100% of streams with return interval of 25-yr peak streamflow occurring once every 20 to 30 years. Mid century and end of century projections are 28.5% and 14.5%, respectively, of streams with return interval of 25-year peak streamflow occurring once every 10 to 20 years. Meaning peak streamflows will occur more frequently.</p>	<p>Skagit County has a rich agricultural industry and many important ecosystems, historically shaped by the unconfined Skagit River delta. Approximately 90% of the county's farmgate value is produced on around 60,000 acres in the Skagit and Samish Deltas, areas that rely on specialized diking, drainage, and irrigation districts to maintain productivity. This transformation of marsh and floodplains into productive farmland has made Skagit County one of the largest agricultural communities west of the Cascade Mountains, generating approximately \$261 million annually. The land is primarily cultivated by large and mid-scale farms that support critical practices such as crop rotation and land-sharing agreements. However, it is important to note current dike and drainage infrastructure may be at or near full capacity.</p>	Policy changes; Site constraints; Lack of investments or funds	Farms may have to explore crop rotation opportunities (i.e., drought resistant crops) and research other adaptation strategies.
39	Farms-Reduced snowpack	Decrease in snowpack	<p>Reductions in snowpack are expected to decrease groundwater and surface water availability for crop production. Reduced crop production can reduce revenue for locally sourced products.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>	<p>Skagit County has a rich agricultural industry and many important ecosystems, historically shaped by the unconfined Skagit River delta. Approximately 90% of the county's farmgate value is produced on around 60,000 acres in the Skagit and Samish Deltas, areas that rely on specialized diking, drainage, and irrigation districts to maintain productivity. This transformation of marsh and floodplains into productive farmland has made Skagit County one of the largest agricultural communities west of the Cascade Mountains, generating approximately \$261 million annually. The land is primarily cultivated by large and mid-scale farms that support critical practices such as crop rotation and land-sharing agreements. However, it is important to note current dike and drainage infrastructure may be at or near full capacity.</p>	Policy changes; Site constraints; Lack of investments or funds	Farms may have to explore crop rotation opportunities (i.e., drought resistant crops) and research other adaptation strategies.
40	Farms-Sea level rise	Increase in likely sea level rise	<p>Moderate sea level rise will intensify coastal flooding during storms or extreme weather events, which can disrupt business operations and damage property.</p> <p>Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.</p>	<p>Skagit County has a rich agricultural industry and many important ecosystems, historically shaped by the unconfined Skagit River delta. Approximately 90% of the county's farmgate value is produced on around 60,000 acres in the Skagit and Samish Deltas, areas that rely on specialized diking, drainage, and irrigation districts to maintain productivity. This transformation of marsh and floodplains into productive farmland has made Skagit County one of the largest agricultural communities west of the Cascade Mountains, generating approximately \$261 million annually. The land is primarily cultivated by large and mid-scale farms that support critical practices such as crop rotation and land-sharing agreements. However, it is important to note current dike and drainage infrastructure may be at or near full capacity.</p>	Policy changes; Site constraints; Lack of investments or funds	Farms may have to explore crop rotation opportunities (i.e., drought resistant crops) and research other adaptation strategies.
41	Farms-Wildfire	Increase in wildfire danger	<p>More days with high wildfire danger are expected to affect businesses through more frequent closures of recreation areas and restrictions on outdoor activities during the wildfire season. More high fire danger days will interrupt timber operations and outdoor recreation.</p> <p>Steady increase in change in high fire danger days. Historical baseline is 48 days of high fire danger days. Mid century and end of century change in additional high fire danger days is 6 and 11, respectively.</p>	<p>Skagit County has a rich agricultural industry and many important ecosystems, historically shaped by the unconfined Skagit River delta. Approximately 90% of the county's farmgate value is produced on around 60,000 acres in the Skagit and Samish Deltas, areas that rely on specialized diking, drainage, and irrigation districts to maintain productivity. This transformation of marsh and floodplains into productive farmland has made Skagit County one of the largest agricultural communities west of the Cascade Mountains, generating approximately \$261 million annually. The land is primarily cultivated by large and mid-scale farms that support critical practices such as crop rotation and land-sharing agreements.</p> <p>Although farm labor in Skagit County is significantly smaller than in the rest of the state, the region still cultivates labor-intensive crops, resulting in a compressed labor market. The H-2A guest worker program has become increasingly relied upon as a labor source; however, the overall migrant farmworker population is shrinking, with a notable shift toward more resident migrant populations</p>	Competing land uses; Policy changes; Site constraints; Lack of investments or funds	Farms may have to explore crop rotation opportunities (i.e., drought resistant crops) and research other adaptation strategies.
42	Commercial forests-Drought (Economic Dev)	Decrease in snowpack	<p>Snowpack in the mountains in the beginning of spring indicates the amount of natural water storage in snowpack that will be available in the melt season. April 1st snowpack (snow water equivalent) is one source of water for uses including instream flows for ecosystems. Decreased snowpack is expected to stunt tree growth that reduces financial returns.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>	<p>Skagit County 2022 Timber Harvest Volume is 80,920, equivalent to more than 10,719 homes, ~3,000 jobs, ~\$169.2 million in wages, ~\$9.4 million in taxes and fees (WA Forest Protection Association, 2024). Forested areas in Culture Mountain, Mount Josephine, Chuckanut Mountain, Anderson Mountain, west of Bald Mountain/east of Lake Shannon, Rinker Ridge along Sauk River, and south of Lookout Mountain near Marblemount are zoned IF-NRL for Industrial Forest - Natural Resource Lands (SCC 14.16.410) allows commercial forest industries and limited recreational activities to promote sustainable economic growth.</p> <p>Snowpack exposure to warming varies by elevation. The low-elevation Cascade and Olympic foothills will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing. By the end of the century, snowpack is expected to remain relatively unaffected only in the high-elevations of the Northern Cascade Mountains.</p>	Competing land uses; Policy changes; Site constraints	Projected decrease in snowpack will impact tree species ability to store water, more susceptible to disease and increasing mortality, reducing economic returns.
43	Commercial forests-Extreme Heat	Increase in summer max temperature	<p>Warmer summer temperatures could decrease tree growth, increase tree mortality, and disrupt ecosystem functions. These impacts could impact the economic activity regarding commercial forests.</p> <p>Increase in summer maximum temperature from 5.1 deg F for mid century to 10.7 deg F. end of century. Historical baseline is 69 deg F.</p>	<p>Skagit County 2022 Timber Harvest Volume is 80,920, equivalent to more than 10,719 homes, ~3,000 jobs, ~\$169.2 million in wages, ~\$9.4 million in taxes and fees (WA Forest Protection Association, 2024). Exposure to increases in summer temperatures does not vary substantially across Washington State due to the region's temperate climate. Minor increases in summer max temperatures can stunt growth for heat-sensitive trees impacting revenue and funds for counties.</p>	Policy changes; Site constraints; Economic changes	Increases in summer temperature can stunt growth that impacts revenue generated from timber production. Ancillary uses such as biomass would require diversification of energy sources to meet consumption demand.
44	Commercial forests-Extreme precipitation	Increase in heavy precipitation magnitude	<p>Heavier precipitation is expected to intensify flooding in low-lying areas and require higher capacity storm water drainage systems.</p> <p>Increase in heavy precipitation magnitude from 8% for mid century to 21% for end of century. Historical baseline was not recorded.</p>	<p>Skagit County 2022 Timber Harvest Volume is 80,920, equivalent to more than 10,719 homes, ~3,000 jobs, ~\$169.2 million in wages, ~\$9.4 million in taxes and fees (WA Forest Protection Association, 2024). Commercial forest lands located in low-lying areas (Iron Mtn. foothills), within current floodplains or regulatory flood zones (Mt. Josephine foothills along Skagit River), or adjacent to unstable slopes (usually tributaries near river valleys throughout County - reference unstable slope exhibit) are exposed to increases in heavy precipitation magnitude, impacting revenue and publicly available funds.</p>	Competing land use; Site constraints	Commercial forests can be more exposed to landslide due to an increase in heavy precipitation in erosion hazard areas, leading to increased tree mortality rates and decreased economic returns.

45	Commercial forests-Flooding	Decrease from baseline of streams with return interval of 25-yr peak streamflow	<p>More frequent high streamflow's are expected to increase the frequency of flooding impacts to businesses and the economy by disrupting travel and shipping routes and damaging property. More frequent flooding has the potential to increase insurance premiums or make some properties more difficult to insure.</p> <p>Historical baseline is 100% of streams with return interval of 25-yr peak streamflow occurring once every 20 to 30 years. Mid century and end of century projections are 28.5% and 14.5%, respectively, of streams with return interval of 25-year peak streamflow occurring once every 10 to 20 years. Meaning peak streamflows will occur more frequently.</p>	<p>Skagit County 2022 Timber Harvest Volume is 80,920, equivalent to more than 10,719 homes, ~3,000 jobs, ~\$169.2 million in wages, ~\$9.4 million in taxes and fees (WA Forest Protection Association, 2024). Commercial forest lands located in low-lying areas (Iron Mtn. foothills) and in or near current and historical flood zones (Mt. Josephine foothills along Skagit River, Skagit river, Sauk River, Marblemount area, Concrete area, Lake Shannon area) will be most exposed to projected increases in the frequency of high streamflows impacting revenue and publicly available funds.</p> <p>Commercial tree species i.e., Sitka Spruce, Western Hemlock, Western Red Cedar, etc. are more tolerant to flooding. Douglas Firs are not tolerant to flooding.</p>	Competing land use; Site constraints	Commercial forests can be more exposed to landslide due to an increase in heavy precipitation in erosion hazard areas, leading to increased tree mortality rates and decreased economic returns. Commercial forest lands are limited to hillside areas away from river floodplains and are typically zoned for mineral extraction.
46	Commercial forests-Reduced snowpack	Decrease in snowpack	<p>Snowpack in the mountains in the beginning of spring indicates the amount of natural water storage in snowpack that will be available in the melt season. April 1st snowpack (snow water equivalent) is one source of water for uses including irrigation and instream flows for ecosystems. Reductions in snowpack are expected to have little to no direct impact on commercial forest lands.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>	<p>Skagit County 2022 Timber Harvest Volume is 80,920, equivalent to more than 10,719 homes, ~3,000 jobs, ~\$169.2 million in wages, ~\$9.4 million in taxes and fees (WA Forest Protection Association, 2024). Snowpack exposure to warming varies by elevation. In Skagit county, commercial forest operations may depend on reliable snowpack to maintain soil moisture for tree health. The low-elevation Cascade and Olympic foothills will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing. By the end of the century, snowpack is expected to remain relatively unaffected only in the high-elevations of the Northern Cascade Mountains.</p>	Economic constraints; Land use constraints	Reductions in snowpack can leave topsoil drier, making it more susceptible to wildfire and tree mortality. Snowpack decreases are expected to have little to no direct impact on commercial forest lands.
47	Commercial forests-Sea level rise	Increase in likely sea level rise	<p>Moderate sea level rise will intensify coastal flooding during storms or extreme weather events, which can disrupt business operations and damage property.</p> <p>Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.</p>	<p>Skagit County 2022 Timber Harvest Volume is 80,920, equivalent to more than 10,719 homes, ~3,000 jobs, ~\$169.2 million in wages, ~\$9.4 million in taxes and fees (WA Forest Protection Association, 2024). Commercial forest lands in unstable slope areas along the coast are subject to landslide/erosion and flooding inundation from SLR. Commercial forest lands along the southern flank of Chuckanut Mountains are located in WA DOE-designated unstable slope areas and erosion hazard areas. Most coastal areas in the County are zoned for open space. Islands of the County i.e., Cypress Island, Strawberry Island, Burrows Island, Young Island, Allan Island, allow for commercial forest use.</p>	Economic constraints; Land use constraints	Landslide/erosion and flooding inundation from land movement/SLR can directly impact commercial forest trees, decreasing economic returns.
48	Commercial forests-Wildfire	Increase in wildfire danger	<p>More days with high wildfire danger are expected to affect businesses through more frequent closures of recreation areas and restrictions on outdoor activities during the wildfire season. More high fire danger days will interrupt timber operations and outdoor recreation.</p> <p>Steady increase in change in high fire danger days. Historical baseline is 48 days of high fire danger days. Mid century and end of century change in additional high fire danger days is 6 and 11, respectively.</p>	<p>Skagit County 2022 Timber Harvest Volume is 80,920, equivalent to more than 10,719 homes, ~3,000 jobs, ~\$169.2 million in wages, ~\$9.4 million in taxes and fees (WA Forest Protection Association, 2024). Commercial forest lands located in the wildland-urban interface and areas with high wildfire risk historically are more exposed to increases in wildfire likelihood. WUI-Intermix and -Interface zones are located along the Skagit River valley, Samish valley/hillside along State Route 9, Alger, Humphrey Hill, outer regions of incorporated areas, Skagit river and Samish river basin, and island communities. Wildfire risk increases under "perfect storm" conditions i.e., soil moisture, fuel loads, air humidity, etc.</p>	Increasing urban development; Population growth; Water supply constraints	Commercial forest areas with dry soils and dead vegetation are more susceptible to increased wildfire dangers and cascading effects like landslides, reducing habitat quality and economic returns.
49	Industrial businesses-Drought (Economic Dev)	Decrease in snowpack	<p>Industrial businesses are important to job security and wealth building for lower income/disadvantaged communities. Decreases in snowpack would impact raw materials used to supply manufacturing processes in industrial businesses i.e. timber production, water for cooling thermal reactors in generating electricity, etc.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>	<p>Drought conditions can impact raw goods that industrial manufacturing businesses rely on. For example, a biomass facility in County relies in part on remnants from timber production to provide electricity. Petroleum and other energy facilities use river water/streamflow for electricity generation. Otherwise, decrease in snowpack has little to no direct impacts on industrial businesses.</p>	Market fluctuations; Site constraints; Competing land uses	Energy sources will be more diversified if decreases in snowpack impact reduce timber and water supplies - goals to reach renewable energy efforts are accelerated to meet future demands.
50	Industrial businesses-Extreme Heat	Increase in summer max temperature	<p>Warmer summer temperatures could decrease opportunities for warm season recreation activities in some areas and increase them in others. Extreme heat is expected to impact raw goods used to supply manufacturers.</p> <p>Increase in summer maximum temperature from 5.1 deg F for mid century to 10.7 deg F. end of century. Historical baseline is 69 deg F.</p>	<p>The County's industrial manufacturing businesses comprise of uses such as fabrication, fertilizer manufacturing, wood container/products manufacturing, lumber yards, industrial machinery sale, etc. (SCC sections 14.16.180, .190, .195). Increase in summer max temp is expected to have little to no direct impacts on industrial businesses.</p>	Market fluctuations; Site constraints; Competing land uses	Energy sources will be more diversified where increases in summer max temperatures reduce timber and water supplies - goals to reach renewable energy efforts are accelerated to meet future demands.
51	Industrial businesses-Extreme precipitation	Increase in heavy precipitation magnitude	<p>Heavier precipitation is expected to intensify flooding in low-lying areas and require higher capacity storm water drainage systems.</p> <p>Increase in heavy precipitation magnitude from 8% for mid century to 21% for end of century. Historical baseline was not recorded.</p>	<p>Manufacturing businesses located in low-lying areas, within current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to an increase in heavy precipitation. Some assets are located in the upper river basin and west of Padilla Bay and are exposed to secondary hazards from extreme precip such as power outages and landslide/erosion that disrupts business continuity.</p>	Market fluctuations; Site constraints; Competing land uses	Increased heavy precipitation magnitude can down powerlines and reduce energy efficiencies that disrupt business continuity and production, causing prices to fluctuate and increase due to low supply.
52	Industrial businesses-Flooding	Decrease from baseline of streams with return interval of 25-yr peak streamflow	<p>More frequent high streamflow's are expected to increase the frequency of flooding impacts to businesses and the economy by disrupting travel and shipping routes and damaging property. More frequent flooding has the potential to increase insurance premiums or make some properties more difficult to insure.</p> <p>Historical baseline is 100% of streams with return interval of 25-yr peak streamflow occurring once every 20 to 30 years. Mid century and end of century projections are 28.5% and 14.5%, respectively, of streams with return interval of 25-year peak streamflow occurring once every 10 to 20 years. Meaning peak streamflows will occur more frequently.</p>	<p>Industrial manufacturing businesses located in low-lying areas and in or near current and historical flood zones will be most exposed to projected increases in the frequency of high streamflows. Some assets are located in the upper basin of Sauk and Skagit rivers and are exposed to secondary hazards from flooding such as landslide/erosion that disrupts business continuity.</p>	Market fluctuations; Site constraints; Competing land uses	Disruptions to business continuity and production causes prices to fluctuate and/or increase due to low supply. Business decisions may result in outsourcing materials for industrial manufacturing that also impacts consumer prices.
53	Industrial businesses-Reduced snowpack	Decrease in snowpack	<p>Reductions in snowpack are expected to decrease opportunities for winter outdoor recreation and shorten the winter recreation season, with adverse effects on the economy and character of some communities. Warm season outdoor recreation opportunities may increase, shifting tourism from one recreation sector to another and into different seasons.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>	<p>Snowpack exposure to warming varies by elevation. In Skagit County, reduced snowpack would more likely impact raw materials that industrial businesses use. Low-elevation timber, streamflow, and other raw goods are exposed to reduced snowpack. Otherwise, reduced snowpack has little to no direct impact on industrial businesses.</p>	Market fluctuations; Site constraints; Competing land uses	Disruptions to business continuity and production causes prices to fluctuate and/or increase due to low supply. Business decisions may result in outsourcing materials for industrial manufacturing that also impacts consumer prices.

54	Industrial businesses-Sea level rise	Increase in likely sea level rise	Moderate sea level rise will intensify coastal flooding during storms or extreme weather events, which can disrupt business operations and damage property. Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.	Exposure to sea level rise will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion will vary based on shoreline topography and characteristics. Assets are located in relatively level and stable coastal areas and have little exposure to SLR impacts.	Market fluctuations; Site constraints; Competing land uses	Disruptions to business continuity and production causes prices to fluctuate and/or increase due to low supply. Business decisions may result in outsourcing materials for industrial manufacturing that also impacts consumer prices.
55	Industrial businesses-Wildfire	Increase in wildfire danger	More days with high wildfire danger are expected to affect businesses through more frequent closures of recreation areas and restrictions on outdoor activities during the wildfire season. More high fire danger days will interrupt timber operations and outdoor recreation. Steady increase in change in high fire danger days. Historical baseline is 48 days of high fire danger days. Mid century and end of century change in additional high fire danger days is 6 and 11, respectively.	Industrial businesses located in the wildland-urban interface and areas with high wildfire risk historically are more exposed to increases in wildfire likelihood. WUI-Intermix and -Interface zones are located along the Skagit River valley, Samish valley/hillides along State Route 9, Alger, Humphrey Hill, outer regions of incorporated areas, Skagit river and Samish river basin, and island communities. Wildfire risk increases under "perfect storm" conditions i.e., soil moisture, fuel loads, air humidity, etc.	Market fluctuations; Site constraints; Competing land uses; Design constraints	Disruptions to business continuity and production causes prices to fluctuate and/or increase due to low supply. Business decisions may result in outsourcing materials for industrial manufacturing that also impacts consumer prices.
56	Rivers-Drought (Ecosystems)	Decrease in late summer precipitation	Less summer precipitation is expected to affect ecosystem types differently. In freshwater ecosystems, less summer precipitation will contribute to lower streamflow's, reduce water quality, and increase water temperatures. In terrestrial ecosystems, less summer precipitation will contribute to drought stress and reduce the growth and productivity of some plants. Steady decrease in percent change in total precipitation for July 15-September 15. Historical baseline is 3 inches of late summer precipitation. Mid century and end of century negative percentage changes are 10.7% and 11.9 percent, respectively.	Skagit county receives small amounts of summer precipitation, areas that receive more summer precipitation currently will be more exposed to changes. Precipitation changes are mostly moderate throughout the county - northeast county where Cascade mountains and Okanogan mountains exist are more likely to experience abnormal drought conditions. Gauges along Skagit river, Sauk river, Finney creek, Bacon Creek, and Cascade river have reported much below and low streamflow conditions.	Competing land uses; Urban development; Policy changes	Decreases in summer precipitation would occur due to decreases in snowpack - impacting reservoirs that are fed by snowmelt along rivers. Tributaries are most likely to be impacted, decreasing habitat quality and forest health in mountainous areas.
57	Rivers-Extreme Heat	Increase in summer max temperature	Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase. Increase in summer maximum temperature from 5.1 deg F for mid century to 10.7 deg F. end of century. Historical baseline is 69 deg F.	Exposure of ecosystems to extreme heat is expected to be greater in transitional zones between ecosystems and where plant and animal species are already living at temperature margins of suitable habitat. Skagit county critical areas i.e., wetlands, frequently flooded areas, aquifer recharge, geologically hazardous areas, and fish and wildlife habitat conservation areas, contain sensitive habitats or species that are more exposed to increases in summer temperatures.	Competing land uses; Urban development; Policy changes	Warmer water temperatures and more frequent extreme events, such as floods and low flows, are projected to impact aquatic ecosystems in western Washington due to climate change. Sea level rise is likely to reduce streamflow, which will impact flow velocities and water depths accessible to fish affecting the species that depend on these environments. Changes in water quantity, timing, and quality are projected to disrupt food webs and limit access to critical habitats for aquatic species.
58	Rivers-Flooding	Decrease in peak streamflow	Higher streamflow's can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflow's reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality. Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for 10 to 10 is 100. Mid century and end of century projections are 19.3 and 4.4, respectively. Meaning annual maximum streamflow for 19.3% of stream segments Countywide will not change by mid century (hence decrease from 100 to 19.3%), while 80.4% of stream segments Countywide will be 10 to 30% greater than the 1980-2009 average annual maximum streamflow by mid century.	Potential flood damage in the Skagit River Basin is greatest in the floodplain. The floodplain is primarily agricultural, but includes a large proportion of the County's residents, manufacturing plants, and major transportation routes. Middle and high-elevation streams such as tributaries along Skagit river and Sauk river valleys receive a large fraction of winter precipitation as snow, rather than rain, and can be more exposed to increases in high streamflows with warming.	Competing land uses; Policy changes	Increase in peak streamflow would lead to more intense, intermittent flows during spring time that impacts water quality i.e., sedimentation, and fish habitat.
59	Rivers-Wildfire	Increase in wildfire likelihood	More frequent wildfires have the potential to reduce timber, non-timber forest products, carbon storage, and forest habitat for some wildlife. Wildfires also increase establishment of invasive species. More frequent wildfires have the potential to increase runoff and sediment to streams, which can reduce aquatic habitat quality. Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	County riverine exposure to changes in wildfire likelihood will depend on historical wildfire frequency and the presence of critical resources and habitats. Low flow rivers and other critical areas i.e., wetlands, frequently flooded areas, aquifer recharge, geologically hazardous areas, and fish and wildlife habitat conservation areas, that overlap with WUI zones are more susceptible to increases in wildfire likelihood that impact ecosystem health and integrity. Wildfire risk increases under "perfect storm" conditions i.e., soil moisture, fuel loads, air humidity, etc.	Competing land uses; Policy changes	Low flow rivers with perfect storm conditions can decrease habitat ecosystem quality that fisheries, timber, and other resources depend on. Protections under the shoreline master plan can also be reduced/taken away.
60	Fisheries-Drought (Ecosystems)	Decrease in late summer precipitation	Less summer precipitation is expected to affect ecosystem types differently. In freshwater ecosystems, less summer precipitation will contribute to lower streamflow's, reduce water quality, and increase water temperatures. In terrestrial ecosystems, less summer precipitation will contribute to drought stress and reduce the growth and productivity of some plants. Steady decrease in percent change in total precipitation for July 15-September 15. Historical baseline is 3 inches of late summer precipitation. Mid century and end of century negative percentage changes are 10.7% and 11.9 percent, respectively.	The County already receives little amounts of summer precipitation, areas that receive more summer precipitation currently will be more exposed to changes. Coldwater fish such as Coastal cutthroat trout and Yellow perch that rely on high stream flows and lower temperatures for spawning during summer will be exposed to decreased summertime precipitation. This will be evident in recreational fishing areas throughout the County: Beaver Lake, Big Lake, Clear Lake, Lake Erie, Lake Cambell, Lake McMurray, Lake Cavanaugh, Lake Shannon, Pass lake, Whistle lake.	Policy changes; competing land uses; Lack of funds	Fisheries in the County are managed by WA Dept of Fish & Wildlife - changing environmental conditions i.e., drought, wildfire, etc. aims to preserve habitat and reduces opportunities for recreational fishing. Reduced late summer precip increases water temperature at shoreline or other low water level areas and impacts winter streamflows, resulting in habitat changes.
61	Fisheries-Extreme Heat	Increase in summer max temperature	Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase. Increase in summer maximum temperature from 5.1 deg F for mid century to 10.7 deg F. end of century. Historical baseline is 69 deg F.	Warmer water temperatures and more frequent extreme events, such as floods and low flows, are projected to impact aquatic ecosystems in western Washington due to climate change. Sea level rise is likely to reduce streamflow, which will impact flow velocities and water depths accessible to fish affecting the species that depend on these environments. Exposure of ecosystems to extreme heat is expected to be greater in transitional zones between ecosystems and where plant and animal species are already living at temperature margins of suitable habitat. Skagit county experiences temperate climate where transitional zone encompasses foothill and mountain regions. Coldwater fish such as Coastal cutthroat trout and Yellow perch that rely on lower temperatures during summer will be exposed to increased temperatures. Fisheries located in transition zones: Beaver Lake, Big Lake, Clear Lake, Lake Erie, Lake Cambell, Lake McMurray, Lake Cavanaugh, Lake Shannon, Pass lake, Whistle lake, would be exposed.	Policy changes; competing land uses;	Changes in water quantity, timing, and quality due to increased temperatures are projected to disrupt food webs and limit access to critical habitats for aquatic species, reducing fish populations that impact subsistence fishing, cultural use, and fish habitat.

62	Fisheries-Flooding	Decrease in peak streamflow	<p>Higher streamflow's can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflow's reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p> <p>Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for 10 to 10 is 100. Mid century and end of century projections are 19.3 and 4.4, respectively. Meaning annual maximum streamflow for 19.3% of stream segments Countywide will not change by mid century (hence decrease from 100 to 19.3%), while 80.4% of stream segments Countywide will be 10 to 30% greater than the 1980-2009 average annual maximum streamflow by mid century.</p>	<p>Altered timing and quantity of water flows can disrupt food webs and affect species that rely on specific flow conditions for spawning or feeding. Changes in water quantity, timing, and quality are projected to disrupt food webs and limit access to critical habitats for aquatic species. Skagit County's ecosystems, while somewhat resilient, are increasingly vulnerable to the impacts of climate change, particularly sea level rise and habitat alterations.</p> <p>Streamflow plays a critical role in shaping and maintaining habitats for aquatic species, particularly in the Skagit River, where Pacific salmon and trout are both culturally significant and legally protected. The availability of spawning and rearing habitats for these fish is heavily influenced by the river's flow patterns, which determine which areas of the watershed are accessible. Species like Chinook and coho salmon, steelhead, and bull trout—especially those that spawn in summer or rear as juveniles for extended periods in freshwater—are highly sensitive to low flow conditions.</p>	Policy changes; competing land uses;	<p>Low flows, which can result from natural variability and increased water demand, are becoming more pronounced due to climate change, potentially reducing habitat availability and impacting fish populations.</p> <p>SLR poses a significant threat to estuarine habitats, with projections indicating a reduction in intertidal marsh areas and constrained habitat migration due to land use practices. This threatens critical habitats for species like juvenile Chinook salmon, impacting their growth and survival.</p>
63	Fisheries-Wildfire	Increase in wildfire likelihood	<p>More frequent wildfires have the potential to reduce timber, non-timber forest products, carbon storage, and forest habitat for some wildlife. Wildfires also increase establishment of invasive species. More frequent wildfires have the potential to increase runoff and sediment to streams, which can reduce aquatic habitat quality.</p> <p>Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.</p>	<p>Fisheries exposure to changes in wildfire likelihood will depend on historical wildfire frequency and the presence of critical resources and habitats. All waterbodies with fishing is located in WUI zones and are more susceptible to increases in wildfire likelihood that impact ecosystem health and integrity. Wildfire risk increases under "perfect storm" conditions i.e., soil moisture, fuel loads, air humidity, etc.</p>	Competing land uses; Policy changes	<p>Increased wildfire likelihood are more likely to cause secondary impacts such as sedimentation from wildfire debris that reduces fish populations.</p>
64	Nature preserves-Drought (Ecosystems)	Decrease in late summer precipitation	<p>Less summer precipitation is expected to affect ecosystem types differently. In freshwater ecosystems, less summer precipitation will contribute to lower streamflow's, reduce water quality, and increase water temperatures. In terrestrial ecosystems, less summer precipitation will contribute to drought stress and reduce the growth and productivity of some plants.</p> <p>Steady decrease in percent change in total precipitation for July 15-September 15. Historical baseline is 3 inches of late summer precipitation. Mid century and end of century negative percentage changes are 10.7% and 11.9 percent, respectively.</p>	<p>Most of Washington State already receives little summer precipitation. The Skagit River basin upstream of Mount Vernon is expected to receive less summer precipitation and will be more exposed to changes in habitat quality for water, fish, vegetation, soil, and others.</p>	Competing land uses; Policy changes	<p>Reduced quality of nature preserves can impact user experiences such as recreational hikers, birders, and other nature enthusiasts.</p>
65	Nature preserves-Extreme Heat	Increase in summer max temperature	<p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Increase in summer maximum temperature from 5.1 deg F for mid century to 10.7 deg F. end of century. Historical baseline is 69 deg F.</p>	<p>Exposure of ecosystems to extreme heat is expected to be greater in transitional zones between ecosystems and where plant and animal species are already living at temperature margins of suitable habitat. Eastern County area where the Cascade mountain foothills exists are more exposure to increases in summer temperatures, impacting critical habitats or sensitive species and local tributaries/waterways.</p>	Competing land uses; Policy changes	<p>Reduced quality of nature preserves can impact user experiences such as recreational hikers, birders, and other nature enthusiasts.</p>
66	Nature preserves-Flooding	Decrease in peak streamflow	<p>Higher streamflow's can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflow's reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p> <p>Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for 10 to 10 is 100. Mid century and end of century projections are 19.3 and 4.4, respectively. Meaning annual maximum streamflow for 19.3% of stream segments Countywide will not change by mid century (hence decrease from 100 to 19.3%), while 80.4% of stream segments Countywide will be 10 to 30% greater than the 1980-2009 average annual maximum streamflow by mid century.</p>	<p>Middle and high-elevation streams that currently receive a large fraction of winter precipitation as snow, rather than rain, will be more exposed to increases in high streamflows with warming.</p>	Competing land uses; Policy changes	<p>Reduced quality of nature preserves can impact user experiences such as recreational hikers, birders, and other nature enthusiasts.</p>
67	Nature preserves-Wildfire	Increase in wildfire likelihood	<p>More frequent wildfires have the potential to reduce timber, non-timber forest products, carbon storage, and forest habitat for some wildlife. Wildfires also increase establishment of invasive species. More frequent wildfires have the potential to increase runoff and sediment to streams, which can reduce aquatic habitat quality.</p> <p>Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.</p>	<p>Ecosystem exposure to changes in wildfire likelihood will depend on historical wildfire frequency and the presence of critical resources and habitats. Nature preserves are located throughout County in shoreline and inland mountainous areas, predominantly in low-lying frequently flooded areas or historic farmlands. Assets are located in WUI zones and are more susceptible to increases in wildfire likelihood that impact ecosystem health and integrity. Wildfire risk increases under "perfect storm" conditions i.e., soil moisture, fuel loads, air humidity, etc.</p>	Competing land uses; Policy changes	<p>Reduced quality of nature preserves can impact user experiences such as recreational hikers, birders, and other nature enthusiasts.</p>
68	Flood management infrastructure-Drought (Emergency Management)	Increase in precipitation drought	<p>More frequent and severe droughts due to low summer precipitation are expected to increase the need for emergency services to plan, prepare, and respond to water shortages.</p> <p>Steady increase of likelihood of a year with summer precipitation below 75% ranges from 0.26 mid century to 0.39 end of century. The close the value is to 1, the higher likelihood of snowpack drought; value closer to 0 area lower likelihood. The historical baseline is 0.</p>	<p>Most of Washington State already receives little summer precipitation. The Skagit River basin upstream of Mount Vernon is expected to receive less summer precipitation. Dike districts and infrastructure i.e., tidegates, dikes, etc. exist primarily along Skagit River, Samish River, and Joe Leary Slough basins in western Skagit County. Drought conditions will have little impact on asset.</p>	Policy changes; Urban development; Lack of personnel, Capital Improvement financial constraints	<p>Decrease in summertime precipitation can weaken earthen dikes/berms and make them more susceptible to erosion and failure, requiring more frequent updates.</p>
69	Flood management infrastructure-Extreme Heat	Increase in 90 deg F max Humidex days	<p>More frequent extreme daytime heat events are expected to increase the demand for emergency services to plan, prepare, and respond to human health impacts. Extreme heat may also impact emergency services due to transportation and travel disruptions such as warped and buckling pavement on roads.</p> <p>Steady increase of 90 deg F Max Humidex Days from 2 days for the historical baseline. Mid century and end of century projected to be an increase of 21.6 days and 34.0 days, respectively.</p>	<p>Exposure of people to extreme heat will vary locally based on features that exacerbate or ameliorate extreme heat, such as the extent of paved surfaces, tree canopy for shade, or proximity to water bodies. Asset exist primarily along Skagit River, Samish River, and Joe Leary Slough basins in western Skagit County. Extreme heat will have little impact on asset.</p>	Policy changes; Urban development; Lack of personnel, Capital Improvement financial constraints	<p>Increase in high temperature days can weaken earthen dikes/berms and make them more susceptible to erosion and failure, requiring more frequent updates.</p>
70	Flood management infrastructure-Extreme precipitation	Increase in extreme precipitation magnitude	<p>Heavier precipitation has the potential to increase the demand for emergency response services by intensifying flood events and increasing other emergencies associated with heavy precipitation.</p> <p>Increase in heavy precipitation magnitude from 8% for mid century to 30% for end of century. Historical baseline was not recorded.</p>	<p>Emergency services that serve people located in low-lying areas, within current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to the impacts of heavier precipitation events. Dike districts and infrastructure i.e., tidegates, dikes, etc. exist primarily along Skagit River, Samish River, and Joe Leary Slough basins in western Skagit County. Increased precip magnitude can lead to flood events that</p>	Policy changes; Urban development; Lack of personnel, Capital Improvement financial constraints	<p>Increased extreme precipitation magnitude can cause erosion and/or lead to flood events that weaken earthen dikes/berms and undermine other systems, making them more susceptible to erosion and failure, requiring more frequent updates.</p>

71	Flood management infrastructure-Flooding	Decrease in peak streamflow	Higher streamflow's are expected to increase riverine flooding within existing floodplains and could expand flooding to new areas not currently in existing floodplains. More flooding has the potential to increase the demand for emergency services to plan, prepare, and respond to flood events. Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for 10 to 10 is 100. Mid century and end of century projections are 19.3 and 4.4, respectively. Meaning annual maximum streamflow for 19.3% of stream segments Countywide will not change by mid century (hence decrease from 100 to 19.3%), while 80.4% of stream segments Countywide will be 10 to 30% greater than the 1980-2009 average annual maximum streamflow by mid century.	People and infrastructure located in river valleys and in or near current and historical flood zones will be most exposed to increases in high streamflows that can cause flooding and increase the need for emergency services. All dike management districts and infrastructure are exposed to flooding. Issue of flooding is very important to County - October 20-26 declared Skagit County Flood Awareness Week.	Policy changes; Urban development; Lack of personnel, Capital Improvement financial constraints	Increased riverine flooding with limited personnel (flood fighters) can exacerbate damage to existing and new areas.
72	Flood management infrastructure-Sea level rise	Increase in likely sea level rise	Moderate sea level rise is expected to inundate some coastal land and intensify coastal flooding during storms, which could increase the need for emergency services to plan, respond to and recover from coastal flooding. Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.	Exposure will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion will vary based on shoreline topography and characteristics. Emergency management serving low-lying coastal communities and unstable bluffs will be most exposed to the impacts of more coastal flooding. South of Sedro-Wooley is a valley that descends into almost sea level and widens to flat fertile floodplain joined at Samish Valley to north and extends west through Mount Vernon to La Conner and south to Stillaguamish River (2020 HMP).	Policy changes; Urban development; Lack of personnel, Capital Improvement financial constraints	Increased sea levels combined with future increases in precipitation can inundate new areas. Limited personnel (flood fighters) can exacerbate damage to existing and new areas.
73	Flood management infrastructure-Wildfire	Increase in wildfire danger	More days with high fire danger will increase the need for fire bans and associated enforcement and capacity to respond to wildfires. Steady increase in change in high fire danger days. Historical baseline is 48 days of high fire danger days. Mid century and end of century change in additional high fire danger days is 6 and 11, respectively.	In your county or community, people and infrastructure located in the wildland-urban interface and areas with high wildfire risk historically will be most exposed to increases in the likelihood of wildfire.	Policy changes; Urban development; Lack of personnel, Capital Improvement financial constraints	N/a
74	Fire stations-Drought (Emergency Management)	Increase in likelihood of below-normal summer precipitation	More frequent and severe droughts due to low summer precipitation are expected to increase the need for emergency services to plan, prepare, and respond to water shortages. Steady increase of likelihood of a year with summer precipitation below 75% ranges from 0.26 mid century to 0.39 end of century. The closer the value is to 1, the higher the likelihood of snowpack drought; value closer to 0 area lower likelihood.	Skagit County has a total of 19 fire districts, in addition to the local municipalities' fire departments. Within these fire districts and departments, there are a total of 44 fire stations (including City Departments) which protect the county during emergency situations. The purpose of Skagit County Fire Districts is the provision of fire prevention and preparedness services, fire suppression services, emergency medical services, and for the protection of life and property. Most of Washington State already receives little summer precipitation. The Skagit River basin upstream of Mount Vernon is expected to receive less summer precipitation. Fire stations that rely on reservoirs and others water supply infrastructure for fireflow are exposed to increases in precipitation drought.	Policy changes; Urban development; Lack of personnel	Increased likelihood of below-normal summer precipitation can make it more difficult for fire stations to source water for firefighting purposes and respond to emergencies.
75	Fire stations-Extreme Heat	Increase in 90 deg F max Humidex days	More frequent extreme daytime heat events are expected to increase the demand for emergency services to plan, prepare, and respond to human health impacts. Extreme heat may also impact emergency services due to transportation and travel disruptions such as warped and buckling pavement on roads. Steady increase of 90 deg F Max Humidex Days from 2 days for the historical baseline. Mid century and end of century projected to be an increase of 21.6 days and 34.0 days, respectively.	In your county or community, exposure of people to extreme heat will vary locally based on features that exacerbate or ameliorate extreme heat, such as the extent of paved surfaces, tree canopy for shade, or proximity to water bodies.	Policy changes; Urban development; Lack of personnel	Increased high temperature days can increase emergency calls and demand for response services.
76	Fire stations-Extreme precipitation	Increase in extreme precipitation magnitude	Heavier precipitation has the potential to increase the demand for emergency response services by intensifying flood events and increasing other emergencies associated with heavy precipitation. Increase in heavy precipitation magnitude from 8% for mid century to 30% for end of century. Historical baseline was not recorded.	In your county or community, emergency services that serve people located in low-lying areas, within current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to the impacts of heavier precipitation events. In addition, there may be increased response times from emergency management as existing transportation network may be impacted by extreme precipitation.	Policy changes; Urban development; Lack of personnel	Increased extreme precipitation magnitude can increase emergency calls and demand for response services.
77	Fire stations-Flooding	Decrease in peak streamflow	Higher streamflow's are expected to increase riverine flooding within existing floodplains and could expand flooding to new areas not currently in existing floodplains. More flooding has the potential to increase the demand for emergency services to plan, prepare, and respond to flood events. Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for 10 to 10 is 100. Mid century and end of century projections are 19.3 and 4.4, respectively. Meaning annual maximum streamflow for 19.3% of stream segments Countywide will not change by mid century (hence decrease from 100 to 19.3%), while 80.4% of stream segments Countywide will be 10 to 30% greater than the 1980-2009 average annual maximum streamflow by mid century.	In your county or community, people and infrastructure located in river valleys and in or near current and historical flood zones will be most exposed to increases in high streamflows that can cause flooding and increase the need for emergency services.	Policy changes; Urban development; Lack of personnel	More flooding has the potential to increase the demand for emergency services to plan, prepare, and respond to flood events. Increased flooding can also directly damage asset.
78	Fire stations-Sea level rise	Increase in likely sea level rise	Moderate sea level rise is expected to inundate some coastal land and intensify coastal flooding during storms, which could increase the need for emergency services to plan, respond to and recover from coastal flooding. Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.	Exposure will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion will vary based on shoreline topography and characteristics. Emergency management serving low-lying coastal communities and unstable bluffs will be most exposed to the impacts of more coastal flooding.	Policy changes; Urban development; Lack of personnel	Increased sea levels combined with future increases in precipitation can inundate new areas. Limited personnel (flood fighters) can exacerbate damage to existing and new areas.
79	Fire stations-Wildfire	Increase in wildfire danger	More days with high fire danger will increase the need for fire bans and associated enforcement and capacity to respond to wildfires. Steady increase in change in high fire danger days. Historical baseline is 48 days of high fire danger days. Mid century and end of century change in additional high fire danger days is 6 and 11, respectively.	In your county or community, people and infrastructure located in the wildland-urban interface and areas with high wildfire risk historically will be most exposed to increases in the likelihood of wildfire.	Policy changes; Urban development; Lack of personnel	Increased wildfire likelihood can cause smoke inhalation, resulting in increased emergency services/care and use of asset for sheltering.
80	Emergency staging areas-Drought (Emergency Management)	Increase in precipitation drought	More frequent and severe droughts due to low summer precipitation are expected to increase the need for emergency services to plan, prepare, and respond to water shortages. Steady increase of likelihood of a year with summer precipitation below 75% ranges from 0.26 mid century to 0.39 end of century. The closer the value is to 1, the higher the likelihood of snowpack drought; value closer to 0 area lower likelihood.	Most of Washington State already receives little summer precipitation. The Skagit River basin upstream of Mount Vernon is expected to receive less summer precipitation. Emergency staging areas are located throughout the county as MOUs/MOAs with private businesses - and have little exposure to increased drought conditions.	Policy changes; Urban development; Lack of personnel	Emergency staging areas may be affected by drought conditions that cause pavement and road surfaces to crack, undermining buildings, and delaying emergency responses.

81	Emergency staging areas-Extreme Heat	Increase in 90 deg F max Humidex days	<p>More frequent extreme daytime heat events are expected to increase the demand for emergency services to plan, prepare, and respond to human health impacts. Extreme heat may also impact emergency services due to transportation and travel disruptions such as warped and buckling pavement on roads.</p> <p>Steady increase of 90 deg F Max Humidex Days from 2 days for the historical baseline. Mid century and end of century projected to be an increase of 21.6 days and 34.0 days, respectively.</p>	In your county or community, exposure of people to extreme heat will vary locally based on features that exacerbate or ameliorate extreme heat, such as the extent of paved surfaces, tree canopy for shade, or proximity to water bodies.	Policy changes; Urban development; Lack of personnel	Increased high temperature days can increase emergency calls and demand for response services.
82	Emergency staging areas-Extreme precipitation	Increase in extreme precipitation magnitude	<p>Heavier precipitation has the potential to increase the demand for emergency response services by intensifying flood events and increasing other emergencies associated with heavy precipitation.</p> <p>Increase in heavy precipitation magnitude from 8% for mid century to 30% for end of century. Historical baseline was not recorded.</p>	In your county or community, emergency services that serve people located in low-lying areas, within current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to the impacts of heavier precipitation events.	Policy changes; Urban development; Lack of personnel	Increased extreme precipitation magnitude can increase emergency calls and demand for response services.
83	Emergency staging areas-Flooding	Decrease in peak streamflow	<p>Higher streamflows are expected to increase riverine flooding within existing floodplains and could expand flooding to new areas not currently in existing floodplains. More flooding has the potential to increase the demand for emergency services to plan, prepare, and respond to flood events.</p> <p>Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for 10 to 10 is 100. Mid century and end of century projections are 19.3 and 4.4, respectively. Meaning annual maximum streamflow for 19.3% of stream segments Countywide will not change by mid century (hence decrease from 100 to 19.3%), while 80.4% of stream segments Countywide will be 10 to 30% greater than the 1980-2009 average annual maximum streamflow by mid century.</p>	In your county or community, people and infrastructure located in river valleys and in or near current and historical flood zones will be most exposed to increases in high streamflows that can cause flooding and increase the need for emergency services.	Policy changes; Urban development; Lack of personnel	Increase in peak streamflow and flood events can increase emergency calls and demand for response services.
84	Emergency staging areas-Sea level rise	Increase in likely sea level rise	<p>Moderate sea level rise is expected to inundate some coastal land and intensify coastal flooding during storms, which could increase the need for emergency services to plan, respond to and recover from coastal flooding.</p> <p>Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.</p>	Exposure will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion will vary based on shoreline topography and characteristics. Emergency management serving low-lying coastal communities and unstable bluffs will be most exposed to the impacts of more coastal flooding.	Policy changes; Urban development; Lack of personnel	Increased sea levels combined with future increases in precipitation can inundate new areas. Limited personnel (flood fighters) can exacerbate damage to existing and new areas.
85	Emergency staging areas-Wildfire	Increase in wildfire danger	<p>More days with high fire danger will increase the need for fire bans and associated enforcement and capacity to respond to wildfires.</p> <p>Steady increase in change in high fire danger days. Historical baseline is 48 days of high fire danger days. Mid century and end of century change in additional high fire danger days is 6 and 11, respectively.</p>	In your county or community, people and infrastructure located in the wildland-urban interface and areas with high wildfire risk historically will be most exposed to increases in the likelihood of wildfire.	Policy changes; Urban development; Lack of personnel	Increased wildfire likelihood can cause smoke inhalation, resulting in increased emergency services/care.
86	Community centers-Extreme Heat (Health & Well-being)	Increase in summer max temperature	<p>Warmer summers are expected to increase concentrations of air pollutants, such as ozone and some vector-borne illnesses, such as West Nile virus.</p> <p>Increase in summer maximum temperature from 5.1 deg F for mid century to 10.7 deg F, end of century. Historical baseline is 69 deg F.</p>	Exposure of people to warmer summers and associated ozone and vector-borne illnesses will vary locally based on features that exacerbate or ameliorate these conditions. Areas with existing poor air or water quality will be more exposed. Air quality changes are episodic - however, urban areas generally have poorer air quality than forested/open space areas. Skagit county overall has good air quality.	Lack of personnel; Site constraints; Lack of funding; Increased demand in cooling shelters.	Increased high temperature days can increase emergency calls and demand for response services.
87	Community centers-Wildfire	Increase in wildfire likelihood	<p>More frequent wildfires are expected to reduce human health through loss of life, injury and reduced mental health associated with displacement. Poor air quality due to more wildfire smoke can cause adverse respiratory health effects.</p> <p>Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.</p>	Residents living in the wildland-urban interface and areas with high wildfire risk historically will be most exposed to increases in the likelihood of wildfire. Asset is not located in WUI zone, but does not consider "perfect storm" conditions i.e., humidity, soil moisture, etc. Asset is more likely to be exposed to wildfire smoke.	Lack of personnel; Site constraints; Lack of funding	Increased wildfire likelihood can cause smoke inhalation, resulting in increased emergency services/care and use of asset for sheltering.
88	Roadways-Drought (Transportation)	Decrease in snowpack	<p>Reductions in snowpack have the potential to reduce snow-related road maintenance, road closures, and transportation delays. However, as more cold-season precipitation falls as rain rather than snow, transportation routes in mountainous areas may experience more damage from heavier winter rainfall and associated flooding, erosion, and washouts.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>	<p>State Route 20 at Sharps Corner faces risks from climate change due to its critical role in supporting the movement of people and goods across Skagit County. This corridor links communities on Whidbey, Fidalgo, and San Juan Islands, as well as the Swinomish Reservation and Burlington, making it vital for regional connectivity. As part of the Strategic Highway Network, it provides essential access to the Whidbey Naval Air Station, which employs 10,000 people. The route also connects the mainland to island ferries, including the Port Townsend/Coupeville ferry and the Anacortes/San Juan/Sydney B.C. ferry.</p> <p>Samish Island Road, a critical two-lane access route for residents of Samish Island, faces significant climate risks due to surrounding privately owned dikes, which are in various stages of disrepair.</p>	Lack of funds; Lack of personnel	While drought conditions primarily impact water availability, they have a limited direct effect on transportation infrastructure compared to other climate risks like flooding. However, prolonged drought could cause roads to crack due to depressed soil levels from reduced water levels, indirectly affect operations in essential areas, such as ferry routes, and potentially impacting dust and surface conditions on roads.
89	Roadways-Extreme Heat	Increase in hot days	<p>More very hot days have the potential to damage the surfaces of roads and bridges, leading to greater maintenance and repair costs and more frequent traffic and service disruptions.</p> <p>Steady increase in hot days above 100 deg F. Historical baseline is 4 days. Mid century and end of century is projected to be an increase of 22.7 days and 34.2 days, respectively.</p>	<p>State Route 20 at Sharps Corner faces risks from climate change due to its critical role in supporting the movement of people and goods across Skagit County. This corridor links communities on Whidbey, Fidalgo, and San Juan Islands, as well as the Swinomish Reservation and Burlington, making it vital for regional connectivity. As part of the Strategic Highway Network, it provides essential access to the Whidbey Naval Air Station, which employs 10,000 people. The route also connects the mainland to island ferries, including the Port Townsend/Coupeville ferry and the Anacortes/San Juan/Sydney B.C. ferry.</p> <p>Samish Island Road, a critical two-lane access route for residents of Samish Island, faces significant climate risks due to surrounding privately owned dikes, which are in various stages of disrepair.</p>	Lack of personnel; Site constraints; Lack of funding	Rising temperatures can cause stress on transportation infrastructure, such as the warping of pavement and foundations, and deterioration of road surfaces, leading to delays, increased maintenance costs, and potential safety hazards for transportation services.

90	Roadways-Extreme precipitation	Increase in heavy precipitation magnitude	<p>Heavier precipitation events are expected to intensify flooding, landslides, and erosion, which can interrupt transportation routes, damage infrastructure, and increase maintenance and repair costs. For example, extreme precipitation may temporarily isolate Fidalgo Island from the rest of Skagit County.</p> <p>Increase in heavy precipitation magnitude from 8% for mid century to 21% for end of century. Historical baseline was not recorded.</p>	<p>Transportation services – such as public transit access and ferries – in the Skagit River Basin is highly vulnerable to extreme flooding. Some public transportation services in Skagit County, such as bus routes, are particularly at risk during high flood stages of the Samish and Skagit Rivers. Due to their low-lying locations and close proximity to these rivers, these routes are susceptible to rapid inundation and severe disruptions. Extreme weather events can exacerbate these issues through levee breaches, debris accumulation, and intense rainfall, leading to significant interruptions in transportation services.</p> <p>Several roads in Skagit County, such as Highway 20, are particularly vulnerable to flooding and closures during the high flood stages of the Samish and Skagit Rivers; these roads, located in low-lying areas near the rivers, face increased risks of rapid inundation during extreme weather events. Levee breaches, dike failure or overtopping, debris accumulation, and intense rainfall can all exacerbate flooding, leading to significant disruptions in transportation and access for residents.</p>	Lack of personnel; Site constraints; Lack of funding	Increased heavy precipitation magnitude can cause stress on transportation infrastructure, such as the warping of pavement and foundations, and deterioration of road surfaces, leading to delays, increased maintenance costs, and potential safety hazards for transportation services.
91	Roadways-Flooding	Decrease in peak streamflow	<p>Heavier precipitation events are expected to intensify flooding, landslides, and erosion, which can interrupt transportation routes, damage infrastructure, and increase maintenance and repair costs.</p> <p>Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for 10 to 10 is 100. Mid century and end of century projections are 19.3 and 4.4, respectively. Meaning annual maximum streamflow for 19.3% of stream segments Countywide will not change by mid century (hence decrease from 100 to 19.3%), while 80.4% of stream segments Countywide will be 10 to 30% greater than the 1980-2009 average annual maximum streamflow by mid century.</p>	<p>Transportation services – such as public transit access and ferries – in the Skagit River Basin is highly vulnerable to extreme flooding. Some public transportation services in Skagit County, such as bus routes, are particularly at risk during high flood stages of the Samish and Skagit Rivers. Due to their low-lying locations and close proximity to these rivers, these routes are susceptible to rapid inundation and severe disruptions. Extreme weather events can exacerbate these issues through levee breaches, debris accumulation, and intense rainfall, leading to significant interruptions in transportation services.</p>	Lack of personnel; Site constraints; Lack of funding	Flooding can reduce access to evacuation centers and other critical facilities, and lead to deterioration of road surfaces, delays, increased maintenance costs, and potential safety hazards for transportation services. Non-climate stressors with climate stressors may also increase emergency calls as individuals become stranded or isolated with limited evacuation routing.
92	Roadways-Reduced snowpack	Decrease in snowpack	<p>Reductions in snowpack have the potential to reduce snow-related road maintenance, road closures, and transportation delays. However, as more cold-season precipitation falls as rain rather than snow, transportation routes in mountainous areas may experience more damage from heavier winter rainfall and associated flooding, erosion, and washouts.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>	<p>State Route 20 at Sharps Corner faces risks from climate change due to its critical role in supporting the movement of people and goods across Skagit County. This corridor links communities on Whidbey, Fidalgo, and San Juan Islands, as well as the Swinomish Reservation and Burlington, making it vital for regional connectivity. As part of the Strategic Highway Network, it provides essential access to the Whidbey Naval Air Station, which employs 10,000 people. The route also connects the mainland to island ferries, including the Port Townsend/Coupeville ferry and the Anacortes/San Juan/Sydney B.C. ferry.</p> <p>Samish Island Road, a critical two-lane access route for residents of Samish Island, faces significant climate risks due to surrounding privately owned dikes, which are in various stages of disrepair.</p>	Lack of personnel; Site constraints; Lack of funding	Roads in mountainous areas may experience increased closures due to landslides, washouts, etc. as winter conditions become more wet. Roads in low-lying coastal and basin areas may also experience increased closures from flooding. These impacts may make it difficult for timely emergency responses and for safe routes evacuation.
93	Roadways-Sea level rise	Increase in likely sea level rise	<p>With moderate sea level rise, Washington's seaports and the connected distribution networks are expected to flood more often. Coastal transportation infrastructure may be subject to more frequent closures due to coastal flooding and erosion, and require more frequent maintenance and repairs.</p> <p>Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.</p>	<p>State Route 20 at Sharps Corner faces risks from climate change due to its critical role in supporting the movement of people and goods across Skagit County. This corridor links communities on Whidbey, Fidalgo, and San Juan Islands, as well as the Swinomish Reservation and Burlington, making it vital for regional connectivity. As part of the Strategic Highway Network, it provides essential access to the Whidbey Naval Air Station, which employs 10,000 people. The route also connects the mainland to island ferries, including the Port Townsend/Coupeville ferry and the Anacortes/San Juan/Sydney B.C. ferry.</p> <p>Samish Island Road, a critical two-lane access route for residents of Samish Island, faces significant climate risks due to surrounding privately owned dikes, which are in various stages of disrepair.</p>	Lack of funds; Lack of personnel; Site constraints	Coastal and low-lying infrastructure, such as ferry terminals, coastal roads, and rail systems, are particularly vulnerable to flooding and erosion caused by rising sea levels. Samish Island Road and other low-lying areas are prone to inundation from storms, levee breaches, and high river flows. Additionally, vulnerable roads like March's Point Road frequently fail due to tidal influence and poor road base. Roads such as the State Route 20 in areas closer to the sea may face future inundation as well. Increased saltwater intrusion can damage infrastructure, disrupt service schedules, and raise maintenance needs, posing some challenges to operational continuity.
94	Roadways-Wildfire	Increase in wildfire likelihood	<p>More frequent wildfires, and related smoke, can disrupt travel, increase road closures and delay construction projects. Wildfire smoke has the potential to affect labor in the transportation sector because of health effects on outdoor laborers. More roadside brush fires can create safety hazards and disrupt transportation.</p> <p>Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.</p>	<p>State Route 20 at Sharps Corner faces risks from climate change due to its critical role in supporting the movement of people and goods across Skagit County. This corridor links communities on Whidbey, Fidalgo, and San Juan Islands, as well as the Swinomish Reservation and Burlington, making it vital for regional connectivity. As part of the Strategic Highway Network, it provides essential access to the Whidbey Naval Air Station, which employs 10,000 people. The route also connects the mainland to island ferries, including the Port Townsend/Coupeville ferry and the Anacortes/San Juan/Sydney B.C. ferry.</p> <p>Samish Island Road, a critical two-lane access route for residents of Samish Island, faces significant climate risks due to surrounding privately owned dikes, which are in various stages of disrepair.</p> <p>Major bus routes in the Wildland-Urban Interface (WUI) areas, such as those near Little Mountain Park, are at high risk from wildfires and wildfire smoke.</p>	Lack of personnel; Site constraints; Lack of funding	Wildfires can directly damage road infrastructure, leading to closures, while smoke can severely impact air quality and visibility, creating dangerous driving conditions and potentially compromising safety and maintenance operations on these critical routes (CWPP, 2019; EPA, 2023; DNR, 2024).
95	Bridges-Drought (Transportation)	Decrease in snowpack	<p>Reductions in snowpack have the potential to reduce snow-related road maintenance, road closures, and transportation delays. However, as more cold-season precipitation falls as rain rather than snow, transportation routes in mountainous areas may experience more damage from heavier winter rainfall and associated flooding, erosion, and washouts.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>	<p>Snowpack exposure to warming varies by elevation. Exposure in the County has transportation routes and infrastructure that will depend on elevation with assets in mountainous areas more exposed. The low-elevation Cascade and Olympic foothills will be exposed first because these areas rarely receive substantial snowfall at temperatures near freezing. By the end of the century, snowpack is expected to remain relatively unaffected only in the high-elevations of the Northern Cascade Mountains.</p>	Lack of funds; Lack of personnel	Decreases in snowpack results in more dry soil conditions, potentially undermining bridges if soils crack, contract, and move under drought conditions.
96	Bridges-Extreme Heat	Increase in hot days	<p>More very hot days have the potential to damage the surfaces of roads and bridges, leading to greater maintenance and repair costs and more frequent traffic and service disruptions.</p> <p>Steady increase in hot days above 100 deg F. Historical baseline is 4 days. Mid century and end of century is projected to be an increase of 22.7 days and 34.2 days, respectively.</p>	<p>In your county or community, the exposure of road surfaces to extreme heat will vary locally based on features that exacerbate or ameliorate extreme heat such as the extent of urban heat islands and tree canopy cover for shade.</p>	Lack of personnel; Site constraints; Lack of funding; Design/technology constraints	Rising temperatures can cause stress on transportation infrastructure, such as the warping of pavement and foundations, and deterioration of road surfaces, leading to delays, increased maintenance costs, and potential safety hazards for transportation services.
97	Bridges-Extreme precipitation	Increase in heavy precipitation magnitude	<p>Change in the intensity of heavy precipitation events are more likely to cause damages to infrastructure and agricultural operations than changes in seasonal and annual precipitation.</p> <p>Increase in heavy precipitation magnitude from 8% for mid century to 21% for end of century. Historical baseline was not recorded.</p>	<p>In your county or community, transportation routes and infrastructure located in low-lying areas, within or near current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to an increase in heavy precipitation. Bridges and culverts in low-lying areas experience repeated flooding during extreme rain events, leading to accelerated wear and tear</p>	Lack of personnel; Site constraints; Lack of funding; Design/technology constraints	Heavier precipitation events are expected to intensify flooding, landslides, and erosion, which can interrupt transportation routes, damage infrastructure, and increase maintenance and repair costs.

98	Bridges-Flooding	Decrease in peak streamflow	<p>Change in the intensity of heavy precipitation events are more likely to cause damages to infrastructure and agricultural operations than changes in seasonal and annual precipitation.</p> <p>Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for 10 to 10 is 100. Mid century and end of century projections are 19.3 and 4.4, respectively. Meaning annual maximum streamflow for 19.3% of stream segments Countywide will not change by mid century (hence decrease from 100 to 19.3%), while 80.4% of stream segments Countywide will be 10 to 30% greater than the 1980-2009 average annual maximum streamflow by mid century.</p>	<p>In your county or community, transportation routes and infrastructure located in low-lying areas, within or near current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to an increase in heavy precipitation. Bridges and culverts in low-lying areas experience repeated flooding during extreme rain events, leading to accelerated wear and tear</p>	<p>Lack of personnel; Site constraints; Lack of funding; Design/technology constraints</p>	<p>Heavier precipitation events are expected to intensify flooding, landslides, and erosion, which can interrupt transportation routes, damage infrastructure, and increase maintenance and repair costs.</p>
99	Bridges-Reduced snowpack	Decrease in snowpack	<p>Reductions in snowpack have the potential to reduce snow-related road maintenance, road closures, and transportation delays. However, as more cold-season precipitation falls as rain rather than snow, transportation routes in mountainous areas may experience more damage from heavier winter rainfall and associated flooding, erosion, and washouts.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>	<p>Snowpack exposure to warming varies by elevation. In your county or community, the exposure of transportation routes and infrastructure will depend on elevation with assets in mountainous areas more exposed. The low-elevation Cascade and Olympic foothills will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing. By the end of the century, snowpack is expected to remain relatively unaffected only in the high-elevations of the Northern Cascade Mountains.</p>	<p>Lack of personnel; Site constraints; Lack of funding; Design/technology constraints</p>	<p>Bridges in mountainous areas may experience increased closures due to landslides, washouts, etc. as winter conditions become more wet. Roads in low-lying coastal and basin areas may also experienced increased closures from flooding. These impacts may make it difficult for timely emergency responses and for safe routes evacuation as bridges provide critical access at junctions.</p>
100	Bridges-Sea level rise	Increase in likely sea level rise	<p>Relative sea level rise indicates how much the average water level is expected to rise due to the combined effects of climate change and movement of the land. With moderate sea level rise, Washington's seaports and the connected distribution networks are expected to flood more often.</p> <p>Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.</p>	<p>SR 20, HWY 5, and collector roads have bridges that cross tributaries and large rivers, and also provide critical support in moving people/goods and responding to emergencies. Bridges in basin and unstable bluff areas are exposed to erosion/landslides, and inundation from SLR.</p>	<p>Lack of personnel; Site constraints; Lack of funding; Design/technology constraints</p>	<p>With moderate sea level rise, Washington's seaports and the connected distribution networks are expected to flood more often. Coastal transportation infrastructure may be subject to more frequent closures due to coastal flooding and erosion, and require more frequent maintenance and repairs.</p>
101	Bridges-Wildfire	Increase in wildfire likelihood	<p>More frequent wildfires, and related smoke, can disrupt travel, increase road closures and delay construction projects. Wildfire smoke has the potential to affect labor in the transportation sector because of health effects on outdoor laborers. More roadside brush fires can create safety hazards and disrupt transportation.</p> <p>Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.</p>	<p>In your county or community, transportation routes and infrastructure wildland-urban interface and areas with high wildfire risk historically will be most exposed to increases in the likelihood of wildfire.</p>	<p>Lack of personnel; Site constraints; Lack of funding; Design/technology constraints</p>	<p>Wildfires can directly damage bridge infrastructure, leading to closures, while smoke can severely impact air quality and visibility, creating dangerous driving conditions and potentially compromising safety and maintenance operations on these critical routes (CWPP, 2019; EPA, 2023; DNR, 2024).</p>
102	Railroad-Drought (Transportation)	Decrease in snowpack	<p>Reductions in snowpack have the potential to reduce snow-related road maintenance, road closures, and transportation delays. However, as more cold-season precipitation falls as rain rather than snow, transportation routes in mountainous areas may experience more damage from heavier winter rainfall and associated flooding, erosion, and washouts.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>	<p>Snowpack exposure to warming varies by elevation. BNSF RR is mainly located in west County from Anacortes/Swinomish to upper Samish river valley. Exposure of transportation routes and infrastructure will increase in mountainous areas. The BNSF RR in upper Samish river valley will be exposed first because this area can receive substantial snowfall at temperatures near freezing. By the end of the century, snowpack is expected to remain relatively unaffected only in the high-elevations of the Northern Cascade Mountains.</p>	<p>Infrastructure strain; Lack of personnel</p>	<p>Decreases in snowpack results in more dry soil conditions, potentially undermining railroad tracks if soils crack, contract, and move under drought conditions.</p>
103	Railroad-Extreme Heat	Increase in hot days	<p>More very hot days have the potential to damage the surfaces of roads and bridges, leading to greater maintenance and repair costs and more frequent traffic and service disruptions.</p> <p>Steady increase in hot days above 100 deg F. Historical baseline is 4 days. Mid century and end of century is projected to be an increase of 22.7 days and 34.2 days, respectively.</p>	<p>In your county or community, the exposure of road surfaces to extreme heat will vary locally based on features that exacerbate or ameliorate extreme heat such as the extent of urban heat islands and tree canopy cover for shade.</p>	<p>Lack of personnel; Site constraints; Lack of funding</p>	<p>Rising temperatures can cause stress on transportation infrastructure, such as the warping of railroad tracks and foundations, and deterioration of surfaces, leading to delays, increased maintenance costs, business disruptions, and potential safety hazards for transportation services.</p>
104	Railroad-Extreme precipitation	Increase in heavy precipitation magnitude	<p>Heavier precipitation events are expected to intensify flooding, landslides, and erosion, which can interrupt transportation routes, damage infrastructure, and increase maintenance and repair costs.</p> <p>Increase in heavy precipitation magnitude from 8% for mid century to 21% for end of century. Historical baseline was not recorded.</p>	<p>In your county or community, transportation routes and infrastructure located in low-lying areas, within or near current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to an increase in heavy precipitation.</p>	<p>Lack of personnel; Site constraints; Design/technology constraints</p>	<p>Increased heavy precipitation magnitude can cause stress on transportation infrastructure, such as the warping of railroad tracks and foundations, and deterioration of surfaces, leading to delays, increased maintenance costs, business disruptions, and potential safety hazards for transportation services.</p>
105	Railroad-Flooding	Decrease in peak streamflow	<p>Heavier precipitation events are expected to intensify flooding, landslides, and erosion, which can interrupt transportation routes, damage infrastructure, and increase maintenance and repair costs.</p> <p>Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for 10 to 10 is 100. Mid century and end of century projections are 19.3 and 4.4, respectively. Meaning annual maximum streamflow for 19.3% of stream segments Countywide will not change by mid century (hence decrease from 100 to 19.3%), while 80.4% of stream segments Countywide will be 10 to 30% greater than the 1980-2009 average annual maximum streamflow by mid century.</p>	<p>In your county or community, transportation routes and infrastructure located in low-lying areas, within or near current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to an increase in heavy precipitation.</p>	<p>Lack of personnel; Site constraints; Design/technology constraints</p>	<p>Increased peak streamflow results in more intense seasonal flooding that can cause stress on transportation infrastructure, such as the warping of railroad tracks and foundations, and deterioration of surfaces, leading to delays, increased maintenance costs, business disruptions, and potential safety hazards for transportation services.</p>
106	Railroad-Reduced snowpack	Decrease in snowpack	<p>Reductions in snowpack have the potential to reduce snow-related road maintenance, road closures, and transportation delays. However, as more cold-season precipitation falls as rain rather than snow, transportation routes in mountainous areas may experience more damage from heavier winter rainfall and associated flooding, erosion, and washouts.</p> <p>Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.</p>	<p>Snowpack exposure to warming varies by elevation. In your county or community, the exposure of transportation routes and infrastructure will depend on elevation with assets in mountainous areas more exposed. The low-elevation Cascade and Olympic foothills will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing. By the end of the century, snowpack is expected to remain relatively unaffected only in the high-elevations of the Northern Cascade Mountains.</p>	<p>Lack of personnel; Site constraints; Design/technology constraints</p>	<p>Decrease in snowpack results in more intense seasonal precipitation and localized flooding that can cause stress on transportation infrastructure, such as the warping of railroad tracks and foundations, and deterioration of surfaces, leading to delays, increased maintenance costs, business disruptions, and potential safety hazards for transportation services.</p>

107	Railroad-Sea level rise	Increase in likely sea level rise	With moderate sea level rise, Washington's seaports and the connected distribution networks are expected to flood more often. Coastal transportation infrastructure may be subject to more frequent closures due to coastal flooding and erosion, and require more frequent maintenance and repairs. Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.	In your county or community, exposure to sea level rise will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion will vary based on shoreline topography and characteristics. Transportation routes and infrastructure located in low-lying coastal zones or near coastal bluffs will be more exposed.	Lack of personnel; Site constraints; Design/technology constraints	SLR inundation in low-lying coastal areas results in widespread flooding that can cause stress on transportation infrastructure, such as the warping of railroad tracks and foundations, and deterioration of surfaces, leading to delays, increased maintenance costs, business disruptions, and potential safety hazards for transportation services.
108	Railroad-Wildfire	Increase in wildfire likelihood	More frequent wildfires, and related smoke, can disrupt travel, increase road closures and delay construction projects. Wildfire smoke has the potential to affect labor in the transportation sector because of health effects on outdoor laborers. More roadside brush fires can create safety hazards and disrupt transportation. Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	In your county or community, transportation routes and infrastructure wildland-urban interface and areas with high wildfire risk historically will be most exposed to increases in the likelihood of wildfire.	Lack of personnel; Site constraints; Design/technology constraints	Wildfires can directly damage railroad infrastructure, leading to closures, while smoke can severely impact air quality and visibility, creating dangerous driving conditions and potentially compromising safety and maintenance operations on these critical routes (CWPP, 2019; EPA, 2023; DNR, 2024).
109	Public transit-Drought (Transportation)	Decrease in snowpack	Reductions in snowpack have the potential to reduce snow-related road maintenance, road closures, and transportation delays. However, as more cold-season precipitation falls as rain rather than snow, transportation routes in mountainous areas may experience more damage from heavier winter rainfall and associated flooding, erosion, and washouts. Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.	Snowpack exposure to warming varies by elevation. Exposure of transit routes and infrastructure will depend on elevation with assets in mountainous areas more exposed. Transit routes that serve unincorporated County extends from Swinomish to Concrete area. The low-elevation Cascade and Olympic foothills will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing.	Infrastructure strain; Lack of personnel; Lack of funds	Decreases in snowpack results in more dry soil conditions, potentially undermining roads if soils crack, contract, and move under drought conditions.
110	Public transit-Extreme Heat	Increase in hot days	More very hot days have the potential to damage the surfaces of roads and bridges, leading to greater maintenance and repair costs and more frequent traffic and service disruptions. Steady increase in hot days above 100 deg F. Historical baseline is 4 days. Mid century and end of century is projected to be an increase of 22.7 days and 34.2 days, respectively.	In your county or community, the exposure of road surfaces to extreme heat will vary locally based on features that exacerbate or ameliorate extreme heat such as the extent of urban heat islands and tree canopy cover for shade.	Lack of personnel; Site constraints; Lack of funding	Rising temperatures can cause stress on transportation infrastructure, such as the warping of pavement and foundations, and deterioration of road surfaces, leading to delays, increased maintenance costs, and potential safety hazards for transportation services.
111	Public transit-Extreme precipitation	Increase in heavy precipitation magnitude	Heavier precipitation events are expected to intensify flooding, landslides, and erosion, which can interrupt transportation routes, damage infrastructure, and increase maintenance and repair costs. Increase in heavy precipitation magnitude from 8% for mid century to 21% for end of century. Historical baseline was not recorded.	Transportation services – such as public transit access and ferries – in the Skagit River Basin is highly vulnerable to extreme flooding.	Lack of personnel; Site constraints; Lack of funding	Due to their low-lying locations and close proximity to these rivers, these routes are susceptible to rapid inundation and severe disruptions. Extreme weather events can exacerbate these issues through levee breaches, debris accumulation, and intense rainfall, leading to significant interruptions in transportation services.
112	Public transit-Flooding	Decrease in peak streamflow	Heavier precipitation events are expected to intensify flooding, landslides, and erosion, which can interrupt transportation routes, damage infrastructure, and increase maintenance and repair costs. Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for 10 to 10 is 100. Mid century and end of century projections are 19.3 and 4.4, respectively. Meaning annual maximum streamflow for 19.3% of stream segments Countywide will not change by mid century (hence decrease from 100 to 19.3%), while 80.4% of stream segments Countywide will be 10 to 30% greater than the 1980-2009 average annual maximum streamflow by mid century.	Transportation services – such as public transit access and ferries – in the Skagit River Basin is highly vulnerable to extreme flooding.	Lack of personnel; Site constraints; Lack of funding	Due to their low-lying locations and close proximity to these rivers, these routes are susceptible to rapid inundation and severe disruptions. Extreme weather events can exacerbate these issues through levee breaches, debris accumulation, and intense rainfall, leading to significant interruptions in transportation services.
113	Public transit-Reduced snowpack	Decrease in snowpack	Reductions in snowpack have the potential to reduce snow-related road maintenance, road closures, and transportation delays. However, as more cold-season precipitation falls as rain rather than snow, transportation routes in mountainous areas may experience more damage from heavier winter rainfall and associated flooding, erosion, and washouts. Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.	Snowpack exposure to warming varies by elevation. In your county or community, the exposure of transportation routes and infrastructure will depend on elevation with assets in mountainous areas more exposed. The low-elevation Cascade and Olympic foothills will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing. By the end of the century, snowpack is expected to remain relatively unaffected only in the high-elevations of the Northern Cascade Mountains.	Lack of personnel; Site constraints; Lack of funding	Due to their low-lying locations and close proximity to these rivers, these routes are susceptible to rapid inundation and severe disruptions. Extreme weather events can exacerbate these issues through levee breaches, debris accumulation, and intense rainfall, leading to significant interruptions in transportation services.
114	Public transit-Sea level rise	Increase in likely sea level rise	With moderate sea level rise, Washington's seaports and the connected distribution networks are expected to flood more often. Coastal transportation infrastructure may be subject to more frequent closures due to coastal flooding and erosion, and require more frequent maintenance and repairs. Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.	In your county or community, exposure to sea level rise will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion will vary based on shoreline topography and characteristics. Transportation routes and infrastructure located in low-lying coastal zones or near coastal bluffs will be more exposed.	Lack of funds; Lack of personnel; Site constraints	Due to their low-lying locations and close proximity to these rivers, these routes are susceptible to rapid inundation and severe disruptions. Extreme weather events can exacerbate these issues through levee breaches, debris accumulation, and intense rainfall, leading to significant interruptions in transportation services.
115	Public transit-Wildfire	Increase in wildfire likelihood	More frequent wildfires, and related smoke, can disrupt travel, increase road closures and delay construction projects. Wildfire smoke has the potential to affect labor in the transportation sector because of health effects on outdoor laborers. More roadside brush fires can create safety hazards and disrupt transportation. Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	In your county or community, transportation routes and infrastructure wildland-urban interface and areas with high wildfire risk historically will be most exposed to increases in the likelihood of wildfire. Routes 40X (County connector island/Skagit), 70X (upriver connector), and 80X (County connector whatcom/Skagit) that are located near historic wildfire areas such as Jordan Creek near Marblemount, Burpee Hills near Concrete, and Sares Head at Fidalgo island are exposed to increases in wildfire likelihood.	Lack of funds; Lack of personnel; Site constraints	Wildfires can directly damage road infrastructure that public transit services relies on, leading to closures, while smoke can severely impact air quality and visibility, creating dangerous driving conditions and potentially compromising safety and maintenance operations on these critical routes (CWPP, 2019; EPA, 2023; DNR, 2024).
116	Solid waste facility-Extreme precipitation (Waste Management)	Increase in extreme precipitation magnitude	Changes in the intensity of extreme precipitation events are more likely to cause damages to infrastructure and agricultural operations than changes in seasonal and annual precipitation. Historical baseline not recorded. Mid century and end of century projected to be 8% and 30%, respectively.	In your county or community, waste management services that serve people located in low-lying areas, within current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to the impacts of heavier precipitation events. Asset is also located in low-lying basin area just south of Skagit Regional Airport and is exposed to increased extreme precip.	Lack of funds; Lack of personnel; Site constraints; Design and technology constraints	Heavier precipitation has the potential to increase storm damage to infrastructure and generate more waste and debris. More waste will strain municipal cleanup and refuse capacity.

117	Solid waste facility-Flooding	Increase in return interval frequency of 25-yr peak streamflow	More frequent high streamflow events are expected to increase flooding, which can generate more debris and waste. More waste will strain municipal cleanup and refuse capacity. Flooding of waste management facilities can release contaminants and hazardous materials. Historical baseline for all streams in Skagit County is a 20 to 30 year return interval (occurrence of 25-yr flood capacity). Mid century and end of century projections are expected to increase: Mid century and end of century projected to have 28.5% streams and 14.5% streams with 10 to 20 year return interval, respectively. 71.5% streams and 85.5% streams with 0 to 10 year return interval.	In your county or community, waste management services that serve people located in low-lying areas, within current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to the impacts of heavier precipitation events. Asset is also located in low-lying basin area just south of Skagit Regional Airport and is exposed to increased extreme precip.	Lack of funds; Lack of personnel; Site constraints; Design and technology constraints	Due to their low-lying locations and close proximity to river delta, these routes are susceptible to rapid inundation and severe disruptions. Flooding events can exacerbate these issues through levee breaches, debris accumulation, and intense rainfall, leading to significant interruptions in solid waste services.
118	Solid waste facility-Wildfire	Increase in wildfire likelihood	More frequent wildfires have the potential to generate greater amounts of debris and waste. More waste will strain municipal cleanup and refuse capacity. Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	In your county or community, waste management facilities that serve areas in the wildland-urban interface will be more exposed to increases in waste with more wildfire. Asset is located in WUI-interface zone and may be exposed to increased wildfire likelihood - however, "perfect storm" conditions i.e., dry soil, dry vegetation, humidity, ignition source, etc. must be present for wildfire events to occur.	Lack of funds; Lack of personnel; Site constraints; Design and technology constraints	Wildfires can directly damage solid waste infrastructure that public relies on, leading to closures, while smoke can severely impact air quality and visibility and potentially compromising safety and maintenance operations on these critical routes (CWPP, 2019; EPA, 2023; DNR, 2024).
119	Private septic tanks-Extreme precipitation (Waste Management)	Increase in extreme precipitation magnitude	Heavier precipitation has the potential to increase storm damage to infrastructure and generate more waste and debris. More waste will strain municipal cleanup and refuse capacity. Historical baseline not recorded. Mid century and end of century projected to be 8% and 30%, respectively.	In your county or community, waste management services that serve people located in low-lying areas, within current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to the impacts of heavier precipitation events.	Site constraints; Design and technology constraints; Competing land uses	Heavier precipitation has the potential to flood and damage private septic's and generate more waste and debris. More waste will strain municipal cleanup and refuse capacity along with groundwater contamination.
120	Private septic tanks-Flooding	Increase in return interval frequency of 25-yr peak streamflow	More frequent high streamflow's are expected to increase flooding, which can generate more debris and waste. More waste will strain municipal cleanup and refuse capacity. Flooding of waste management facilities can release contaminants and hazardous materials. Historical baseline for all streams in Skagit County is a 20 to 30 year return interval (occurrence of 25-yr flood capacity). Mid century and end of century projections are expected to increase: Mid century and end of century projected to have 28.5% streams and 14.5% streams with 10 to 20 year return interval, respectively. 71.5% streams and 85.5% streams with 0 to 10 year return interval.	In your county or community, waste management services that serve development located in low-lying areas and in current and historical flood zones will be most exposed to projected increases in the frequency of high streamflows that can cause flooding and generate more waste. Private septic's in frequently flooded delta area, river flood zones, and high groundwater tables are more exposed to damage from flooding.	Site constraints; Design and technology constraints; Competing land uses	Rapid inundation and severe disruptions of human waste collection can occur. Flooding events can exacerbate these issues through levee breaches, debris accumulation, and intense rainfall, leading to significant interruptions in proper waste disposal.
121	Private septic tanks-Wildfire	Increase in wildfire likelihood	More frequent wildfires have the potential to generate greater amounts of debris and waste. More waste will strain municipal cleanup and refuse capacity. Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	In your county or community, waste management facilities that serve areas in the wildland-urban interface will be more exposed to increases in waste with more wildfire. Assets may be located in WUI-interface zone and may be exposed to increased wildfire likelihood - however, "perfect storm" conditions i.e., dry soil, dry vegetation, humidity, ignition source, etc. must be present for wildfire events to occur.	Site constraints; Design and technology constraints; Competing land uses	Wildfires can directly damage infrastructure that individuals, especially in remote areas, relies on. This can lead to closures or reduced usage and proper handling of asset.
122	Water treatment facility-Drought (Water Resources)	Increase in total annual precipitation	Increases in annual precipitation have the potential to increase groundwater recharge. Changes in the timing and intensity of precipitation and increases in water demand and evaporation are expected to offset increases in groundwater recharge due to more annual precipitation. Steady increase in percent change in total annual precipitation. Historical baseline recorded to be 80 inches. Mid century and end of century projected to be 5.3% and 10%, respectively.	Skagit PUD facilities include over 600 miles of pipe, and 31-million gallons of storage volume. The exposure of water resources to changes in annual precipitation in the County depends on the presence of critical groundwater aquifer recharge areas and the location of wells. Aquifer recharge areas (ARA) include Diobsud Creek, Grandy Creek, Jones Creek, Opal Creek, Friday Creek, Samish River, Nookachamps Creek, Hill Ditch, and Lake Erie. Wells are located throughout County along water bodies. Asset receives water source from Judy Reservoir/Cultus Mountain watershed and is not in ARA. Asset has two groundwater wells.	Increased development; Lack of technology; Lack of capital expenditure funds; Site constraints; Design & technology constraints	Assets may exceed carrying capacity due to increases in annual precipitation, limiting water availability and increased ability to serve a growing population.
123	Water treatment facility-Reduced snowpack	Decrease in snowpack	Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase. Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.	Skagit PUD facilities include over 600 miles of pipe, and 31-million gallons of storage volume. Snowpack exposure to warming varies by elevation. In your county or community, the exposure of water resources will depend on the location of water sources. The low-elevation Cascade and Olympic foothills will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing. By the end of the century, snowpack is expected to remain relatively unaffected only in the high-elevations of the Northern Cascade Mountains. Asset receives water source from Judy Reservoir/Cultus Mountain watershed and is not in ARA.	Increased development; Lack of technology; Lack of capital expenditure funds; Site constraints; Design & technology constraints	Assets may exceed carrying capacity due to increases in annual precipitation, limiting water availability and increased ability to serve a growing population.
124	Water treatment facility-Sea level rise	Increase in likely sea level rise	Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality. Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.	Skagit PUD facilities include over 600 miles of pipe, and 31-million gallons of storage volume. Exposure will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion will vary based on shoreline topography and characteristics. Shallow aquifers and wells located in low-lying coastal zones will be more exposed to saltwater intrusion. Asset receives water source from Judy Reservoir/Cultus Mountain watershed and is not in ARA. SLR inundation from increased SLR likelihood depends on "perfect storm" conditions i.e., high groundwater levels, storms, high/King tides, geologic subsidence, etc.	Increased development; Lack of technology; Lack of capital expenditure funds; Site constraints; Design & technology constraints	Increased SLR likelihood and combination of other perfect storm conditions can exacerbate localized flooding and contaminate water sources that decreases water security.
125	Water treatment facility-Wildfire	Increase in wildfire likelihood	More frequent wildfires have the potential to damage water distribution infrastructure and reduce water quality in reservoirs due to more runoff, erosion, and turbidity. Changes in water quality could increase the need for water treatment and filtration. Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	Skagit PUD facilities include over 600 miles of pipe, and 31-million gallons of storage volume. Water facilities that serve areas in the wildland-urban interface will be more exposed to increases in waste with more wildfire. Asset receives water source from Judy Reservoir/Cultus Mountain watershed and is not in ARA. Asset is located in WUI-interface zone and may be exposed to increased wildfire likelihood - however, "perfect storm" conditions i.e., dry soil, dry vegetation, humidity, ignition source, etc. must be present for wildfire events to occur.	Increased development; Lack of technology; Lack of capital expenditure funds; Site constraints; Design & technology constraints	Increased wildfire likelihood and combination of other perfect storm conditions can contaminate water sources that decreases water security.
126	Reservoirs-Drought (Water Resources)	Increase in total annual precipitation	Increases in annual precipitation have the potential to increase groundwater recharge. Changes in the timing and intensity of precipitation and increases in water demand and evaporation are expected to offset increases in groundwater recharge due to more annual precipitation. Steady increase in percent change in total annual precipitation. Historical baseline recorded to be 80 inches. Mid century and end of century projected to be 5.3% and 10%, respectively.	The exposure of water resources to changes in annual precipitation in your county or community depends on the presence of critical groundwater aquifer recharge areas and the location of wells. Aquifer recharge areas include Diobsud Creek, Grandy Creek, Jones Creek, Opal Creek, Friday Creek, Samish River, Nookachamps Creek, Hill Ditch, and Lake Erie. Wells are located throughout County along water bodies. Increases in annual precip provide additional water security and quality from 1/2 mile buffer - seasonal precip offsets seasonal drought conditions.	Increased development; Lack of technology; Lack of capital expenditure funds; Site constraints; Design & technology constraints	Assets may exceed carrying capacity due to increases in annual precipitation, limiting water availability. Reservoir spill elevation has been increased in the past and may increase again to adapt to increased precipitation.
127	Reservoirs-Reduced snowpack	Decrease in snowpack	Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase. Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.	Snowpack exposure to warming varies by elevation. In your county or community, the exposure of water resources will depend on the location of water sources. The low-elevation Cascade and Olympic foothills will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing. By the end of the century, snowpack is expected to remain relatively unaffected only in the high-elevations of the Northern Cascade Mountains.	Increased development; Lack of technology; Lack of capital expenditure funds; Site constraints; Design & technology constraints	Assets may exceed carrying capacity that limits water availability. Reservoir spill elevation has been increased in the past and may increase again to adapt to snowpack decreases.

128	Reservoirs-Sea level rise	Increase in likely sea level rise	Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality. Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.	In your county or community, exposure will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion will vary based on shoreline topography and characteristics. Shallow aquifers and wells located in low-lying coastal zones will be more exposed to saltwater intrusion.	Increased development; Lack of technology; Lack of capital expenditure funds; Site constraints; Design & technology constraints	Assets may exceed carrying capacity that limits water availability. Reservoir spill elevation has been increased in the past and may increase again to adapt to SLR likelihood increases.
129	Reservoirs-Wildfire	Increase in wildfire likelihood	More frequent wildfires have the potential to damage water distribution infrastructure and reduce water quality in reservoirs due to more runoff, erosion, and turbidity. Changes in water quality could increase the need for water treatment and filtration. Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	In your county or community, water collection facilities that serve areas in the wildland-urban interface will be more exposed to increases in waste with more wildfire. Assets located in WUI-interface zone are exposed to increased wildfire likelihood - however, "perfect storm" conditions i.e., dry soil, dry vegetation, humidity, ignition source, etc. must be present for wildfire events to occur.	Increased development; Lack of technology; Lack of capital expenditure funds; Site constraints; Design & technology constraints	Assets may exceed carrying capacity that limits water availability from sedimentation. Reservoir spill elevation has been increased in the past and may increase again to adapt to increased wildfire likelihood.
130	Schools-Drought (Zoning & Dev)	Decrease in snowpack	Reductions in snowpack are expected to decrease opportunities for winter outdoor recreation and shorten the winter recreation season with adverse effects on the economy and character of some communities. Warm season outdoor recreation opportunities are expected to increase, shifting tourism revenue from one recreation sector to another. Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.	Snowpack exposure to warming varies by elevation. The low-elevation Cascade and Olympic foothills will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing. No assets are located in mountain foothills and exposed to decrease in snowpack.	Lack of personnel; Site constraints; Enrollment increases; Generational knowledge gaps	Decrease in snowpack indicates a decreased amount of natural water storage in snowpack that will be available in the melt season. Reduced water security is especially felt where municipal infrastructure is not present in school grounds i.e., Marblemount, rural communities, etc.
131	Schools-Extreme Heat	Increase in August stream temperature	Stream temperature during August, which is typically the hottest month for most streams, is an indicator of water quality for salmon and other species that depend on cold water. Warmer stream temperatures have the potential to reduce the ability to meet water quality standards and the effluent limits (amount discharge to the water body) set on existing wastewater treatment facilities. The percentage of stream lengths in categories of average August stream temperature for future 30-year periods.	Schools located near rivers, streams, or other water bodies are more exposed to vector diseases from increased summertime temperatures.	Lack of personnel; Site constraints; Enrollment increases; Generational knowledge gaps	Increased exposure to vector diseases can result in more frequent closures, disruption to individual learning, and strain on school services.
132	Schools-Extreme precipitation	Increase in heavy precipitation magnitude	Heavier precipitation events are expected to intensify urban flooding and demands on storm water systems, which can affect zoning restrictions on new buildings, and require revised building codes for development in more frequently flooded areas. Increase in heavy precipitation magnitude from 8% for mid century to 21% for end of century. Historical baseline was not recorded.	In your county or community, certain land uses and development located in low-lying areas, within current floodplains or regulatory flood zones, or adjacent to unstable slopes are expected to be more exposed to an increase in heavy precipitation.	Lack of personnel; Site constraints; Enrollment increases; Generational knowledge gaps	Increased heavy precipitation magnitude can result in more frequent closures, disruption to individual learning, and strain on school services.
133	Schools-Flooding	Increase in peak streamflow frequency	Higher streamflow's are expected to increase damage to all types of infrastructure in flood zones and could expand the flood zone in some areas leading to damage of development not currently in flood zones. Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for 10 to 10 percent is 100. Meaning 100% of stream segments experience 25-year peak volumes once every 20 to 30 years. Mid century and end of century projections are 19.3 and 4.4, respectively, of river segments with little to no change in peak streamflow, whereas 80.4 and 29.5 river segments are projected to experience 25-year peak volumes once every 10 to 20 years. Meaning peak streamflow will occur more frequently.	In your county or community, development located in river valleys and in or near current and historical flood zones will be most exposed to projected increases in high streamflows that cause flooding.	Lack of personnel; Site constraints; Enrollment increases; Generational knowledge gaps	Increased peak streamflow can result in flood damages, more frequent closures, disruption to individual learning, and strain on school services.
134	Schools-Reduced snowpack	Decrease in snowpack	Higher streamflow's are expected to increase damage to all types of infrastructure in flood zones and could expand the flood zone in some areas leading to damage of development not currently in flood zones. Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.	In your county or community, development located in river valleys and in or near current and historical flood zones will be most exposed to projected increases in high streamflows that cause flooding.	Lack of personnel; Site constraints; Enrollment increases; Generational knowledge gaps	Decrease in snowpack indicates a decreased amount of natural water storage in snowpack that will be available in the melt season. Reduced water security is especially felt where municipal infrastructure is not present in school grounds i.e., Marblemount, rural communities, etc.
135	Schools-Sea level rise	Increase in likely sea level rise	Moderate sea level rise is expected to inundate some coastal land and intensify coastal flooding of infrastructure. Sea level rise is expected to increase beach and bluff erosion in some areas. Increasing coastal hazards are expected to decrease the area of coastal land that is suitable for some types of development and increase the need for relocation. Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.	In your county or community, exposure to sea level rise will vary locally with differences in the rate of geologic uplift or subsidence. The extent of inundation, coastal flooding, and erosion will vary based on shoreline topography and characteristics. Development located in low-lying coastal zones or near coastal bluffs will be more exposed.	Lack of personnel; Site constraints; Enrollment increases; Generational knowledge gaps	Increased SLR likelihood can result in flood damages, more frequent closures, disruption to individual learning, and strain on school services.
136	Schools-Wildfire	Increase in wildfire likelihood	More frequent wildfires are expected to increase damage to homes and infrastructure and displace residents. Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	In your county or community, the extent of development and the types of land use in the wildland-urban interface will affect local exposure to increases in the likelihood of wildfire.	Lack of personnel; Site constraints; Enrollment increases; Generational knowledge gaps	An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.

137	Radio towers-Drought (Zoning & Dev)	Decrease in snowpack	Higher streamflow's are expected to increase damage to all types of infrastructure in flood zones and could expand the flood zone in some areas leading to damage of development not currently in flood zones. Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.	Snowpack exposure to warming varies by elevation. Exposure of asset will depend on elevation. Asset is managed by private corporation - some located in low-elevation Cascade and Olympic foothills that will be exposed first because these areas currently receive substantial snowfall at temperatures near freezing. Radio towers have little to no anticipated exposure to decreased snowpack.	Increased development; Lack of funds; Site constraints; Design & technology constraints; Policy changes	N/a
138	Radio towers-Extreme Heat	Increase in August stream temperature	Higher streamflow's are expected to increase damage to all types of infrastructure in flood zones and could expand the flood zone in some areas leading to damage of development not currently in flood zones. Mid Century: 13.2% increase in range 16-18 deg C. 20.9% increase in range 14-16 deg C. 21.2% increase in range 12-14 deg C. 15% increase in range 10-12 deg C. 15.2% increase in range below 8 deg C. Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.	Radio communications include radio towers that are located in remote forested areas with higher elevations. However, communication towers are owned and operated by private entities and exact location of assets are unknown. Radio communication towers have little to no anticipated exposure to increases in summertime stream temperatures.	Increased development; Lack of funds; Site constraints; Design & technology constraints; Policy changes	Drier vegetation and soils from extreme heat events increase likelihood of wildfires and landslides that may increase destruction of towers, making it difficult for individuals and community members to communicate and respond to emergencies.
139	Radio towers-Extreme precipitation	Increase in heavy precipitation magnitude	Heavier precipitation events are expected to intensify urban flooding and demands on storm water systems, which can affect zoning restrictions on new buildings, and require revised building codes for development in more frequently flooded areas. Increase in heavy precipitation magnitude from 8% for mid century to 21% for end of century. Historical baseline was not recorded.	Radio communications include radio towers that are located in remote forested areas with higher elevations. However, communication towers are owned and operated by private entities and exact location of assets are unknown. Assets located in unstable landslide/hillside areas are exposed to increases in heavy precip magnitude.	Increased development; Lack of funds; Site constraints; Design & technology constraints; Policy changes	Increased precipitation magnitude increases flooding or landslides that may increase destruction of towers, making it difficult for individuals and community members to communicate and respond to emergencies.
140	Radio towers-Flooding	Increase in peak streamflow frequency	Higher streamflow's are expected to increase damage to all types of infrastructure in flood zones and could expand the flood zone in some areas leading to damage of development not currently in flood zones. Historical baseline for percentage of stream lengths in Skagit county in annual maximum streamflow for 10 to 10 percent is 100. Meaning 100% of stream segments experience 25-year peak volumes once every 20 to 30 years. Mid century and end of century projections are 19.3 and 4.4, respectively, of river segments with little to no change in peak streamflow, whereas 80.4 and 29.5 river segments are projected to experience 25-year peak volumes once every 10 to 20 years. Meaning peak streamflow will occur more frequently.	Radio communications include radio towers that are located in remote forested areas with higher elevations. However, communication towers are owned and operated by private entities and exact location of assets are unknown. Assets located in or near unstable high-elevation stream banks are exposed to damage from flooding.	Increased development; Lack of funds; Site constraints; Design & technology constraints; Policy changes	Flood events increase likelihood of landslides and erosion that may increase destruction of towers, making it difficult for individuals and community members to communicate and emergency response services.
141	Radio towers-Reduced snowpack	Decrease in snowpack	Higher streamflow's are expected to increase damage to all types of infrastructure in flood zones and could expand the flood zone in some areas leading to damage of development not currently in flood zones. Steady decrease in percent change in April 1 snowpack. Historical baseline is 22 inches. Mid century and end of century is projected to be a decrease in 53% and 79%, respectively.	Radio communications include radio towers that are located in remote forested areas with higher elevations. However, communication towers are owned and operated by private entities and exact location of assets are unknown. Assets located in river valleys and in or near current and historical flood zones will be most exposed to projected increases in high streamflows that cause flooding.	Increased development; Lack of funds; Site constraints; Design & technology constraints; Policy changes	Seasonal and more intense flooding from decreased snowpack can down radio towers and lines, interrupting communications between individuals and community members, emergency response services and Countywide security.
142	Radio towers-Sea level rise	Increase in likely sea level rise	Moderate sea level rise is expected to inundate some coastal land and intensify coastal flooding of infrastructure. Sea level rise is expected to increase beach and bluff erosion in some areas. Increasing coastal hazards are expected to decrease the area of coastal land that is suitable for some types of development and increase the need for relocation. Historical baseline not recorded. Mid century and end of century projected to be 0.7 feet and 2.1 feet, respectively.	Radio communications include radio towers that are located in remote forested areas with higher elevations. However, communication towers are owned and operated by private entities and exact location of assets are unknown. Assets located in low-lying coastal zones or near coastal bluffs will be more exposed due to coastal flooding, unstable hillsides, increased groundwater levels, etc.	Increased development; Lack of funds; Site constraints; Design & technology constraints; Policy changes	Seasonal and more intense flooding from increased SLR likelihood can down radio towers and lines, interrupting communications between individuals and community members, emergency response services and Countywide security.
143	Radio towers-Wildfire	Increase in wildfire likelihood	More frequent wildfires are expected to increase damage to homes and infrastructure and displace residents. Steady increase in likelihood of climate and fuel conditions for wildfire. Historical baseline recorded to be 0. Mid century and end of century projected to be 0.04 and 0.17, respectively.	Radio communications include radio towers that are located in remote forested areas with higher elevations. However, communication towers are owned and operated by private entities and exact location of assets are unknown. Assets located in the wildland-urban interface zones will affect local exposure to increases in the likelihood of wildfire.	Increased development; Lack of funds; Site constraints; Design & technology constraints; Policy changes	An increasing likelihood of wildfire indicates a greater potential for wildfire to damage infrastructure, interrupt businesses, or affect public health and well-being.

Task 1.4: Identify priority climate hazards

Hazard	Relevant to your jurisdiction? (Mark Yes or No.)	Notes (Explain why you determined this hazard is or is not relevant to your jurisdiction.)
Drought	Yes	Despite being the Evergreen State, Skagit County has experienced a number of drought episodes, including several that have lasted for more than a single season. Agricultural and forestry industries usually experience the greatest impact from a drought event in Skagit County.
Extreme heat	No	Jurisdiction's exposure to increased extreme events is low.
Extreme precipitation	Yes	Areas located in central and east Skagit County demonstrate more intense precipitation ranging from 5 inches to more than 10 inches. West Skagit County generally demonstrates 3-4 inches and/or less than 3 inches of precipitation.
Flooding	Yes	Major flooding has occurred on a regular basis in the Skagit River Basin. The Skagit River Basin is subject to winter rains and an increase in discharge during spring due to snowmelt runoff. Rain-type floods usually occur in November or December; however, may occur as early as October or as late as February.
Reduced snowpack	Yes	Jurisdiction is surrounded by various mountainous regions. Reduced snowpack impacts streamflow timing which affects hydroelectrical facilities, fisheries, and recreation activities that rely on predictable snowmelt.
Sea level rise	Yes	Most of Skagit County marine and shoreline areas are protected from sea level rise; however, shoreline areas of Fidalgo Island, Guemes Island, Sinclair Island, Cypress Island, Samish Island, March's Point, the communities of La Conner, Burlington, and Bayview, as well as lakeshore areas may be vulnerable to sea level rise.
Wildfire	Yes	Major wildfire events occur once every 20 to 50 years, and have remained small, less than 0.2 acres. Since 2008, small wildfire events have occurred in high frequency. Wildfire likelihood is anticipated to increase, resulting in larger more frequent wildfire events.
Other - please list		
Earthquake	No	Jurisdiction experiences earthquakes due to its location near the Juan de Fuca and Pacific plates; however, the impacts of climate change on earthquake probability are unknown.
Volcano	No	Lahars are the primary threat and present the greatest hazard to Skagit County resulting from volcanic activity at either Mount Baker or Glacier Peak. Though the possibility of a large volcanic eruption exists, these types of events are typically separated by several hundred to a few thousand years and is unlikely to occur in this lifetime. In addition, the impacts of climate change on volcano probability are unknown.
Avalanche	No	There are limited records available of avalanches impacting homes, businesses, or communities within Skagit County.

Task 2.1: Review existing plans for climate gaps and opportunities

Measure	Document	Sector	Climate Indicator	Hazards	Climate Impacts	Assets	Gaps and	Next Step
<i>List existing measure (goal or policy) that implicitly or explicitly supports climate resilience.</i>	<i>List the document where the measure is found (comprehensive plan, hazard mitigation plan, shoreline master program, stormwater management plan, etc.)</i>	<i>List the most appropriate sector(s) for the measure (select all that apply.)</i>	<i>Information from Step 1: List the climate indicator(s) that are relevant to the measure (changes in snowpack, streamflow, sea level, etc.).</i>	<i>Information from Step 1: List the climate-related hazard(s) that the measure addresses.</i>	<i>Information from Step 1: List climate impacts that the measure addresses now or could be addressed via changes. Also, consider whether the measure is maladaptive and could increase climate vulnerability and risk.</i>	<i>Information from Step 1: List assets (forests, orchards, bridges, etc.) that are affected by the climate impacts you listed.</i>	<i>If applicable, note how the existing measure could be amended or supplemented by a new goal or policy to better address your local climate hazards and impact(s).</i>	<i>Note desired next step (e.g., amend an existing measure; consolidate with a similar measure; add a new measure; keep existing measure as-is in comprehensive plan).</i>
<p>1 Urban, Open Space, and Land Use</p> <p>Policy 2A-1.3 - In designating Urban Growth Areas, consider GMA requirements to provide for recreational lands, critical areas, open space corridors, greenbelts, and view sheds, and to avoid natural hazard areas prone to flooding or other risks to public safety.</p>	Skagit County Comprehensive Plan 2016-2036	Zoning & Development	Peak Streamflow and return interval of 25 yr peak streamflow	Flooding	Higher streamflows are expected to increase damage to all types of infrastructure in flood zones and could expand the flood zone in some areas leading to damage of development not currently in flood zones.	N/A	Add specificity - climate impacts	Amend existing policy to consider climate impacts. Add measures to climate resiliency element.
<p>2 Urban, Open Space, and Land Use</p> <p>Policy 2A-3.1 - Urban public facilities include: improved streets, roads, highways, sidewalks, road lighting systems and traffic signals; urban domestic water systems, sanitary sewer systems, storm sewer systems, park and recreational facilities and schools as defined in the Capital Facilities Element with adopted level of service standards.</p>	Skagit County Comprehensive Plan 2016-2036	Buildings and Energy, Waste Management, Water Resources, Transportation	Heating degree days, wildfire likelihood, extreme precipitation magnitude, decrease in peak streamflow	Extreme heat, wildfire, extreme precipitation, flooding	<p>A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations.</p> <p>More frequent wildfires have the potential to affect energy transmission by damaging infrastructure and interrupting transmission and distribution. More frequent wildfires are expected to cause property damage and loss. Poor air quality due to wildfire smoke could increase demand for air filtration systems in buildings.</p> <p>Heavier precipitation events are expected to intensify flooding, landslides, and erosion, which can interrupt transportation routes, damage infrastructure, and increase maintenance and repair costs.</p>	Roadways, highways, sidewalks, water systems, waste systems, recreational facilities	Add specificity - climate impacts	Integrate the resiliency element with the land use element, transportation, recreational and capital facilities elements.
<p>3 Urban, Open Space, and Land Use</p> <p>Policy 2A-3.2 - Urban public services include fire protection and suppression; emergency medical services; public safety; public health; education; recreation; environmental protection; and other services as identified in the Capital Facilities Element with adopted level of service standards.</p>	Skagit County Comprehensive Plan 2016-2036	Buildings and Energy, Waste Management, Water Resources, Emergency Management, Health and Safety, Transportation	Total annual precipitation, snowpack, likely sea level rise, wildfire likelihood, precipitation drought, 90 deg F max humidex days, extreme precipitation magnitude, peak streamflow, wildfire danger	Extreme precipitation, reduced snowpack, sea level rise, wildfire, flooding	<p>A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations.</p> <p>More frequent wildfires have the potential to affect energy transmission by damaging infrastructure and interrupting transmission and distribution. More frequent wildfires are expected to cause property damage and loss. Poor air quality due to wildfire smoke could increase demand for air filtration systems in buildings.</p> <p>Heavier precipitation events are expected to intensify flooding, landslides, and erosion, which can interrupt transportation routes, damage infrastructure, and increase maintenance and repair costs.</p> <p>Heavier precipitation has the potential to increase the demand for emergency response services by intensifying flood events and increasing other emergencies associated with heavy precipitation.</p> <p>More frequent and severe droughts due to low summer precipitation are expected to increase the need for emergency services to plan, prepare, and respond to water shortages.</p> <p>More frequent extreme daytime heat events are expected to increase the demand for emergency services to plan, prepare, and respond to human health impacts. Extreme heat may also impact emergency services due to transportation and travel disruptions such as warped and buckling pavement on roads.</p> <p>Higher streamflows are expected to increase riverine flooding within existing floodplains and could expand flooding to new areas not currently in existing floodplains. More flooding has the potential to increase the demand for emergency services to plan, prepare, and respond to flood events.</p> <p>Moderate sea level rise is expected to inundate some coastal land and intensify coastal flooding during storms, which could increase the need for emergency services to plan, respond to and recover from coastal flooding.</p> <p>More days with high fire danger will increase the need for fire bans and associated enforcement and capacity to respond to wildfires.</p>	All assets	No changes needed	Adopt into comprehensive plan
<p>4 Urban, Open Space, and Land Use</p> <p>Policy 2A-3.3 - Urban governmental services should not be extended to, or expanded in, rural areas except in those limited circumstances necessary to protect basic public health and safety and the environment, and when such services are financially supportable at rural densities and do not support urban development.</p>	Skagit County Comprehensive Plan 2016-2036	Buildings and Energy, Cultural resources & Practices & Health & Well-being	heating degree days, wildfire likelihood, low streamflow, august stream temperature, peak streamflow, likely sea level rise, wildfire likelihood, summer maximum temperature	Extreme heat, wildfire, drought, extreme heat, flooding, sea level rise, wildfire	<p>A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations.</p> <p>More frequent wildfires have the potential to affect energy transmission by damaging infrastructure and interrupting transmission and distribution. More frequent wildfires are expected to cause property damage and loss. Poor air quality due to wildfire smoke could increase demand for air filtration systems in buildings.</p>	All assets	Add specificity - climate impacts	Amend existing policy to consider climate impacts. Add measures to climate resiliency element.
<p>5 Urban, Open Space, and Land Use</p> <p>Policy 2H-1.3 - Essential Public Facilities must comply with adopted federal, state, and county land use regulations and be in conformance with this Comprehensive Plan.</p>	Skagit County Comprehensive Plan 2016-2036	Buildings and Energy	Total annual precipitation, snowpack, likely sea level rise, wildfire likelihood, precipitation drought, 90 deg F max humidex days, extreme precipitation magnitude, peak streamflow, wildfire danger	Extreme precipitation, reduced snowpack, sea level rise, wildfire, flooding	<p>A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations.</p> <p>More frequent wildfires have the potential to affect energy transmission by damaging infrastructure and interrupting transmission and distribution. More frequent wildfires are expected to cause property damage and loss. Poor air quality due to wildfire smoke could increase demand for air filtration systems in buildings.</p> <p>Heavier precipitation events are expected to intensify flooding, landslides, and erosion, which can interrupt transportation routes, damage infrastructure, and increase maintenance and repair costs.</p> <p>Heavier precipitation has the potential to increase the demand for emergency response services by intensifying flood events and increasing other emergencies associated with heavy precipitation.</p> <p>More frequent and severe droughts due to low summer precipitation are expected to increase the need for emergency services to plan, prepare, and respond to water shortages.</p> <p>More frequent extreme daytime heat events are expected to increase the demand for emergency services to plan, prepare, and respond to human health impacts. Extreme heat may also impact emergency services due to transportation and travel disruptions such as warped and buckling pavement on roads.</p> <p>Higher streamflows are expected to increase riverine flooding within existing floodplains and could expand flooding to new areas not currently in existing floodplains. More flooding has the potential to increase the demand for emergency services to plan, prepare, and respond to flood events.</p> <p>Moderate sea level rise is expected to inundate some coastal land and intensify coastal flooding during storms, which could increase the need for emergency services to plan, respond to and recover from coastal flooding.</p> <p>More days with high fire danger will increase the need for fire bans and associated enforcement and capacity to respond to wildfires.</p>	All assets	Add specificity - climate impacts	Integrate the resiliency element with capital facilities elements.

<p>6 Urban, Open Space, and Land Use</p> <p>Policy 2H-1.6 - The County code must establish approval criteria for facility requirements and impacts. Proposals should be conditioned to be consistent with the County Comprehensive Plan, functional plans, and development regulations. The County may execute interlocal agreements regarding the siting, operation and/or expansion of such facilities within Skagit County. Agreements are encouraged to the extent they would result in locally beneficial siting decisions, facilitate the sponsor's voluntary provision of enhanced mitigation measures exceeding those required by applicable regulatory standards, and/or provide for mitigation of any disproportionate financial burden on the County created by the proposed facility.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Zoning & Development</p>	<p>Total annual precipitation, snowpack, likely sea level rise, wildfire likelihood, precipitation drought, 90 deg F max humidex days, extreme precipitation magnitude, peak streamflow, wildfire danger</p>	<p>Extreme precipitation, reduced snowpack, sea level rise, wildfire, flooding</p>	<p>Reductions in snowpack are expected to decrease opportunities for winter outdoor recreation and shorten the winter recreation season with adverse effects on the economy and character of some communities. Warm season outdoor recreation opportunities are expected to increase, shifting tourism revenue from one recreation sector to another.</p> <p>Warmer stream temperatures have the potential to reduce the ability to meet water quality standards and the effluent limits (amount discharge to the water body) set on existing wastewater treatment facilities.</p> <p>Higher streamflows are expected to increase damage to all types of infrastructure in flood zones and could expand the flood zone in some areas leading to damage of development not currently in flood zones.</p> <p>Heavier precipitation events are expected to intensify urban flooding and demands on storm water systems, which can affect zoning restrictions on new buildings, and require revised building codes for development in more frequently flooded areas.</p> <p>Moderate sea level rise is expected to inundate some coastal land and intensify coastal flooding of infrastructure. Sea level rise is expected to increase beach and bluff erosion in some areas. Increasing coastal hazards are expected to decrease the area of coastal land that is suitable for some types of development and increase the need for relocation.</p> <p>More frequent wildfires are expected to increase damage to homes and infrastructure and displace residents.</p>	<p>All assets</p>	<p>Add specificity - climate impacts</p>	<p>Integrate the resiliency element with capital facilities elements.</p>
<p>7 Urban, Open Space, and Land Use</p> <p>Policy 2H-1.8 - Skagit County shall encourage the siting of essential public facilities equitably so that no single community and no racial, cultural or socio-economic group should absorb an inequitable share of these facilities and their impacts. In addition, siting should consider environmental, economic, technical, and service area factors.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Zoning & Development</p>	<p>Total annual precipitation, snowpack, likely sea level rise, wildfire likelihood, precipitation drought, 90 deg F max humidex days, extreme precipitation magnitude, peak streamflow, wildfire danger</p>	<p>Extreme precipitation, reduced snowpack, sea level rise, wildfire, flooding</p>	<p>Reductions in snowpack are expected to decrease opportunities for winter outdoor recreation and shorten the winter recreation season with adverse effects on the economy and character of some communities. Warm season outdoor recreation opportunities are expected to increase, shifting tourism revenue from one recreation sector to another.</p> <p>Warmer stream temperatures have the potential to reduce the ability to meet water quality standards and the effluent limits (amount discharge to the water body) set on existing wastewater treatment facilities.</p> <p>Higher streamflows are expected to increase damage to all types of infrastructure in flood zones and could expand the flood zone in some areas leading to damage of development not currently in flood zones.</p> <p>Heavier precipitation events are expected to intensify urban flooding and demands on storm water systems, which can affect zoning restrictions on new buildings, and require revised building codes for development in more frequently flooded areas.</p> <p>Moderate sea level rise is expected to inundate some coastal land and intensify coastal flooding of infrastructure. Sea level rise is expected to increase beach and bluff erosion in some areas. Increasing coastal hazards are expected to decrease the area of coastal land that is suitable for some types of development and increase the need for relocation.</p> <p>More frequent wildfires are expected to increase damage to homes and infrastructure and displace residents.</p>	<p>All assets</p>	<p>Add specificity - climate impacts</p>	<p>Integrate the resiliency element with capital facilities elements.</p>
<p>8 Rural</p> <p>Policy 3A-3.2 - Continue to work with water providers such as Skagit PUD to extend public water service in rural areas where ground water supplies are limited, with the greatest emphasis being on areas already identified as pre-existing higher density rural areas with corresponding Comprehensive Plan designations and zoning, specifically limited areas of more intensive rural development (LAMIRDS) including Rural Villages and Rural Intermediate.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Water Resources</p>	<p>likely sea level rise</p>	<p>Extreme precipitation, flooding, sea level rise</p>	<p>Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.</p>	<p>Water infrastructure, ground water wells, aquifers, etc.</p>	<p>Add specificity - climate impacts</p>	<p>Amend existing policy to consider climate impacts. Add measures to climate resiliency element.</p>
<p>9 Rural</p> <p>Policy 3A-3.3 - Standards and plans for structures, roads and utility systems, and other public services and facilities shall be consistent with rural densities and uses. Such facilities and services shall be such designed, constructed, and provided to minimize the alteration of the landscape and the impacts to rural residents and community character, to preserve natural systems, to protect critical areas, to protect important land features such as ridgelines, to retain historic and cultural structures/landscapes, and scenic amenities.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Buildings & Energy</p>	<p>Heating degree days and wildfire likelihood</p>	<p>Extreme heat and wildfire</p>	<p>A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations.</p> <p>More frequent wildfires have the potential to affect energy transmission by damaging infrastructure and interrupting transmission and distribution. More frequent wildfires are expected to cause property damage and loss. Poor air quality due to wildfire smoke could increase demand for air filtration systems in buildings.</p>	<p>Roadways, utility stems, and other public service utilities.</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>
<p>10 Rural</p> <p>Policy 3A-3.4 - The County's public health responsibility for ensuring adequate wastewater treatment includes the determination of failing on-site septic systems, technical assistance to property owners, and actions to require necessary improvements. These services may include community plans and other strategies for creating area-wide solutions when surface waters or groundwater is threatened.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Waste Management</p>	<p>Extreme precipitation magnitude, return interval of 25-year peak streamflow</p>	<p>Extreme precipitation, flooding</p>	<p>Heavier precipitation has the potential to increase storm damage to infrastructure and generate more waste and debris. More waste will strain municipal cleanup and refuse capacity.</p> <p>More frequent high streamflows are expected to increase flooding, which can generate more debris and waste. More waste will strain municipal cleanup and refuse capacity. Flooding of waste management facilities can release contaminants and hazardous materials.</p>	<p>Wastewater infrastructure/systems and septic tank systems</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>
<p>11 Rural</p> <p>Policy 3C-2.19 - Any new Rural Center designations shall meet the following criteria:</p> <p>(a) All property to be included is located within the Rural Intermediate or Rural Reserve designations only.</p> <p>(b) The commercial area existed predominantly as an area or use of more intensive commercial development on July 1, 1990.</p> <p>(c) Location at the crossroads of county roads, state routes, or major arterials.</p> <p>(d) The designation does not jeopardize the protection of designated critical areas, frequently flooded areas, and surface water and ground water resources, including sole source aquifers, or the conservation and productive use of designated natural resource lands.</p> <p>(e) The travel distance between a new Rural Center and existing rural commercial designations is a minimum of 5 miles. This is generally the minimum distance that existing Rural Centers are located from other rural commercial designations.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Zoning & Development</p>	<p>Heavy precipitation magnitude, peak streamflow, likely sea level rise</p>	<p>Extreme precipitation, flooding, sea level rise</p>	<p>Heavier precipitation events are expected to intensify urban flooding and demands on storm water systems, which can affect zoning restrictions on new buildings, and require revised building codes for development in more frequently flooded areas.</p> <p>Higher streamflows are expected to increase damage to all types of infrastructure in flood zones and could expand the flood zone in some areas leading to damage of development not currently in flood zones.</p> <p>Moderate sea level rise is expected to inundate some coastal land and intensify coastal flooding of infrastructure. Sea level rise is expected to increase beach and bluff erosion in some areas. Increasing coastal hazards are expected to decrease the area of coastal land that is suitable for some types of development and increase the need for relocation.</p>	<p>County roads, state routes, or major arterials,</p>	<p>Add specificity - climate impacts</p>	<p>Amend existing policy to consider climate impacts. Add measures to climate resiliency element.</p>
<p>12 Natural Resource Lands</p> <p>Policy 4A-2.4 - Agricultural Resource Lands Database: Skagit County shall maintain a database of current information on land uses, farming activities, conversions of agricultural lands for development or habitat, soils, drainage systems, and other quantifiable factors for the purpose of monitoring and conserving agricultural lands</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Agriculture & Food Systems</p>	<p>Precipitation drought, summer maximum temperature, heavy precipitation magnitude, streamflow timing, wildfire likelihood</p>	<p>Drought, extreme heat, extreme precipitation, reduced snowpack, wildfire</p>	<p>More frequent and severe droughts due to low summer precipitation will reduce the amount of water available for livestock and irrigation during the same time that warmer temperatures and longer growing seasons are expected to increase the demand for irrigation water.</p> <p>Warmer summers are expected to increase the potential for heat stress on some crops and livestock and decrease crop yields. Some agricultural pests are expected to have greater survival rates and population size with warming. Warmer summer temperatures are expected to increase demand for irrigation water.</p> <p>Heavier precipitation is expected to intensify flooding and inundation of agricultural lands, which can delay spring planting, affect crop quality and quantity, increase erosion and runoff, and increase susceptibility to root diseases.</p> <p>A shift in streamflow timing, with more streamflow in winter and early spring, will change the timing of water available for irrigated agriculture. This may or may not align with changes in the timing of the growing season for different crops.</p> <p>More frequent wildfires have the potential to increase damage to crops, livestock, agriculture infrastructure and operations. Wildfire smoke may reduce the quality of some crops and adversely affect farm workers and other outdoor laborers in the industry.</p>	<p>Agricultural land</p>	<p>Add specificity - climate impacts</p>	<p>Integrate the resiliency element with agricultural and recreational elements.</p>
<p>13 Natural Resource Lands</p> <p>Policy 4A-2.7 - Agricultural and Critical Areas: Consistent with the Growth Management Act, the County will convene a watershed group to prepare a Voluntary Stewardship Work Plan for the Samish and Skagit watersheds in order to protect critical areas and promote the viability of agriculture.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Agriculture & Food Systems</p>	<p>Precipitation drought, summer maximum temperature, heavy precipitation magnitude, streamflow timing, wildfire likelihood</p>	<p>Drought, extreme heat, extreme precipitation, reduced snowpack, wildfire</p>	<p>More frequent and severe droughts due to low summer precipitation will reduce the amount of water available for livestock and irrigation during the same time that warmer temperatures and longer growing seasons are expected to increase the demand for irrigation water.</p> <p>Warmer summers are expected to increase the potential for heat stress on some crops and livestock and decrease crop yields. Some agricultural pests are expected to have greater survival rates and population size with warming. Warmer summer temperatures are expected to increase demand for irrigation water.</p> <p>Heavier precipitation is expected to intensify flooding and inundation of agricultural lands, which can delay spring planting, affect crop quality and quantity, increase erosion and runoff, and increase susceptibility to root diseases.</p> <p>A shift in streamflow timing, with more streamflow in winter and early spring, will change the timing of water available for irrigated agriculture. This may or may not align with changes in the timing of the growing season for different crops.</p> <p>More frequent wildfires have the potential to increase damage to crops, livestock, agriculture infrastructure and operations. Wildfire smoke may reduce the quality of some crops and adversely affect farm workers and other outdoor laborers in the industry.</p>	<p>Agricultural land</p>	<p>Add specificity - climate impacts</p>	<p>Integrate the resiliency element with agricultural and recreational elements.</p>

<p>14 Natural Resource Lands</p> <p>Policy 4A-5.6 - Drainage Plans: Minimize and mitigate flooding and drainage impacts on agricultural lands. Skagit County Public Works shall develop criteria to review development proposals for drainage impacts on agricultural lands. Drainage plans for minimizing impacts of development shall be circulated to the affected. Drainage District for comment prior to issuance of permits by Public Works.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Water Resources and Emergency Management</p>	<p>Snowpack, likely sea level rise, peak streamflow, extreme precipitation magnitude,</p>	<p>Reduced snowpack, sea level rise, flooding, extreme precipitation</p>	<p>Heavier precipitation has the potential to increase the demand for emergency response services by intensifying flood events and increasing other emergencies associated with heavy precipitation.</p> <p>Higher streamflows are expected to increase riverine flooding within existing floodplains and could expand flooding to new areas not currently in existing floodplains. More flooding has the potential to increase the demand for emergency services to plan, prepare, and respond to flood events.</p> <p>Moderate sea level rise is expected to inundate some coastal land and intensify coastal flooding during storms, which could increase the need for emergency services to plan, respond to and recover from coastal flooding.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p> <p>Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.</p>	<p>Agricultural land</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>
<p>15 Natural Resource Lands</p> <p>Policy 4B-2.2 - Forestry and Critical Area/Habitat Goals: The Forest Advisory Board (FAB) will develop a County-coordinated working group of non-profit organizations, industry groups and County agencies to reconcile, where possible, conflicts between the goals of protecting critical areas and habitat with those of preserving forest land for commercial forestry purposes.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems</p>	<p>Late summer precipitation, summer maximum temperature, peak streamflow, streamflow timing, likely sea level rise</p>	<p>Drought, extreme heat, flooding, reduced snowpack, sea level rise</p>	<p>Less summer precipitation is expected to affect ecosystem types differently. In freshwater ecosystems, less summer precipitation will contribute to lower streamflows, reduce water quality, and increase water temperatures. In terrestrial ecosystems, less summer precipitation will contribute to drought stress and reduce the growth and productivity of some plants.</p> <p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p>	<p>Agricultural and forest land</p>	<p>Add specificity - climate impacts</p>	<p>Integrate the resiliency element with agricultural and recreational elements.</p>
<p>16 Natural Resource Lands</p> <p>Policy 4B-2.7 - Fire Prevention and Protection: Residential development allowed on Industrial Forest Resource Lands shall be limited to those areas located within an existing fire protection district and within 200 feet of a county road or state highway. Skagit County shall require owners of all structures built in the designated forest lands to address forest fire prevention, reduction, and control. The Forest Advisory Board shall review the implementation of this policy annually to ensure its performance.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Emergency Management and Ecosystems</p>	<p>Wildfire danger and wildfire likelihood</p>	<p>Wildfire</p>	<p>More frequent wildfires have the potential to reduce timber, non-timber forest products, carbon storage, and forest habitat for some wildlife. Wildfires also increase establishment of invasive species. More frequent wildfires have the potential to increase runoff and sediment to streams, which can reduce aquatic habitat quality.</p> <p>More days with high fire danger will increase the need for fire bans and associated enforcement and capacity to respond to wildfires.</p>	<p>Residential development and existing residential buildings</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>
<p>17 Natural Resource Lands</p> <p>Policy 4B-2.11 - Wildfire Planning Program: Continue the National Fire Protection Association's "Firewise Communities Program" consistent with the Natural Hazards Mitigation Plan and with agency partners such as the Skagit Conservation District, fire districts and state agencies. Skagit County supports further development of a county-wide wildfire planning program to increase public safety and awareness regarding forest fire dangers, and establish the means of managing, reducing and suppressing catastrophic wildfires.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Emergency Management and Ecosystems</p>	<p>Wildfire danger and wildfire likelihood</p>	<p>Wildfire</p>	<p>More frequent wildfires have the potential to reduce timber, non-timber forest products, carbon storage, and forest habitat for some wildlife. Wildfires also increase establishment of invasive species. More frequent wildfires have the potential to increase runoff and sediment to streams, which can reduce aquatic habitat quality.</p> <p>More days with high fire danger will increase the need for fire bans and associated enforcement and capacity to respond to wildfires.</p>	<p>All assets</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>
<p>18 Natural Resource Lands</p> <p>Policy 4D-6.1 - Reclamation Plan: Support the Washington Department of Natural Resources (DNR) requirement that reclamation plans specify how overburden and spoil material is to be handled and placed in a manner which will control erosion, dust, sedimentation or leaching of material and hazardous substances into surface or ground waters.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems and Water Resources</p>	<p>Peak streamflow, streamflow timing, likely sea level rise, summer maximum temperature</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p> <p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p>	<p>Natural resource lands, groundwater wells, aquifers</p>	<p>Add specificity - climate impacts</p>	<p>Integrate the resiliency element with agricultural, land use, and recreational elements.</p>
<p>19 Natural Resource Lands</p> <p>Policy 4D-6.3 - Erosion Prevention: The flow of natural or process runoff from mineral extraction sites shall be dispersed or regulated such that soil erosion on receiving lands is prevented. Natural runoff includes: Any water that runs on disturbed ground, including stormwater and 'process water' that flows through operation.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems and Water Resources</p>	<p>Peak streamflow, streamflow timing, likely sea level rise, summer maximum temperature</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p> <p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p>	<p>Mineral extraction sites, groundwater wells, aquifers</p>	<p>Add specificity - climate impacts</p>	<p>Integrate the resiliency element with agricultural, land use, and recreational elements.</p>
<p>20 Natural Resource Lands</p> <p>Policy 4D-6.6 - Aquifer Protection: Activities related to mineral extraction and processing operations in the vicinity of open aquifers must provide safeguards including containment, to prevent contamination to the open aquifer.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Water Resources</p>	<p>Total annual precipitation, snowpack, likely sea level rise</p>	<p>Drought, reduced snowpack, sea level rise</p>	<p>Increases in annual precipitation have the potential to increase groundwater recharge. Changes in the timing and intensity of precipitation and increases in water demand and evaporation are expected to offset increases in groundwater recharge due to more annual precipitation.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p> <p>Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.</p>	<p>Aquifers</p>	<p>Add specificity - climate impacts</p>	<p>Amend existing policy to consider climate impacts. Add measures to climate resiliency element.</p>
<p>21 Natural Resource Lands</p> <p>Policy 4F-1.3 - Natural Resource Lands Database: Maintain a database management system to provide current information on natural resource land uses and activities, soils, conversions, and other quantifiable factors for the purpose of monitoring and conserving natural resource lands.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems</p>	<p>Peak streamflow, streamflow timing, likely sea level rise, summer maximum temperature</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p>	<p>Natural resource lands</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>
<p>22 Environment</p> <p>Policy 5A-1.1 - Critical areas shall be identified based on the best available science.</p> <p>(a) The National Wetland Inventory Maps, U.S.D.A. Soil Conservation Service Soil Survey, Washington Department of Fish and Wildlife Priority Habitats and Species Database and aerial photo overlays are examples of the information that shall be utilized in determining the approximate distribution and extent of wetlands in Skagit County.</p> <p>(b) Soil logs and surveys, geological information, well logs, and geological reports shall be utilized in identifying aquifers and aquifer recharge areas.</p> <p>(c) Hydrologic information such as Washington Department of Natural Resources water type maps, United States Geological Services streamflow data, and Federal Emergency Management Agency maps should be utilized in identifying frequently flooded areas.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems and Water Resources</p>	<p>Peak streamflow, streamflow timing, likely sea level rise, summer maximum temperature</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p>	<p>Wetlands, aquifers</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>
<p>23 Environment</p> <p>Policy 5A-1.2 - Critical areas shall be designated by definition and site assessment for conservation and protection.</p> <p>(a) Critical Areas shall be designated and mapped from general sources of critical area information based on best available science.</p> <p>(b) Critical areas shall be designated by performance standards or definitions.</p> <p>(c) Critical areas shall be designated upon completion of a site assessment done by a qualified professional during the process of a permit or development application.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems</p>	<p>Late summer precipitation, summer maximum temperature, peak streamflow, streamflow timing, likely sea level rise</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p>	<p>N/A</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>

<p>24 Environment</p> <p>Policy 5A-1.3 - Critical areas shall be classified for conservation, protection, and risk.</p> <p>(a) The Washington State Rating System for Western Washington (2014 Update) shall be utilized to classify wetlands according to the function, value and uniqueness of wetlands in Skagit County.</p> <p>(b) Aquifer recharge areas shall be classified based on their vulnerability, susceptibility to contamination, and potable water quality and quantity.</p> <p>(c) Frequently flooded areas should be classified utilizing the 100-year floodplain designations as adopted by the Federal Emergency Management Agency and the National Flood Insurance Program.</p> <p>(d) Geologically hazardous areas (areas subject to erosion, sliding, earthquakes, or other geologic events) shall be classified based on the degree of risk to health, life, property and resources.</p> <p>(e) "Fish and Wildlife Habitat Conservation Areas" (HCA's) shall be classified according to the type of conservation area which include:</p> <p>(i) Areas with which endangered, threatened, and sensitive species have a primary association;</p> <p>(ii) Habitats and species of local importance that have been designated by the County at the time of application;</p> <p>(iii) All public and private tidelands suitable for shellfish harvest;</p> <p>(iv) Kelp and eelgrass beds, and herring, smelt, and other forage fish spawning areas;</p> <p>(v) Naturally occurring ponds under 20 acres and their submerged aquatic beds that provide fish or wildlife habitat;</p> <p>(vi) Waters of the state as defined by WAC 222-16;</p> <p>(vii) Lakes, ponds, streams, and rivers planted with game fish by a government or Tribal entity;</p> <p>(viii) Areas with which anadromous fish species have a primary association and;</p> <p>(ix) State Natural Area Preserves, Natural Resource Conservation Areas, and State Wildlife Areas.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems</p>	<p>Late summer precipitation, summer maximum temperature, peak streamflow, streamflow timing, likely sea level rise</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p>	<p>Wetlands, aquifers</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>
<p>25 Environment</p> <p>Policy 5A-3.1 - Areas of native vegetation and riparian corridors that connect wetland systems should be conserved and protected whenever feasible through incentive programs.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems</p>	<p>Late summer precipitation, summer maximum temperature, peak streamflow, streamflow timing, likely sea level rise</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p>	<p>Vegetation and riparian corridors, wetland systems</p>	<p>Add specificity - climate impacts</p>	<p>Amend existing policy to consider climate impacts. Add measures to climate resiliency element.</p>
<p>26 Environment</p> <p>Policy 5A-3.4 - Economic incentive programs shall be implemented to encourage private participation in protecting and enhancing aquifer recharge and surface and ground water quality.</p> <p>(a) Reuse of water shall be encouraged and incentives provided for use of best management practices.</p> <p>(b) Incentives shall be developed that encourage industries, businesses and homes to use water conservation technologies and practices.</p> <p>(c) Incentive programs shall be established to maintain</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Water resources</p>	<p>Total annual precipitation, snowpack, likely sea level rise</p>	<p>Drought, reduced snowpack, sea level rise</p>	<p>Increases in annual precipitation have the potential to increase groundwater recharge. Changes in the timing and intensity of precipitation and increases in water demand and evaporation are expected to offset increases in groundwater recharge due to more annual precipitation</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p> <p>Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.</p>	<p>Aquifers</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>
<p>27 Environment</p> <p>Policy 5A-3.5 - Incentives shall be developed to protect critical areas in agriculture and forestry land.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems</p>	<p>Late summer precipitation, summer maximum temperature, peak streamflow, streamflow timing, likely sea level rise</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p>	<p>Agricultural and forest land</p>	<p>Add specificity - climate impacts</p>	<p>Amend existing policy to consider climate impacts. Add measures to climate resiliency element.</p>
<p>28 Environment</p> <p>Policy 5A-4.1 - The use of inter-agency agreements among county, city, state, federal and tribal agencies shall be encouraged for conservation and protection of critical areas when developing regulations, incentives, and monitoring/enforcement strategies.</p> <p>(a) Local, state, federal and tribal governments shall be consulted in the development of land use plans and development review to identify and protect habitat networks on an inter-jurisdictional basis.</p> <p>(b) Local, state, federal agencies, tribes and private interests shall be encouraged to plan and implement methods to protect and enhance water quality at commercial, recreational, and subsistence shellfish beds, including controlling potential new pollution sources, reducing pollution from existing sources, and establishing shellfish protection districts.</p> <p>(c) Coordinate with state and tribal programs to protect plant species and communities listed in the Natural Heritage Program, the Priority Habitats and Species (PHS) Program and plant species of cultural (tribal) significance should be maintained.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems and Water Resources</p>	<p>Late summer precipitation, summer maximum temperature, peak streamflow, streamflow timing, likely sea level rise</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p>	<p>N/A</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>
<p>29 Environment</p> <p>Policy 5A-4.3 - Critical area conservation and protection strategies shall be coordinated with watershed planning efforts and watershed implementation plans.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems and Water Resources</p>	<p>Late summer precipitation, summer maximum temperature, peak streamflow, streamflow timing, likely sea level rise</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p>	<p>N/A</p>	<p>Add specificity - climate impacts</p>	<p>Amend existing policy to consider climate impacts. Add measures to climate resiliency element.</p>
<p>30 Environment</p> <p>Policy 5A-4.6 - Skagit County shall continue to work cooperatively with the cities, towns, state and federal agencies and tribes as needed in flood hazard mitigation planning and projects to minimize potential for flood damage throughout Skagit County.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>All</p>	<p>Total annual precipitation, snowpack, likely sea level rise, wildfire likelihood, precipitation drought, 90 deg F max humidex days, extreme precipitation magnitude, peak streamflow, wildfire danger</p>	<p>Extreme precipitation, reduced snowpack, sea level rise, wildfire, flooding</p>	<p>Reductions in snowpack are expected to decrease opportunities for winter outdoor recreation and shorten the winter recreation season with adverse effects on the economy and character of some communities. Warm season outdoor recreation opportunities are expected to increase, shifting tourism revenue from one recreation sector to another.</p> <p>Warmer stream temperatures have the potential to reduce the ability to meet water quality standards and the effluent limits (amount discharge to the water body) set on existing wastewater treatment facilities.</p> <p>Higher streamflows are expected to increase damage to all types of infrastructure in flood zones and could expand the flood zone in some areas leading to damage of development not currently in flood zones.</p> <p>Heavier precipitation events are expected to intensify urban flooding and demands on storm water systems, which can affect zoning restrictions on new buildings, and require revised building codes for development in more frequently flooded areas.</p> <p>Moderate sea level rise is expected to inundate some coastal land and intensify coastal flooding of infrastructure. Sea level rise is expected to increase beach and bluff erosion in some areas. Increasing coastal hazards are expected to decrease the area of coastal land that is suitable for some types of development and increase the need for relocation.</p> <p>More frequent wildfires are expected to increase damage to homes and infrastructure and displace residents.</p>	<p>All assets</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>
<p>31 Environment</p> <p>Policy 5A-4.7 - The County shall encourage the restoration of appropriate degraded critical areas through coordinated cooperative public and private efforts.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems</p>	<p>Late summer precipitation, summer maximum temperature, peak streamflow, streamflow timing, likely sea level rise</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p>	<p>N/A</p>	<p>Add specificity - climate impacts</p>	<p>Amend existing policy to consider climate impacts. Add measures to climate resiliency element.</p>

<p>32 Environment</p> <p>Policy 5A-5.1 - Critical Areas shall be designated and protected to prevent their continued loss and degradation. Furthermore, priority shall be given to the avoidance of impacts to Critical Areas, followed by the minimization of impacts and full mitigation respectively.</p> <p>(a) Wetlands (i) The greatest level of protection should be provided to wetlands of exceptional resource value, based on the Washington State Wetland Rating System for Western Washington (2014 Update). (ii) Measures shall be taken to protect the natural ability of wetlands to improve the quality of surface water runoff, hold and gradually release storm water, function as primary producers of plant matter, provide habitat for fish and wildlife, provide recreational opportunities, and provide historical and cultural values. (iii) Mitigation projects shall, whenever feasible, contribute to an existing wetland system or restore an area that was historically a wetland. (iv) A wetland buffer zone of adequate width should be maintained between a wetland and any adjacent development to protect the functions and integrity of the wetland. Where buffers are required, adequate buffer widths and protective mechanisms, using best management practices to sustain the buffer functions, shall be established. (v) Wetland buffer zones should be retained in their natural condition to the greatest extent possible. Re-vegetation may be required to restore the functional value of the buffer zone. (vi) Regulated wetlands and their associated buffer zones shall be protected from adverse wetland impacts to their overall functions. No wetland or buffer zone alteration should be authorized unless it can be shown that the impact is unavoidable and that the adverse impacts are offset by deliberate restoration, creation or enhancement of wetlands and buffer zones.</p> <p>(b) Aquifer Recharge Areas (i) Water resources shall be protected using natural systems and non-structural methods wherever possible. (ii) Ground Water Management Areas (according to WAC 173-100), Wellhead Protection Areas and Significant Use Zones shall be established to further protect the quality and quantity of ground and surface water. (iii) Skagit County will review and update its Saltwater Intrusion Policy for the islands and those coastal areas of the mainland where seawater intrusion has been documented. (iv) Skagit County will update the county code to address instream flow, mandated sewage code changes and water code changes. Aquifer recharge areas will be evaluated and protected under the revisions to the Critical Areas Ordinance. (v) Consistent with State law (RCW 19.27.097), Skagit County will not issue a permit for a building requiring potable water unless the applicant can demonstrate they have a legal and adequate source of water and the source meets drinking water standards.</p> <p>(c) Frequently Flooded Areas (i) Undisturbed natural rivers, streams, lakes, wetlands, and floodplains shall be protected to avoid increases in flood elevations, to reduce flood damage, and to allow proper conveyance of flood flows. (ii) When reviewing proposed developments or designing infrastructure, consider the potential effects of tsunamis, high tides with strong winds, sea level rise, and extreme weather events, including those potentially resulting from global climate change, and apply conditions of approval to ensure adaptation to future conditions and mitigation of potential impacts.</p> <p>(d) Fish and Wildlife Habitat Conservation Areas (i) Stream and wetland buffers shall be set so as to protect habitats associated with riparian dependent species. (ii) Habitat fragmentation shall be minimized to enhance wildlife diversity by protecting important wildlife areas, open space, and interconnecting corridors that form a continuous habitat network. (iii) Protective measures will be required in all areas that have the potential to introduce sediments into fish bearing streams, unless the applicant can adequately demonstrate that other mitigating measures will avoid impacts to instream resources. (iv) Habitats or species that have been identified as priority species or priority habitats by the state, federal or tribal governments should not be reduced and should be preserved through regulation, acquisition, incentives and other techniques. The County should determine which habitats are of local importance. (v) The level of protection for HCAs shall be commensurate with the resource population status and management objectives as determined by appropriate resource managers.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems and Water Resources</p>	<p>Late summer precipitation, summer maximum temperature, peak streamflow, streamflow timing, likely sea level rise</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p>	<p>Wetlands, aquifers, fish and wildlife habitat areas</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>
<p>33 Environment</p> <p>Policy 5A-5.2 - Land uses that are incompatible with critical areas shall be discouraged.</p> <p>(a) Frequently Flooded Areas (i) Low intensity land use activities such as agricultural, forestry, and recreational land uses should be encouraged in floodplain areas and other land uses in these areas should be discouraged. (ii) Land uses, densities, and development activities in the floodplain and coastal high hazard areas should be limited to protect public health, safety, and welfare, to minimize expenditure of public money and costly flood control projects, and to maintain hydrologic systems, and to protect habitat for threatened and endangered species consistent with the National Marine Fisheries Service Biological Opinion (September 2008).</p> <p>(b) Geologically Hazardous Areas (i) Low land use densities and intensities or open space shall be preferred in geologically hazardous areas where this practice can provide site specific mitigation. (ii) Land use regulations and practices for geologically hazardous areas shall be established so that development does not cause or exacerbate natural processes that endanger lives, property, infrastructure, and resources on or off site.</p> <p>(c) Fish and Wildlife Habitat Conservation Areas (i) Fish and Wildlife Habitat Conservation Areas shall be protected against habitat degradation to the fullest extent possible while allowing reasonable use of property. (ii) Urban density development in the County and adjacent to Habitat Conservation Areas shall be sited such that HCA functions and values are protected.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems and Water Resources</p>	<p>Late summer precipitation, summer maximum temperature, peak streamflow, streamflow timing, likely sea level rise</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p>	<p>N/A</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>
<p>34 Environment</p> <p>Policy 5A-5.3 - Development allowed in critical areas shall be conducted without risk to lives, and with minimum risk to property, infrastructure, and resources.</p> <p>(a) Wetlands (i) Development adjacent to wetlands should be sited such that wetland and buffer functions are protected and an adequate buffer around the wetland is left undisturbed. (ii) Alterations to wetlands that are allowed in order to maintain or enhance specific wetland functions and values, shall consider all quantitative and qualitative functions of the wetlands and required buffers.</p> <p>(b) Aquifer Recharge Areas (i) Consistent with state and federal laws and regulations, the County shall develop in unincorporated areas and facilitate on a county-wide basis performance standards and regulate uses for activities which can adversely impact water quality or quantity in aquifers, watersheds, and surface waters. (ii) Performance standards shall be established to maintain aquifer recharge and protection and require that new developments meet these performance standards and that existing facilities be retrofitted, where feasible, to meet the standards.</p> <p>(c) Frequently Flooded Areas (i) Development regulations shall be adopted that prohibit intensive uses such as urban subdivisions, multi-family dwellings, commercial buildings, and industrial parks in the floodplain. (ii) The construction of critical facilities (i.e. schools, hospitals, police, fire, emergency response installations, nursing homes, and installations which produce, use or store hazardous materials or hazardous waste) should be prohibited within the 100 year floodplain. (iii) Development shall protect water quality and minimize run-off by limiting impervious surfaces, grading and filling, as well as maximizing vegetative cover and other best management practices. (iv) Flood-proofing of substantial improvements and new structures in frequently flooded areas shall be required. (v) Where the effects of hazards can be mitigated, appropriate design standards shall be required for site development and livestock sanctuary areas within the 100-year floodplain. (vi) Best management practices shall be required for maintaining the river channel configurations during dredging and gravel removal. (vii) Compensatory storage and a "no net loss" land use approach to maintaining flood water storage capacity and conveyance shall be required in frequently flooded areas.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems and Water Resources</p>	<p>Late summer precipitation, summer maximum temperature, peak streamflow, streamflow timing, likely sea level rise</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p>	<p>Wetlands, aquifer recharge areas, critical assets (educational facilities, hospitals, police and fire departments, nursing homes), fish and wildlife areas</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>

<p>(d) Geologically Hazardous Areas</p> <p>(i) Critical facilities (i.e., schools, hospitals, police, fire, emergency response installations, nursing homes, and installations which produce, use or store hazardous materials or hazardous waste)</p> <p>(ii) Development proposals in designated geologically hazardous areas, where applicable, shall include a geotechnical report and a mitigation plan for development activities, with the amount of information required based on the severity of the geologic hazard and the susceptibility of the development on or off site.</p> <p>(iii) Independent third party review of geotechnical reports for development in designated geologically hazardous areas may be required by the planning director when the report is found to be deficient with the review to be paid for by the applicant as a way of expediting development permits.</p> <p>(iv) Any development should be carried out in a way that will not cause or exacerbate hazardous geological conditions.</p> <p>(v) Public or private utility service or extensions (sewer, water, natural gas, and electric) should be discouraged in geologically hazardous areas and carefully sited to avoid potential damage to the utility or properties.</p> <p>(vi) When residential development is proposed in areas subject to geologic hazards it should be clustered and the development designed to minimize risk to human life, property, and the natural environment. Should be prohibited in geologically hazardous areas.</p> <p>(e) Fish and Wildlife Habitat Conservation Areas</p> <p>(i) New development within or adjacent to HCAs should incorporate design elements that protect wildlife habitat values.</p> <p>(ii) All development that may significantly adversely impact HCAs shall require a mitigation plan, prior to any permit approval. A threshold shall be established on a case by case basis by a qualified professional.</p> <p>(iii) Storm water runoff, flow rates, flow volumes and pollution caused by site development shall be managed so that detrimental impacts to water resources and property are maintained at pre-development levels.</p> <p>(iv) Clearing and grading ordinances shall be developed to avoid impacts of erosion on critical areas.</p> <p>(v) Impacts to fish and wildlife resources associated with instream flows shall be considered in the Comprehensive Plan and development regulations.</p> <p>(vi) Areas important for local and ecoregional biodiversity, as determined through regional ecological assessments, should be considered priorities for conservation and protection.</p> <p>(vii) Native vegetation shall be preferred and retained over exotic species in Fish and Wildlife Conservation Areas.</p> <p>(viii) Native plant communities should be integrated with land uses wherever possible.</p> <p>(ix) Give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems and Water Resources</p>	<p>Late summer precipitation, summer maximum temperature, peak streamflow, streamflow timing, likely sea level rise</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p>	<p>Wetlands, aquifer recharge areas, critical assets (educational facilities, hospitals, police and fire departments, nursing homes), fish and wildlife areas</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>
<p>35 Environment</p> <p>Policy 5A-5.4 - Impacts to critical areas should be monitored to ensure the long-term success of mitigation measures.</p> <p>(a) Performance standards shall be adopted through appropriate codes and administrative procedures for development in critical areas; including, but not limited to:</p> <p>(i) Critical area report information and analysis;</p> <p>(ii) Site inspections and development review of construction within critical areas;</p> <p>(iii) The use of critical area designations to prohibit, restrict, or otherwise control land uses within short subdivisions, subdivisions, and residential cluster developments;</p> <p>(iv) The use of protective covenants or conservation easements to protect critical areas in non-land division developments.</p> <p>(b) Land used for critical area mitigation should be preserved in perpetuity. Monitoring and maintenance of critical area mitigation sites shall be provided until the success of the site is established.</p> <p>(c) Monitoring of the mitigation site should take appropriate measures utilizing one or more of the following:</p> <p>(i) Applicants should develop comprehensive mitigation plans in order to ensure long term success of the mitigation project. Such plans should provide for sufficient monitoring, maintenance, and contingencies to ensure mitigation persistence.</p> <p>(ii) Applicants should demonstrate sufficient scientific expertise, supervisory capability and financial resources to complete and monitor mitigation projects and address cumulative impacts to the surrounding area.</p> <p>(iii) Applicants should restore critical areas that are temporarily impacted by development upon project completion.</p> <p>(iv) During development review, applicants should identify potential erosion and sedimentation impacts and submit appropriate mitigation plans that shall be monitored during construction and assessed periodically thereafter.</p> <p>(d) Critical area mitigation proposals should improve overall critical area functions, recognizing that it may be inappropriate to impact certain critical areas. All critical area functions shall be considered.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems</p>	<p>Late summer precipitation, summer maximum temperature, peak streamflow, streamflow timing, likely sea level rise</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p>	<p>N/A</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>
<p>36 Environment</p> <p>Policy 5A-5.5 - Critical areas should be avoided, maintained, restored, acquired, replaced or enhanced.</p> <p>(a) Mitigation for proposed alterations to critical areas or associated buffers should be sufficient to maintain the function and values of the critical area or to prevent risk from a critical area hazard. Proposed mitigation should follow the mitigation sequence of: (i) Avoid the impact altogether.</p> <p>(ii) Minimize the impact utilizing appropriate technology and design.</p> <p>(iii) Rectify the impact by restoring, repairing or rehabilitating the affected environment to the conditions existing at the time of initiation of the project or activity.</p> <p>(iv) Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the project.</p> <p>(v) Compensate for the impact by replacing, enhancing or providing substitute resources or environments.</p> <p>(b) On-site replacement of critical area impact is preferred. Where on-site replacement is not feasible or practical due to characteristics of the existing critical area location, replacement should occur within the same watershed and proximity.</p> <p>(c) Critical area restoration, creation, and enhancement projects should be completed prior to alteration, where possible. In all other cases, replacement should be completed prior to use or occupancy of the development.</p> <p>(d) The County shall place a high priority on the proper placement or other correction of all identified county road culverts causing blockage of fish passage.</p> <p>(e) Acquiring additional natural water storage areas, drainage systems and conveyance capacity should be accomplished through public means.</p> <p>(f) Protection of aquifer recharge areas and potable water resources is preferred, and restoration should be supported where warranted by cost-benefit analysis or limited water supply.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Ecosystems and Water Resources</p>	<p>Late summer precipitation, summer maximum temperature, peak streamflow, streamflow timing, likely sea level rise</p>	<p>flooding, reduced snowpack, sea level rise, extreme heat</p>	<p>Warmer summers are expected to reduce summer soil moisture and increase physiological stress for some plants and animals. Warmer summer temperatures are expected to reduce tree growth and forest productivity in some areas and increase growth and productivity in mild climates. Outbreaks of some forest pests, such as mountain pine beetles, are expected to increase.</p> <p>Higher streamflows can scour the streambed and remove or crush salmon eggs, increasing mortality and reducing return rates. Higher streamflows reduce the availability of slow-water habitat and can increase sedimentation that affects habitat quality.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p>	<p>Fish passage areas, natural water storage areas, drainage streams, and conveyance capacity areas</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>
<p>37 Utilities</p> <p>Policy 9A-4.1 - Planning - Utility providers shall be encouraged to plan for underground installation of utility lines, and private developers shall be required to underground utilities as directed during permit review.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Buildings and energy</p>	<p>Heating degree days and wildfire likelihood</p>	<p>Extreme heat and wildfire</p>	<p>A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations.</p> <p>More frequent wildfires have the potential to affect energy transmission by damaging infrastructure and interrupting transmission and distribution. More frequent wildfires are expected to cause property damage and loss. Poor air quality due to wildfire smoke could increase demand for air filtration systems in buildings.</p>	<p>Underground utility lines</p>	<p>Add specificity - climate impacts</p>	<p>Amend existing policy to consider climate impacts. Add measures to climate resiliency element.</p>
<p>38 Utilities</p> <p>Policy 9A-8.1 - Cooperation with water districts and other water providers shall be extended to support them in their responsibility to provide a reliable service to assure an adequate quality and quantity of potable water and high quality water supply within their service areas.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Water resources</p>	<p>Total annual precipitation, snowpack, likely sea level rise</p>	<p>Drought, reduced snowpack, sea level rise</p>	<p>Increases in annual precipitation have the potential to increase groundwater recharge. Changes in the timing and intensity of precipitation and increases in water demand and evaporation are expected to offset increases in groundwater recharge due to more annual precipitation.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p> <p>Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.</p>	<p>Water supply (lakes, reservoirs, etc.).</p>	<p>Add specificity - climate impacts</p>	<p>Amend existing policy to consider climate impacts. Add measures to climate resiliency element.</p>
<p>39 Utilities</p> <p>Policy 9A-8.10 - Water conservation measures shall be incorporated into water supply development and service plans as a method of addressing future water needs.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Water resources</p>	<p>Total annual precipitation, snowpack, likely sea level rise</p>	<p>Drought, reduced snowpack, sea level rise</p>	<p>Increases in annual precipitation have the potential to increase groundwater recharge. Changes in the timing and intensity of precipitation and increases in water demand and evaporation are expected to offset increases in groundwater recharge due to more annual precipitation.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p> <p>Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.</p>	<p>Water supply (lakes, reservoirs, etc.).</p>	<p>Add specificity - climate impacts</p>	<p>Amend existing policy to consider climate impacts. Add measures to climate resiliency element.</p>
<p>40 Utilities</p> <p>Policy 9B-1.6 - Structural Flood Protection: Dikes, levees, and other structural flood protection facilities should be designed to allow fish passage, protect flows in riparian zones, and complement or enhance the surrounding landscape.</p>	<p>Skagit County Comprehensive Plan 2016-2036</p>	<p>Water resources</p>	<p>Total annual precipitation, snowpack, likely sea level rise</p>	<p>Drought, reduced snowpack, sea level rise</p>	<p>Increases in annual precipitation have the potential to increase groundwater recharge. Changes in the timing and intensity of precipitation and increases in water demand and evaporation are expected to offset increases in groundwater recharge due to more annual precipitation.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p> <p>Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.</p>	<p>Dikes, levees, and other structural protection facilities</p>	<p>No changes needed</p>	<p>Adopt into comprehensive plan</p>

<p>41 Marinas and Launch Ramps</p> <p>1.B Location</p> <p>(1) Marinas and launch ramps should be located to minimize the need for continual dredging, spoil disposal, filling, beach feeding, and other river, lake, harbor, and channel maintenance activities.</p> <p>(2) Hazardous Areas - Marinas and launch ramps and their equipment, structures, and craft, should be located, designed, and maintained to avoid, or if necessary, withstand 100 year frequency flooding, storm tides or surges, and winds without becoming hazards and without the placement of massive structural defense works.</p> <p>(3) Resources and other uses - Marinas and launch ramps should not be located where they would adversely affect or diminish:</p> <p>a. Prime agricultural land.</p> <p>b. Natural resources such as sand and gravel deposits, timber, or recreational beaches.</p> <p>c. Shellfish and aquacultural resource areas.</p> <p>d. Fish and wildlife habitats and migratory routes.</p> <p>e. Commercial fishing and navigational areas.</p> <p>(4) Mixing and Flushing Waters - Marinas and launch ramps should be located in areas where there is adequate mixing and flushing of waters and should be designed so as not to retard or negatively influence flushing characteristics.</p>	Shoreline Master Program	Water resources	Total annual precipitation, snowpack, likely sea level rise	Drought, reduced snowpack, sea level rise	<p>Increases in annual precipitation have the potential to increase groundwater recharge. Changes in the timing and intensity of precipitation and increases in water demand and evaporation are expected to offset increases in groundwater recharge due to more annual precipitation.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p> <p>Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.</p>	Marinas and launch ramps, agricultural land, recreational beaches, fish and wildlife habitats, commercial fishing and navigational areas	No changes needed	Adopt into comprehensive plan
<p>42 Mining</p> <p>1.F Hazardous and Sensitive Areas</p> <p>(1) The sensitivity of flood prone and floodplain areas should be carefully considered during review of proposed mining operations.</p> <p>(2) All equipment, works and structures of mining operations should be able to withstand flooding without becoming hazards in themselves and without the placement of structural defense works.</p> <p>(3) Mining operations, if allowed on shorelines, should occur in areas other than those of high environmental, cultural, recreational, or historical value</p>	Shoreline Master Program	Water resources	Total annual precipitation, snowpack, likely sea level rise	Drought, reduced snowpack, sea level rise	<p>Increases in annual precipitation have the potential to increase groundwater recharge. Changes in the timing and intensity of precipitation and increases in water demand and evaporation are expected to offset increases in groundwater recharge due to more annual precipitation.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p> <p>Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.</p>	Mining extraction sites	No changes needed	Adopt into comprehensive plan
<p>43 Piers and Docks</p> <p>1.B Geohydraulics and Design/Location</p> <p>(1) Marine and lake shores:</p> <p>a. Where geohydraulic processes are active (shore erosion and accretion, littoral drift), piers and docks should allow for a maximum of littoral drift and should minimize interference with basic geohydraulic processes.</p> <p>b. If a bulkhead-like base is proposed for a fixed pier or dock where there is net positive littoral drift, the base should be built landward of the ordinary high water mark (foreshore) or protective berms.</p> <p>c. Piers and docks should not be located in estuaries and biologically productive marshlands.</p> <p>d. The use of mooring buoys should be preferred if proposed docking facilities for small boat and pleasure craft will adversely interfere with basic geohydraulic processes or utilize valuable and unique shoreline resources.</p> <p>(2) River shores:</p> <p>a. Piers and docks should not locate along braided or meandering river channels or where the river channel is subject to change in direction or alignment.</p> <p>b. Bulkhead-like bases for piers and docks along river shorelines should be built landward of the ordinary high water mark.</p> <p>c. If docks are allowed along river shorelines, they should be of the floating type, securely anchored to piling to allow for changes in the river level. Construction of such docks and their accessory uses should be able to withstand 100-year frequency flooding.</p> <p>(3) Floating and/or open-pile construction should be utilized:</p> <p>a. Where geohydraulic processes are active</p> <p>b. Where shore trolling and commercial fishing is a significant activity</p> <p>c. If there will be interference with currents, circulation, and aquatic life.</p> <p>(4) Open-pile piers and docks should not form groins or baffles that trap littoral drift, adversely affect river channel form and alignment, promote erosion or interfere with fisheries resources and other aquatic life</p> <p>(5) Impacts - Piers and docks should be sited and designed to minimize all possible adverse impacts.</p> <p>(6) Boathouses should be located inland from the ordinary high water mark, be in conformance with Skagit County zoning ordinances regarding accessory buildings, and should be designed to minimize visual impacts to the shoreline environment.</p> <p>(7) Mooring Buoys and Swim Floats should be of the anchored, floating type, be located out of main navigational channels and areas of intensive water surface use, and be painted or designated to avoid</p>	Shoreline Master Program	Water resources	Total annual precipitation, snowpack, likely sea level rise	Drought, reduced snowpack, sea level rise	<p>Increases in annual precipitation have the potential to increase groundwater recharge. Changes in the timing and intensity of precipitation and increases in water demand and evaporation are expected to offset increases in groundwater recharge due to more annual precipitation.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p> <p>Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.</p>	Marine and lake shores, river shores, piers and docks	No changes needed	Adopt into comprehensive plan
<p>44 Ports and Industry</p> <p>1.B Location and Design</p> <p>(1) Ports and water related industry should be located and designed to minimize the need for initial and continual dredging, filling, spoil disposal, and other harbor and channel maintenance activities.</p> <p>(2) Ports and water related industry should be located at existing developed port and harbor areas and/or on Department of Natural Resources designated first class shorelands and harbor areas if consistent with this program.</p> <p>(3) Water using industries and activities should not locate in shoreline areas. Waste treatment ponds and works associated with port and water related industry should not locate in shoreline areas.</p> <p>(4) Ports and water related industry should occur in areas other than those of high environmental, agricultural, cultural, recreational, or historical value.</p> <p>(5) All port and water related industrial facilities, equipment and works should be located, designed, and maintained to avoid, or if necessary, withstand 100-year flood frequency flooding and/or storm tides or surges without becoming hazards and without the placement of massive structural defense works.</p>	Shoreline Master Program	Water resources	Total annual precipitation, snowpack, likely sea level rise	Drought, reduced snowpack, sea level rise	<p>Increases in annual precipitation have the potential to increase groundwater recharge. Changes in the timing and intensity of precipitation and increases in water demand and evaporation are expected to offset increases in groundwater recharge due to more annual precipitation.</p> <p>Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase.</p> <p>Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.</p>	Marine and lake shores, river shores, piers and docks	No changes needed	Adopt into comprehensive plan
<p>45 Recreation</p> <p>1.C Unique and Fragile Shoreline Areas</p> <p>(1) Unique and fragile shoreline areas such as accretion beaches marshes, estuaries, and wetlands that are susceptible to damage from structural recreational development and to periodic and seasonal changes in water levels should be identified, protected, and preserved for less intensive forms of recreation.</p> <p>(2) Unique and fragile shoreline areas such as point bar beaches, sand bars, and other accretion beach forms whose formation and maintenance are dependent upon water borne transport and deposit of sand and gravel materials should be identified, protected, and preserved for more passive forms of recreation.</p> <p>(3) Plans for recreational activities, developments, designations, and accesses should identify and make provisions for the preservation, protection, and proper use (see No. 1 and 2) of unique and fragile shoreline areas and their associated biological life and communities.</p>	Shoreline Master Program	Water resources	Likely sea level rise	Sea level rise	Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.	Shorelines (accretion beaches, estuaries, and wetlands)	No changes needed	Adopt into comprehensive plan
<p>46 Residential Development</p> <p>1.A.8 Hazardous Areas - Residential development and accessory uses should be located, designed, constructed, and maintained to avoid, or if necessary, withstand 100-year frequency flooding and storm tides or surges without becoming hazards and without the placement of extensive structural defense works.</p>	Shoreline Master Program	Buildings and energy	N/A	N/A	N/A	Residential development and existing residential buildings	Add specificity - climate impacts	Integrate the resiliency element with land use element.
<p>47 Shoreline Defense Works</p> <p>1.A.10 Restoration - Local programs or coordinated efforts among individuals, private and/or public agencies should be initiated to remove or repair failing, hazardous, or nonfunctioning shore defense works and to restore and/or maintain shore and beach resources with more rational, less hazardous long term measures.</p>	Shoreline Master Program	Water resources	Likely sea level rise	Sea level rise	Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.	Shorelines	No changes needed	Adopt into comprehensive plan

<p>48 Shoreline Stabilization and Flood Protection</p> <p>1.B Design and Location (1) All bank stabilization and flood protection measures should be constructed to comply with the design and location standards and guidelines of applicable agencies.</p> <p>(2) Riprapping and other bank stabilization measures should be located, designed, and constructed primarily to prevent damage to agricultural land, public roads and bridges, existing homes and residential areas, or other structures or natural features whose preservation is in the public interest. Such measures should not restrict the flow of the river or stream.</p> <p>(3) Fish and Wildlife Resources - Recognizing the value and interdependency of water bodies and associated wetlands as biologically productive habitats and recognizing the intent of the Shoreline Management Act (RCW 90.58.030(2) and WAC 173-22-030), shoreline stabilization and flood protection projects should be located landward of natural wetlands, marshes, and swamps of associated fresh and marine water bodies.</p> <p>(4) Braided and meandering channels and associated shoreline areas should not be the locations for intensive land use developments such as those of an industrial, commercial, or residential nature.</p> <p>(5) Substantial stream channel direction modification, realignment, and straightening should be discouraged as a means of shoreline and flood protection and for protection of road rights-of-way, navigational routes, and other construction or developmental projects.</p>	Shoreline Master Program	Water resources	Likely sea level rise	Sea level rise	Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.	Shorelines	No changes needed	Adopt into comprehensive plan
<p>49 Transportation Facilities</p> <p>1.A.7 Hazardous Areas - Transportation facilities and corridors should be located, designed, and maintained to avoid, or if necessary, withstand 100-year frequency flooding and storm tides or surges without becoming hazards and without the placement of massive structural defense works.</p>	Shoreline Master Program	Transportation	Heavy precipitation magnitude, peak streamflow, likely sea level rise	Extreme precipitation, flooding, sea level rise	Heavier precipitation events are expected to intensify flooding, landslides, and erosion, which can interrupt transportation routes, damage infrastructure, and increase maintenance and repair costs. With moderate sea level rise, Washington's seaports and the connected distribution networks are expected to flood more often. Coastal transportation infrastructure may be subject to more frequent closures due to coastal flooding and erosion, and require more frequent maintenance and repairs.	Transportation facilities and corridors	No changes needed	Adopt into comprehensive plan
<p>50 Utilities</p> <p>1.A.5 Hazardous Areas - Utilities and their associated structures should be located, designed, and maintained to avoid, or if necessary, withstand 100-year frequency flooding or storm tides and surges without becoming hazards and without the placement of massive structural defense works.</p>	Shoreline Master Program	Water resources	Reduced snowpack and likely sea level rise	Snowpack and sea level rise	Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase. Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.	Utilities	No changes needed	Adopt into comprehensive plan
<p>51 Skagit County Initiatives</p> <p>Initiative #9 - Provide erosion control information and steep slope stability recommendations to citizens and homeowners. Inform owners concerning structures above steep bluffs or below steep bluffs. Increase monitoring of countywide erosion issues and bluffs.</p>	Natural Hazard Mitigation Plan	Buildings and energy	Decrease in heating degree days, increase in wildfire likelihood,	Extreme heat and wildfire	A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations. More frequent wildfires have the potential to affect energy transmission by damaging infrastructure and interrupting transmission and distribution. More frequent wildfires are expected to cause property damage and loss. Poor air quality due to wildfire smoke could increase demand for air filtration systems in buildings.	Dike and drainage equipment	No changes needed	Adopt into comprehensive plan
<p>52 Skagit County Initiatives</p> <p>Initiative #10 - In conjunction with the Diking and Irrigation Districts, assist in conducting a needs assessment to determine logistical requirements for equipment and parts for dike and drainage equipment, wells, and water distribution sources to ensure a surplus allowing for management of floodwaters, and continued supply of potable water in case commodity flow is impacted by a major event.</p>	Natural Hazard Mitigation Plan	Water resources	Total annual precipitation, decrease in snowpack, likely sea level rise	Drought, reduced snowpack, sea level rise	Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase. Increases in annual precipitation have the potential to increase groundwater recharge. Changes in the timing and intensity of precipitation and increases in water demand and evaporation are expected to offset increases in groundwater recharge due to more annual precipitation. Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.	Roadways and bridges	No changes needed	Adopt into comprehensive plan
<p>53 Skagit County Initiatives</p> <p>Initiative #13 - Partner with the Washington State Department of Transportation, surrounding counties, and local municipalities to expand earthquake assessment of roadways and bridges to reduce hazard impact and transportation-related and potential isolation.</p>	Natural Hazard Mitigation Plan	Transportation	Decrease in snowpack, increase in hot days, increase in heavy precipitation magnitude, decrease in peak streamflow, decrease in snowpack, increase in likely sea level rise, increase in wildfire likelihood	Drought, extreme heat, extreme precipitation, flooding, reduced snowpack, sea level rise	Heavier precipitation events are expected to intensify flooding, landslides, and erosion, which can interrupt transportation routes, damage infrastructure, and increase maintenance and repair costs. With moderate sea level rise, Washington's seaports and the connected distribution networks are expected to flood more often. Coastal transportation infrastructure may be subject to more frequent closures due to coastal flooding and erosion, and require more frequent maintenance and repairs.	Transportation facilities and corridors	Add specificity - climate impacts	Amend existing policy to consider climate impacts. Add measures to climate resiliency element.
<p>54 Skagit County Initiatives</p> <p>Initiative #17 - Continue to integrate mitigation planning data into ongoing land-use planning to assist in providing information necessary to enforce existing building codes, floodplain and critical areas ordinances, and shoreline protection.</p>	Natural Hazard Mitigation Plan	Water Resources	Total annual precipitation, decrease in snowpack, likely sea level rise	Drought, reduced snowpack, sea level rise	Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase. Increases in annual precipitation have the potential to increase groundwater recharge. Changes in the timing and intensity of precipitation and increases in water demand and evaporation are expected to offset increases in groundwater recharge due to more annual precipitation. Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.	Existing buildings	No changes needed	Adopt into comprehensive plan
<p>55 Skagit County Initiatives</p> <p>Initiative #20 - Work with local school districts to study and retrofit school facilities to better withstand damage from earthquakes, tsunamis, floods, severe weather, erosion, and landslide events.</p>	Natural Hazard Mitigation Plan	Buildings and Energy	Decrease in heating degree days, increase in wildfire likelihood,	Extreme heat and wildfire	A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations. More frequent wildfires have the potential to affect energy transmission by damaging infrastructure and interrupting transmission and distribution. More frequent wildfires are expected to cause property damage and loss. Poor air quality due to wildfire smoke could increase demand for air filtration systems in buildings.	Educational facilities	No changes needed	Adopt into comprehensive plan
<p>56 Skagit County Initiatives</p> <p>Initiative #21 - Study, retrofit or move county-owned facilities to better withstand damage from earthquakes, floods, severe weather, and tsunami.</p>	Natural Hazard Mitigation Plan	Buildings and Energy	Decrease in heating degree days, increase in wildfire likelihood,	Extreme heat and wildfire	A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations. More frequent wildfires have the potential to affect energy transmission by damaging infrastructure and interrupting transmission and distribution. More frequent wildfires are expected to cause property damage and loss. Poor air quality due to wildfire smoke could increase demand for air filtration systems in buildings.	County owned facilities	No changes needed	Adopt into comprehensive plan
<p>57 Skagit County Initiatives</p> <p>Initiative #22 - Evaluate and enhance the current capital improvements program for county roads. Working with corresponding special purpose districts to include/review as necessary, drainage projects such as culverts; elevate roadways as necessary where areas are frequently flooding, blocking ingress and egress; replace small-diameter flood control devices in known flood problem areas; enhance drainage system maintenance plans and sediment and debris clearance to ensure unobstructed flow of floodwaters.</p>	Natural Hazard Mitigation Plan	Water Resources	Total annual precipitation, decrease in snowpack, likely sea level rise	Drought, reduced snowpack, sea level rise	Reduced snowpack and more winter rain is expected to increase water availability in winter for multiple uses including drinking water and hydropower generation, and decrease water availability in late spring and summer when demand is also expected to increase. Increases in annual precipitation have the potential to increase groundwater recharge. Changes in the timing and intensity of precipitation and increases in water demand and evaporation are expected to offset increases in groundwater recharge due to more annual precipitation. Sea level rise is expected to increase salt water intrusion into groundwater and coastal aquifers, which could reduce water quality.	County roads	No changes needed	Adopt into comprehensive plan
<p>60 Skagit County Initiatives</p> <p>Initiative #28 - Implement cost-effective measures to address the vulnerabilities of facilities at risk to sea level rise, extreme high tides, and storm surges as they relate to the potential inflow of saltwater. This includes working with local private water purveyors.</p>	Natural Hazard Mitigation Plan	Buildings and Energy, Water Resources	Decrease in heating degree days, increase in wildfire likelihood, Total annual precipitation, decrease in snowpack, likely sea level rise	Extreme heat and wildfire	A decrease in heating degree days is expected to reduce energy demand for heating. This has the potential to reduce energy costs for businesses and residents, but decrease utility revenue to support infrastructure and operations. More frequent wildfires have the potential to affect energy transmission by damaging infrastructure and interrupting transmission and distribution. More frequent wildfires are expected to cause property damage and loss. Poor air quality due to wildfire smoke could increase demand for air filtration systems in buildings.	Existing and future buildings	No changes needed	Adopt into comprehensive plan